Enhanced role of Artificial Intelligence as a game changer force in E-commerce

Dr.A.K.VAGEETHA ABDUL KHADER[1], G.SARANYA[1]

[1]Assistant Professor, Rathnavel Subramaniam College of Arts& Science, Sulur, Coimbatore-641402, Tamilnadu.

Abstract

The most widely used branch of Artificial Intelligence (AI) is machine learning, which can interpret the vast amounts of data that e-commerce businesses gather and utilize to deliver insights that enhance consumer experience, expedite internal company processes, and fight fraud. To offer more personalized services and tailored recommendations through analysis of customer behavior patterns Automating tasks that will allow employees and business owners to spend more time Analyzing business data to provide new insights to help business leaders make decisions. Three cognitive processes—learning, reasoning, and self-correction—are the main topics of AI programming. Through a survey of research publications from several sources, the fundamental goal of this work is to identify some important applications of AI in e-commerce. The study found that artificial intelligence

Keywords: Artificial Intelligence, E- commerce, Chatbots, Consumers, Business

Introduction

E-commerce is the buying and selling of goods and services online. It has become increasingly popular in recent years, as more and more people have access to the internet and smartphones [1]. E-commerce applications are software programs that allow users to shop online from their smartphones or tablets [2]. These applications can be developed by e-commerce businesses themselves or by third-party developers. E-commerce applications offer a number of benefits for both businesses and consumers.

For businesses, e-commerce applications can help to increase sales, reach a wider audience, and reduce costs [3]. For consumers, e-commerce applications offer convenience, a wider selection of products, and competitive prices. The process of categorizing literature according to topic area required dividing it into four main categories: applications, technological challenges, support and implementation, and others[4]. Applications relate to the particular field (marketing, advertising, commerce, etc.) in which the study was carried out. E-commerce research using artificial intelligence (AI) technologies, systems, algorithms, or techniques that support or improve e-commerce applications are examples of technological difficulties [5].

According to a recent report, the main use of AI in E-commerce. It identifies the main themes in the field of study as sentiment analysis, optimization, trust, and personalization. Managers might thus use these tools to raise the caliber of their recommender systems. In particular, it could assist them in comprehending how to create analytics that are optimized, personalized, trust-based, and sentiment-based that are backed by specially created AI algorithms [6]. With this

information, rivals would find it extremely difficult to mimic or duplicate the caliber of suggestions made through e-commerce platforms. Businesses that are interested in using AI in e-commerce will require special access to and ownership of consumer data, as well as knowledge of analytics and AI algorithms (These resources cannot be replicated by the competitors because these resources are exclusive to the company, especially if they are patented, the competitor is unable to replicate them.

Artificial Intelligence Use in E-commerce

Artificial intelligence is enabling technology systems to differentiate between the problem which they've been confronted with and their solutions, while addressing it. The computer system will receive data that its sensors, such as cameras, have prepared or collected. It's processing those data and responding to them. On the basis of analysis of earlier steps, AI systems may operate autonomously and in some cases adapt their behavior [7]. By simulating and extending human intelligence, artificial intelligence is able to perform an automatic act of mental work. Intelligent technology, which is based on the development of intelligent tools comparable to those used by humans in their intellectual activity, such as robots, voices or picture recognition, forms the base for Artificial Intelligence. After they receive the control command, these instruments can react without delay. Expert systems, Decision Support Systems and Robots are further sources of AI [8].

Fuzzy logic is one of the tools to be used by AI. It's a tool that allows it to Computerize human actions, processes and interconnected pre-visual information and knowledge as if they were done by humans [9]. The correct use of fuzzy logic in conjunction with artificial intelligence enables better planning, objective professional evaluation and risk assessment, rational decision-making, and management. It can also help eliminate errors associated with human factor failure [10].

Many varieties of artificial intelligence exist. Artificial intelligence in software includes speech and facial recognition systems, picture analysis tools, search engines, and so-called virtual assistants [11]. Drones, self-driving cars, and robots are examples of artificial intelligence integrated into material technologies [12].

Literature Review

The e-commerce website offers round-the-clock accessibility to customers, aided by virtual assistants/chatbots that provide 24-hour customer support. These chatbots are primarily designed to automatically address customer inquiries, handle basic voice commands, and offer product recommendations through a natural language processing system. Additionally, chatbots can be categorized as a specific type of software application [9]. Images and sound searches can be carried out on Web pages by means of Artificial Intelligence. An image and sound processing algorithm is used for visual and audio search. Table 1 Highlight the literature on AI with E commerce.The customer does not need to type a keyword when searching; he will be able to find the product by means of an image or voice[13].

Table 1 Literature on Artificial Intelligence with Ecommerce

Reference	Objective	Study theme	Findings
Chang, C[14]	To analyze the use of artificial intelligence ine-commerce business	Artificial intelligence in e-commerce	In the online business, AI can help people to be more successful in their large sales and customer relationships
Areiqat, A. Y., et al [7]	To present impact of artificial intelligence ine-commerce	Artificial intelligence in e-commerce	Integration of artificial intelligence in e-commerce companies can E commerce firms may be able to help create more sophisticated solutions, which have an impact on transactions, customer retention, satisfaction and efficiency. Asset management, security, fraud detection, and portfolio management
Singh, R.[5]	To give a clear idea of how AI technology, people and processes should be managed successfully in the creation of value.	Artificial intelligence in e-commerce	Forecasts, planning and training are the core AI abilities that have been developed
Mehta, K [6]	To analyse the current situation in terms of implementation of artificial intelligence for e commerce	Artificial intelligence in e-commerce	In order to change e commerce, Artificial intelligence will play a key role
Khrais, L. T [2]	To discuss machine learning and artificial intelligence applications in e-commerce, corporate management, and finance	Artificial intelligence in business management, e-commerce, and finance	The most common applications include sales growth, profit maximization, sales forecasting, inventory management, security, fraud detection, and portfolio management
Nimbalkar, A et al. [10]	To analyze specific integration of chatbots in the IoT systems	Applying chatbots to the Internet of Things	Consumers can find products, check order status, compare prices and connect them to the customer support team by using chatbots
Reference	Objective	Study theme	Findings
Mehta, K., et al [6]	To present a framework for understanding artificial intelligence, outline applications of it in different facets of retailing, and discuss the future of artificial intelligence in retailing	Artificial intelligence in retailing	Sales growth, profitability maximisation, sales forecasting, inventory control, safety, fraud prevention and portfolio management are among the more common applications.

Srivastava, A [8]	To study the impact of artificial intelligence chatbot disclosure on customer purchases	Impact of artificial intelligence on customer purchases	Prior experience with AI induces more customer purchases and is helpful in reducing the negative disclosure effect
Davies, N [13]	To provide an overview of state-of-the-art research on artificial intelligence in the business context and propose an agenda for future research	Artificial intelligence in business	The relationship between AI and human beings will continue to improve; companies are focused on developing values through collaboration of the labor force with artificial intelligence tools into the brain, smart devices connected to artificial intelligence systems
Chuprina, R.[21]	To present changes caused by artificial intelligence, contrasts with the industrial revolution, the impact on developed and developing countries, and the dominant firms in artificial intelligence	The potential effects of artificial intelligence on businesses, manufacturing, and commerce	Through artificial intelligence, retailers will be able to better understand consumers' psychology through their ability to see what the human brain thinks at any given moment.

Artificial intelligence technologies are applied in marketing and retail, where the analysis of large data sets is used to create personalised customer profiles and predict customers' shopping patterns [14]. The need to understand and forecast consumer demand in the context of a coordinated supply chain is ever more relevant, and an integral part thereof will undoubtedly be AI technology. In the future, there will be a high demand for acceptance of AI technologies to develop and implement them. According to scientists, there's going to be a growing relationship between AI and people in the future. In the future, firms wishing to enter the market are likely to focus on building values through integrated collaboration of human labour and artificial intelligence tools [15]. So people will be concentrating on value added activities that require design, analysis and interpretation based on the processing and outputs of artificial intelligence.

Types of E-Commerce Applications

There are a variety of different types of e-commerce applications available. Some of the most common types include:

- General-purpose e-commerce applications: These applications allow users to browse and purchase products from a variety of different retailers. Some examples of general-purpose e-commerce applications include Amazon, eBay, and Walmart.com.

- Specialty e-commerce applications: These applications focus on a specific niche market, such as fashion, electronics, or travel. Some examples of specialty e-commerce applications include ASOS, Newegg, and Expedia [16].

- Social commerce applications: These applications allow users to shop through social media platforms, such as Facebook and Instagram. Some examples of social commerce applications include Facebook Marketplace and Instagram Shopping.

- Mobile payment applications: These applications allow users to make payments online or in stores using their smartphones. Some examples of mobile payment applications include Apple Pay, Google Pay, and PayPal [17].

Benefits of E-Commerce Applications

E-commerce applications offer a number of benefits for both businesses and consumers.

Benefits for Businesses:

- Increased sales: E-commerce applications can help businesses to reach a wider audience and increase their sales.

- Reduced costs: E-commerce applications can help businesses to reduce costs by eliminating the need for physical stores [18].

- Improved customer service: E-commerce applications can help businesses to improve their customer service by providing customers with a convenient and easy way to shop online.

Benefits for Consumers:

- Convenience: E-commerce applications allow consumers to shop from anywhere, at any time.

- Wider selection of products: E-commerce applications offer consumers a wider selection of products than traditional brick-and-mortar stores [19].

- Competitive prices: E-commerce businesses often offer competitive prices on their products.

- Personalization: E-commerce applications can personalize the shopping experience for consumers by displaying product recommendations and other relevant information [20].

Artificial intelligence (AI) is having a major impact on e-commerce. Here are some of the ways that AI is being used in e-commerce today as shown in figure 1.

Figure 1 AI uses in E commerce & Retail Sectors

- Product recommendations: AI is used to recommend products to customers based on their past purchase history, browsing behavior, and other factors. This helps customers to discover new products that they might be interested in and makes it easier for them to find the products they are looking for.

- Personalization: AI is used to personalize the shopping experience for each customer. This can involve displaying relevant products, recommending products, and offering tailored promotions. AI can also be used to create personalized shopping carts and checkout experiences.

- Search: AI is used to improve the search experience for customers. This can involve understanding the intent behind a customer's search query and displaying the most relevant results. AI can also be used to suggest related keywords and search results [21].

- Fraud detection: AI is used to detect fraudulent transactions. This helps to protect e-commerce businesses from financial losses.

- Chatbots: AI-powered chatbots are being used to provide customer support on e-commerce websites. Chatbots can answer customer questions, resolve issues, and provide guidance [13].

- Image recognition: AI-powered image recognition is being used to allow customers to search for products by image. This can be helpful for finding products that are difficult to describe or that have multiple names.
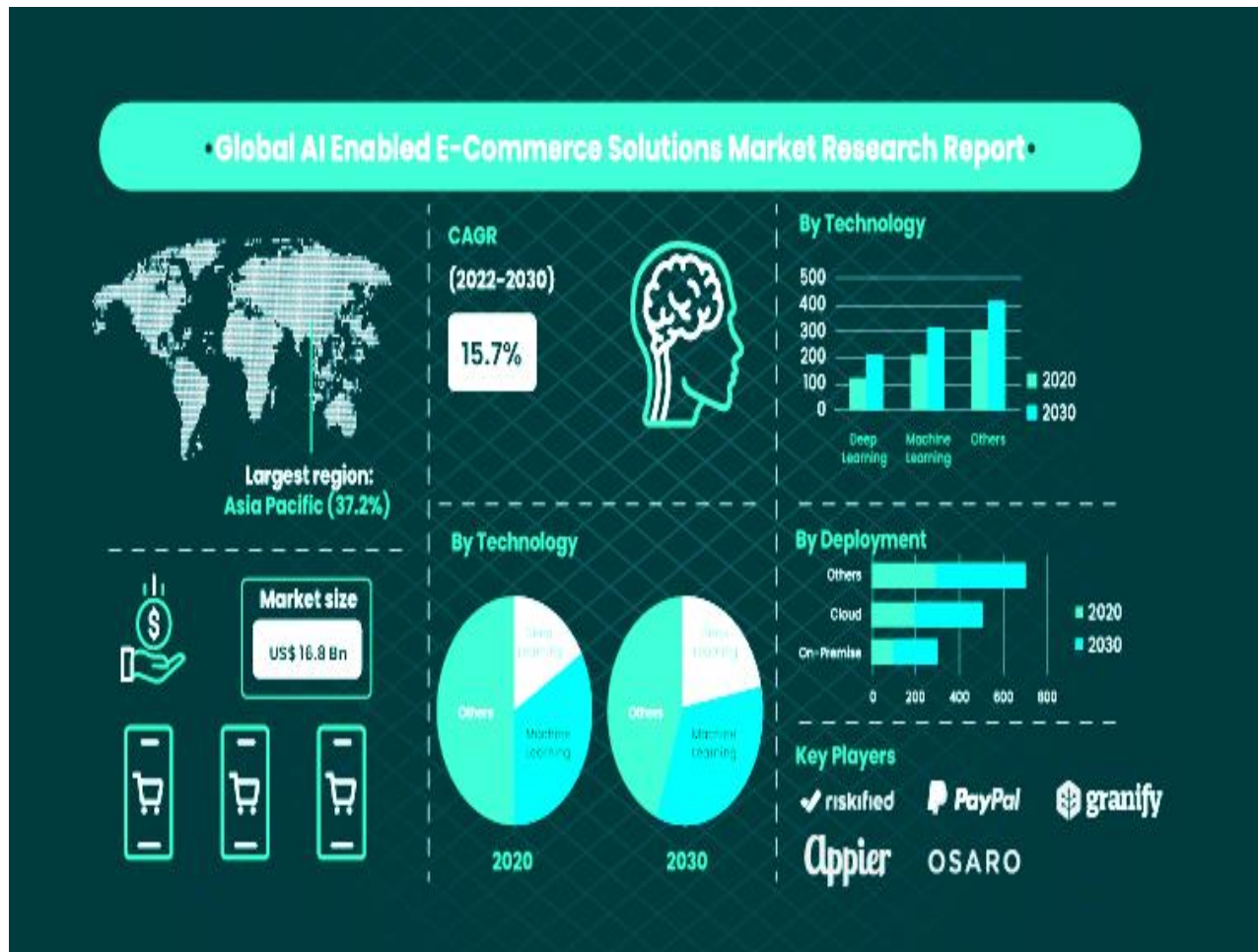
Figure 2.Here are some examples of how AI is being used by e-commerce companies:

- Amazon uses AI to personalize the shopping experience for each customer. This includes displaying relevant products, recommending products, and offering tailored promotions. Amazon also uses AI to improve the search experience for customers.

- Walmart uses AI to detect fraudulent transactions. This helps to protect Walmart from financial losses[15].

- Famous eBay uses AI to power its chatbots, which provide customer support on the eBay website.

- Google uses AI to allow customers to search for products by image on Google Shopping.

- Pay pal for online transactions [17].

Figure 2 shows example of AI in companies and it is capable of handling messages in natural languages, having the ability to store and communicate information, have an automatic thought process that makes use of stored information when answering questions and drawing new

conclusions, adaptive machine learning for adapting to unexpected circumstances or detecting abnormal patterns of behavior.

Conclusion

The purpose of the paper was to describe in detail what E-commerce and artificial intelligence are all about and how they can benefit you. In addition, based on available studies in this field, the paper gives an insight into how AI's importance and its future use as a tool for e commerce is assessed. E commerce is playing an integral role in today's world of business and digital technology. In this modern world of trade and Digital Technology. The Internet is now used by people daily; they are willing to experiment with new products and brands, yet at the same time it remains critical and demanding. In the present work, E-commerce appears to be an appropriate option to meet their requirements. A number of business researchers and experts have taken an interest in the use of AI for e commerce. Increased investment in innovative technology and the availability of large volumes of data have helped AI rapidly develop as far as its capacity for making decisions under complex and unforeseen circumstances within a production environment is concerned over recent years. According to studies it is estimated that 70% of businesses will adopt some form of artificial intelligence technology in their business processes and activities by 2030.

Future of E-Commerce Applications

The future of e-commerce applications is bright. As more and more people have access to the internet and smartphones, e-commerce applications are expected to become even more popular. E-commerce businesses are also investing in new technologies, such as artificial intelligence and augmented reality, to improve the e-commerce experience for consumers.

Here are some specific ways that e-commerce applications are expected to evolve in the future:

- More personalized shopping experiences: E-commerce applications will use artificial intelligence to personalize the shopping experience for each consumer. This will involve recommending products, displaying relevant content, and offering tailored promotions.

- Improved visual search: E-commerce applications will use augmented reality and visual search to allow consumers to try on clothes, see how furniture would look in their homes, and more.

- More convenient checkout options: E-commerce applications will offer more convenient checkout options, such as one-click payments and mobile payments

References

1. Song, X., Yang, S., Huang, Z., & Huang, T. (2019). The Application of Artificial Intelligence in Electronic. Journal of Physics: Conference Series .
2. Khrais, L. T. (2020). Role of Artificial Intelligence in Shaping Consumer Demand in E-Commerce. MDPI- Future Internet
3. Micul, A., Micu, A. E., Geru, M., Capatina, A., &Muntean, M. C. (2020). The Impact Of Artificial Intelligence Use On E-Commerce In Romania. Amfiteatru Economic
4. Soni, V. D. (2020). Emerging Roles of Artificial Intelligence in ecommerce. International Journal of Trend in Scientific Research and Development (IJTSRD) .
5. Singh, R. (2021). A Study of Artificial Intelligence and E-Commerce Ecosystem – A Customer's Perspective. International Journal of Research in Engineering, Science and Management
6. Mehta, K., Das, D. R., & Jindal, S. (2019). The Emerging Concern of Artificial Intelligence in the E-commerce Industry . Transcending Technology
7. Areiqat, A. Y., Alheet, A. F., Qawasmeh, R. A., &Zamil, A. M. (2021). Artificial Intelligence and Its Drastic Impact on E-commerce Progress. Academy of Strategic Management Journal
8. Srivastava, A. (2021). The Application & Impact Of Artificial Intelligence (AI) On E-Commerce. Contemporary Issues in Commerce and Management .
9. Sharma, D. (2021). Impact Of Ai On E-Commerce . Applications of Artificial Intelligence in Business and Finance .
10. Nimbalkar, A., &Berad, A. (2021). The Increasing Importance Of Ai Applications In E-Commerce. Vidyabharati International Interdisciplinary Research Journal 13(1)
11. Team, Z. (2020, July 11). Chatbots, AI, Technologies in eCommerce: Real Examples in Use. Zoolatech Blog. https://zoolatech.com/blog/chatbots-aitechnologies-in-ecommerce-real-examples-in-use/
12. SmallBizGenius. (2022, March 17). The Future is Now - 37 Fascinating Chatbot Statistics. https://www.smallbizgenius.net/by-the-numbers/chatbotstatistics/#gref
13. Davies, N. (2022, January 25). 9 Effective Ecommerce Chatbot Examples from Successful Brands. 9 Effective Ecommerce Chatbot Examples from Successful Brands. https://gettalkative.com/info/ecommerce-chatbot 28
14. Chang, C. (2020, March 4). 3 ways AI can help solve inventory management challenges - IBM Supply Chain: IBM Supply Chain Blog. https://www.ibm.com/blogs/supply-chain/3-ways-ai-solves-inventorymanagement-challenges/
15. Author, H. (2021, February 10). AI in Inventory Management: Putting AI to work to optimize inventory. Hypersonix. https://hypersonix.ai/blog/ai-ininventory-management/
16. Systems, N. (2021). How Artificial Intelligence is Changing Warehouse Operations. Newcastle Systems. https://www.newcastlesys.com/blog/howartificial-intelligence-is-changing-warehouse-operations.
17. Hao, K. (2021, August 12). A new generation of AI-powered robots is taking over warehouses. MIT Technology Review. https://www.technologyreview.com/2021/08/06/1030802/ai-robots-takeover-warehouses/

18. Author, G. (2021, April 9). 10 Top Challenges of AI Technology In 2021. AI Chatbots Software from Onlim. https://onlim.com/en/challenges-of-ai/ 3

19. Duransel, B. (2022, April 20). Warehouse Robotics: Everything You Need to Know. Logiwa. https://www.logiwa.com/blog/warehouse-robotics

20. Application of artificial intelligence in E-commerce | Customer relationship management, Technology, Artificial intelligence. (2022). Pinterest. https://in.pinterest.com/pin/757167756085134659/

21. Chuprina, R. (2022, March 11). The Value of Artificial Intelligence for Retail in 2022. Technology Partner for Innovative Companies. https://spd.group/artificial-intelligence/ai-for-retail/