

THE INCREASING IMPORTANCE OF AI APPLICATIONS IN E-COMMERCE

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ABSTRACT

Artificial intelligence (AI) is a wide-ranging part of computer science concerned about building smart machines equipped for performing tasks that normally require human intelligence. Aside from product recommendations, artificial intelligence in e-commerce industry is being used by online retailers for providing chatbot services, analyzing customer comments, and providing personalized services to online shoppers. The key applications of AI in e-commerce are use of chatbots or virtual assistants, intelligent product recommendations, personalization and inventory management. Summarily, AI has several important uses in e-commerce and retailers are investing heavily in technology to stay competitive and relevant.

Keywords: artificial intelligence, e-commerce, chatbots, personalization, inventory management

Introduction

Artificial intelligence (AI) is a wide-ranging part of computer science concerned about building smart machines equipped for performing tasks that normally require human intelligence. Generally, AI systems function by ingesting sizable amounts of labeled training data, analyzing the data for patterns and correlations, and utilizing these patterns to make forecasts about future states. In this manner, a chatbot that is fed examples of text chats can learn to generate lifelike exchanges with people, or an image recognition technique can learn identifying and describing objects in images by scrutinizing millions of examples.

Examples of AI:

1. Siri, Alexa and other smart assistants
2. Self-driving cars
3. Robo-advisors
4. Conversational bots
5. Email spam filters
6. Netflix's recommendations (builtin.com, 2021)

AI and Ecommerce

Representing an impressive 35% of its overall revenues, product upselling and cross-selling on the Amazon E-commerce platform is among retailer's key success stories. Amazon's product recommendation technology is basically empowered by artificial intelligence or AI.

Aside from product recommendations, artificial intelligence in Ecommerce industry is being used by online retailers for providing chatbot services, analyzing customer comments, and

providing personalized services to online shoppers. A recent report tracked down that 1 in each 5 customers will buy products or services from a chatbot, while 40% of the online shoppers are searching for great offers and shopping deals from chatbots.

Literature Review

There is considerable research on the topic of AI applications in e-commerce. Below are a few abstracts from the recent literature.

Soni (2020), has posited that, the present review, looks into the role of artificial intelligence in e-commerce. Last couple of years have witnessed a rapid expansion of the e-commerce era. Simultaneously the technological advances have led to different stages that can be useful to capture the market needs and update the trends. Therefore this review focuses on the uses of Artificial intelligence in e-commerce business.

Anakkala (2021), has argued that, Artificial intelligence (AI) means to develop a system which exhibits natural characteristics we associate to intelligent human behavior. Recommendation systems are a research area and AI applications. A recommendation system offers personalized content, like products for end users. This present Master's Thesis looks into how value creation is done by the AI applications for eCommerce merchants and also what are the value propositions of the suggested systems. This research was carried as a qualitative case study with ten respondents from two companies. Respondents represented suppliers and merchant organizations. The

study explained what respondents felt AI to mean. Research identified most significant subfields of AI for eCommerce merchants, also with features and value propositions.

Panigrahi and Karuna (2021), have opined that, the proliferation of mobile and internet technologies has led to a massive shift of retail consumers' preferences from genuinely strolling a distance to the nearest or favorite conventional brick-and-mortar store for shopping, to ordering every item one needs from the comfort of their home. Whereas this has great convenience, retailers have been left to grapple with the neck-to-neck competition for this emerging market that comes with certain underlying expenses for business that sometimes threaten the very endurance being battled for. Likewise, this new market comes with a package of challenges, for example, internet delays, that hinder progress. Accordingly, numerous e-commerce businesses have come up with business engagement strategies that are centered around artificial intelligence (AI) to enhance their productivity and efficiency. Multiple studies have been conducted on the effects of AI on the operational efficacy of e-commerce business which focuses to a positive outcome. This paper describes the ramifications of artificial intelligence (AI) in ecommerce business in different aspects and holds that AI is indeed an indispensable component for enhancing business engagement in eCommerce. In that capacity, it uses a systematic review of pertinent literature to validate this position. The requisite procedural aspects of leading systematic review were followed to the latter to ensure no information bias.

According to Desai (2021), personalization is widely used to draw in and retain customers in online business addressing one size fits all issues, yet little is addressed to contextualize users' real-time needs. E-commerce website owners use these strategies for customer-centric marketing through enhanced experience yet come up short in designing effective personalization due to the dynamic nature of users' needs and pace of information exposure. To address this, this chapter explores hyper-personalization strategies to overcome users' implied need to be served better. The research

presents a hyper-personalization process with learning (ML) and artificial intelligence (AI) techniques for marketing functions like segmentation, targeting, and positioning based on real-time analytics all through the customer journey and key components driving effective customer-centric marketing. This chapter facilitates marketers to use AI-enabled personalization to address customers' certain needs and leverage higher returns by delivering the perfect information at the ideal time to the right customer through the right channel.

According to Yan et al. (2021), this paper primarily focuses on the use of artificial intelligence, especially robotics, in the American retail industry by presenting and explaining the development of the U.S retail sector in recent years and investigating some specific examples of three primary American companies-Amazon, Walmart and Costco. In this article, we compare these three companies and talk about their similarities and differences in the use of AI. As a result, the paper tracks down that these well-realized retail companies are not just moving their emphasis on developing the ecommerce yet in addition utilizing AI during creation to raise the companies' productivity and profits.

Moreover, Kumar and Trakru (2020), Roy and Tang (2021) and Purcarea (2021) have dealt with various aspects of AI applications in e-commerce.

Major AI applications in e-commerce

1) Chatbots and other virtual assistants

Retailers from e-commerce are increasingly turning towards digital assistants or chatbots to provide a 24×7 support to the online shoppers. Assembled utilizing AI technologies, these chatbots are getting highly intuitive and are leading to a better customer experience. Aside from providing great customer support, chatbots are enhancing the effect of AI in Ecommerce through capabilities such:

- Natural language processing (or NLP) which can interpret and respond to voice-based interactions with consumers.
- Addressing consumer needs through deeper insights.
- Self-learning capabilities that help them improve over time.

- Provide personalized or targeted offers to customers.

2) Intelligent Product Recommendations

Among the main utilizations of artificial intelligence in the field of ecommerce, personalized product suggestions for online shoppers are leading to higher conversion rates. With the use of big data, AI in ecommerce is impacting customer choices on account of the information it possesses about previous purchases, online browsing habits and searched products. Product suggestions provide number of benefits to ecommerce retailers including:

- Higher number of returning customers
- Improved customer retention and sales
- A personalized shopping experience to online shoppers
- Enable a personalized business email campaign.

3) AI Personalization in Ecommerce

Rated among the best modes, customization is at the core of AI in Ecommerce marketing. AI and machine learning in ecommerce, based on specific data gathered from each online user, is deriving important user insights from the generated customer data.

For instance, the AI-enabled tool, can analyze customer data from multiple touchpoints (email campaigns, mobile apps, and websites) to see how they are performing online interactions. These insights enable the ecommerce retailers to give suitable product suggestions and provide a consistent user experience across all the devices.

4) Inventory Management

Efficient inventory management is tied in with maintaining the right level of inventory that can satisfy market demand without adding to idle stock. While the conventional form of

inventory management was restricted to current stock levels, AI-enabled inventory management is enabling how to maintain stocks based on data related to:

- Sales trends over the previous years
- Projected or anticipated changes in product demands
- Potential supply-related issues that could affect inventory levels (medium.com, 2019)

Conclusion

Artificial intelligence (AI) is a wide-ranging part of computer science concerned about building smart machines equipped for performing tasks that normally require human intelligence. Examples of AI are smart assistants like Siri and Alexa, conversational bots and Netflix recommendations. Aside from product recommendations, artificial intelligence in e-commerce industry is being used by online retailers for providing chatbot services, analyzing customer comments, and providing personalized services to online shoppers. The most important AI applications in e-commerce are – first, chatbots and virtual assistants that offer 24x7 support to the online consumers; second, intelligent product recommendations based on knowledge of previous purchases, searched products, and online browsing habits; third, AI personalization that is based on important user insights from the generated customer data; lastly, inventory management that analyzes sales trends, projected or anticipated changes in product demands and potential supply related issues. Summarily, AI has several important uses in e-commerce and retailers are investing heavily in technology to stay competitive and relevant.

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