ARTIFICIAL INTELLIGENCE IS TRANSFORMING OFFLINE RETAILS INDUSTRY

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ABSTRACT

Artificial Intelligence (AI) is an automated, intelligent system, helping consumers find exactly what they require/need. ML (Machine Learning) is most often discussed in retail, as it takes in countless lines of historical data and tries to find patterns and trends, as well as make precise and accurate predictions. Retail industry is transforming technologically which will change customers' shopping experiences. Companies are investing heavily to provide best online experience to its' customers and brick and mortar stores haven't changed experiences for their customers. However, physical stores / brands must adopt swiftly technology driven economy to keep the customers loyal. Retailers are transforming their businesses digitally, exploring ML technology, data infrastructure and affordable hardware to deploy across retails stores, located different locations [1,2].

INTRODUCTION:

Artificial Intelligence (AI) is used almost every tasks of every industry. AI and Machin Learning (ML) have had a real sway on CPG/retail industry, as the pandemic accelerated the requirements of AI technology to remain the market. Businesses are implementing AI to revolutionize customer experience and data analysis to improve their business decisions [1,2].

In the US, by 2022, the total sales of brick-mortar stores estimated approx. $4.5 trillion and the retailers are primarily focusing to improve the value of their physical stores using various technology of AI such as ML, data, transforming physical stores into marketing tools [1]. AI is changing the retail landscape in a number of ways. AI is helping retailers to better understand their customers through data analysis. This data can be used to improve customer service, target marketing campaigns, and personalize the shopping experience. Additionally, AI is also being used to streamline logistics and operations within retail businesses.

Companies are turning towards AI to get top position in the industry. AI provides the companies access to streams of data for improving speed, efficiency and business decisions. Now a day, many companies are investing at AI, with global annual investment expected to reach 7.3 billion by 2022. In 2023, 325,000 retailers will be using ML in some form [3].

AI has transformed retail corporations' operations/decisions in the area of stock management, marketing of online as well as offline storefront.

There are the major techniques, which retail companies are exploring to improve employee and customer experiences: Image classification, object detection, optical character recognition, human pose estimation and activity recognition [3].

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As per recently done survey by Visa a significant change in the trends the retail market has experienced in the past few years [4]:

• There is approx. 82% of small businesses adjusting their operation process post-pandemic
• 65% of purchasers prefer to do payment via contactless methods

As of 2022, PwC reports that 76% of businesses have implemented AI into their business operations and this will continue grow, based on market estimates [5].

KEY TECHNIQUE OF AI USED IN THE INDUSTRY:

Computer Vision: Online businesses collect customers' behavior data on all buyers' interaction points and applying this constant adjusted data to improve offers for product mix, recommendations and promotions. However, physical stores' owners also utilize computer vision technology to gather the same of data such as their individual customer's purchase behavior data, collective customers' pattern and real-time inventory in their brick-mortar stores [1].

Computer visions and deep-learning models identify the customers' pick-up, keep back and keep in the bags or baskets. Based on the real-time pricing, the App's cart is automatically updated.

Computer vision collects digital images and automatically processes & analyses the data in, allowing machines to make decisions quick and in-real time [6].

APPLICATIONS AND KEY BENEFITS OF AI-POWERED STORES:

Contactless Checkout: Retailers are emphasizing the contact-less shopping experience to their consumers after Covid pandemic. This can be achieved via computer vision technology, allowing shoppers to buy products without cashier interaction and a long waiting que for payments. Currently, AI-powered stores, like drug, grocery, convenience stores, are providing self-checkout capability to the users. This is an attractive feature for the customers as they don't need to spend time in long waiting lines and are free from unnecessary risk of infections [1].

Stress-free Product Search: Computer vision solution allows the shoppers to search items via pictures instead of words [6].

Crowd Analysis: Object detection technology detects footfall data and allows business owners to analyze consumers' in-store behavior and sentiment along with customers' preferences [3].
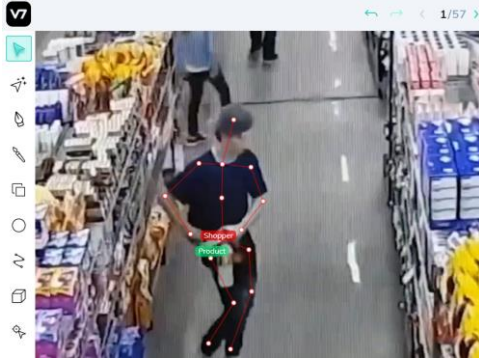

Updated Inventory: AI helps automate the inventory requirements, lowering the cost, as well as monitor in-store pattern and cashier errors.

Reduced Cost: AI helps retailers decrease costs related with inventory management as well as returns of products.

Reduce Theft Activities: AI-enabled cameras detect potentially suspicious activity and notify to the store employees in real-time. These

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cameras also help identify physical assault and provide shoppers safety [3].

A FEW RETAILERS WHICH ARE USING AI:

Carrefour, a France-based retail company, introduced an AI-enabled store in Paris in Nov 2021, naming Flash 10/10, "10 seconds to shop and 10 seconds to pay", which allows shoppers to have access to 900 items in a flash [7].

Neiman Marcus, a luxury department store, is utilizing AI driven technologies to help buyers find items easily in the store via pictures of the products [8].

Taco Bell is helping eaters to place order Tacos directly through AI [8].

Walmart, a retail stores operator, is planning to deploy shelf-scanning robots, which can scan shelves and add missing products and price tags [8].

KEY MARKET PLAYERS OF AI TECHNOLOGY PROVIDERS:

Clarifai provides AI-enabled image and video recognition products, which classify images and separate out unrequired visual data/content [5].

IBM's Watson utilizes AI to generate personalized buying experiences using real-time data. Many companies are using this technology such as Frito-Lay, Home Depot to simplify supply chain operations and improving consumers' shopping experience [5].

CONCLUSION

The retail companies are utilizing AI technology for researching products, pricing and managing inventory. Companies are providing a better customer experience via adopting AI technology. Brick-mortar stores are using computer vision powered cameras to spot thieves, managing products on shelves. AI technology is an efficient tool that helps retailers providing smart shelf sensor systems, cashier less checkouts to improve the retail experience for the shoppers [3]. As AI continues to evolve, it is likely that even more transformative changes will come to the retail sector. It is difficult to predict exactly how AI will change the retail sector in the future. However, it is clear that AI will have a major impact on the way that retailers operate. Additionally, AI will continue to help retailers better understand their customers and offer more personalized shopping experiences. As AI technology advances, it is likely that even more transformative changes will come to the retail sector.

References:

1: https://aifi.com/wp-content/uploads/2021/04/AI-The-Future-of-In-Person-Shopping.pdf

2: https://www.the-future-of-commerce.com/2021/07/01/future-of-online-shopping-ai-and-machine-learning/

3: https://www.v7labs.com/blog/ai-in-retail

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4:      https://alwaysai.co/blog/computer-vision-contactless-shopping

5:     https://builtin.com/artificial-intelligence/ai-retail-ecommerce-tech

6:     https://www.analyticsinsight.net/computer-vision-enhances-shopping-experience/

7:
https://www.euronews.com/next/2022/06/13/what-does-the-future-of-shopping-with-artificial-intelligence-look-like#:~:text=What%20does%20the%20future%20of%20shopping%20with%20artificial%20intelligence%20look%20like%3F,-Shopping%20without%20cashiers&text=The%20retail%20experience%20is%20evolving,to%20identify%20optimum%20store%20layout.

8:
https://www.forbes.com/sites/blakemorgan/2019/03/04/the-20-best-examples-of-using-artificial-intelligence-for-retail-experiences/?sh=4d3cd4bf4466

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