

## The Impact of Artificial Intelligence in E-Commerce

**V. PREETHI MAHESH**

*Assistant Professor Department of Business Economics, Anna Adarsh College For Women, Chennai.*

*E-mail: preethimahesh1979@gmail.com*

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**Abstract:** In the recent times, Artificial Intelligence has started to take control of the technology industry. It started off with giving us a new scope of enhancement and layout to the revolutionary technological trends. It is giving us many solutions to the problems that we are facing and helps in increasing dynamic efficiency to solutions that we can overcome. However, it still undergoes the process of transcendence. E-Commerce is now assimilating various technology to identify patterns based on the buying and selling of goods and services using the internet and the transfer of money and data to carry out these transactions. One of the most visible effects of AI in Indian e-commerce is the augmentation of the shopping experience for consumers. AI plays a very pivotal role in transforming the e-commerce industry. It offers several incentives and supplements various aspects of online commerce.

This paper highlights the crux of e-commerce and artificial intelligence and their benefits. The aim is also to gauge the importance of artificial intelligence and its use in the substance of e-commerce.

**Keywords:** E-commerce, Advertising, Online shopping, Artificial intelligence, Technology

### INTRODUCTION

E-commerce is generally involved in the use of telecommunications and data processing technology mainly to conduct business transactions and for buying and selling of goods and services online. AI plays a pivotal role in transforming the e-commerce industry. It offers innumerable benefits and improves various aspects of online commerce. E-commerce is powered by the internet. Customers use their own devices to gain access to online stores. They can browse products and services online and purchase these products at their own convenience by saving lot of time and energy. The advantages of electronic commerce, activities and their goals are numerous. They can be classified based on the various benefits that they provide to consumers, business and to the society. With the help of technology, we can increase the efficiency, quality, and bring

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in cost-effectiveness of services provided by businesses. The potency of information and communication technologies depends on various factors, such as investing in human capital and an amalgamation of e-commerce and artificial intelligence. New technologies impact pressure on companies to be more innovative commerce has reanalyzed the shopping experience and is allowing customers to purchase the products that they require at their convenience either at the comfort of their homes or using their mobile phones or laptops. This multi-billion-dollar industry has observed an escalating growth fueled by convenience, competitive pricing, and wide product choice availability. The global artificial intelligence in e-commerce market size was US Dollar 6.63 billion in 2023 and is expected to achieve around US Dollar 22.60 billion by 2032, growing at a Compound Annual growth rate of 14.60% from 2023 to 2032.

The rise of generative AI technologies like chat GPT, DALL E and Mid journey is now revolutionizing the E commerce sector. AI has shown a higher conversion rate and an amplified growth of 3- 15 % for companies investing in this latest technology.

## **OBJECTIVES OF THE STUDY**

This study will focus and understand as to how companies have implemented AI to their digital marketing and e-commerce:

1. To realize the present status of e-commerce
2. To know how AI helps in the growth of e-commerce.
3. To study the challenges faced by implementing AI in e-commerce

## **REVIEW OF LITERATURE**

E-commerce is a business model that uses a digital platform to enable the customers to purchase stuff through the internet. (Mohapatra2013). E-commerce involves the use of digital technologies such as the internet, email, and mobile devices to facilitate transactions and exchange information and money between buyers and sellers. (Gupta 2014).

E-commerce has grown significantly in recent years and is now a major component of the global economy. (Bhat et al 2016)

## **DATA COLLECTION**

Secondary data collection has been used in this paper. To collect data from secondary sources, a comprehensive search of relevant literature was conducted using a range of databases, including the Web of Science, Google Scholar, and online news articles

## CONTRIBUTION OF ARTIFICIAL INTELLIGENCE IN E COMMERCE

1. **Inventory Management:** AI algorithms can scrutinize historical sales data, market trends, and other factors to enhance inventory levels, confirming that products are available as and when they are needed. This minimizing stockouts and overstocking, leading to cost savings and improved customer satisfaction. Companies can keep a track of the total purchase order, organize, and manage inventory in storehouse and ensure the company has sufficient stock when products are in great demand.
2. **Recognize Fraud and cyber security of E commerce sites:** AI algorithms can recognize patterns and anomalies in real-time, helping to spot out and avoid fraudulent activities such as payment fraud and account hacking. This intensifies security and builds trust and confidence among customers. AI has upgraded security levels which can identify malicious red flags and mitigating the chances of fraud activities. This can be avoided by scrutinizing the user interactions with the websites or even by identifying credential stuffing activities.
3. **Personalized product recommendation:** AI algorithms scrutinize customer data, including browsing history, purchase manner, and taste and preferences, to provide product recommendations and customized shopping experiences. This helps businesses to improvise on customer interaction and conversion rates. Generative AI 80 % of the customers are most likely to buy the brands that offer personalized experiences.
4. **Automated product descriptions and content advertising:** With the help of AI, we can automatically generate product description, advertisements, social media post that can save a lot of time and maintain the quality. According to the World Federation of Advertisers study, it is noted that that with the use of AI, there has been an improved performance in the content creation.

## HOW ARTIFICIAL INTELLIGENCE HELPS E COMMERCE COMPANIES:

1. **Systematic sales process:** With the help of AI, we can create a more efficient sales process by collecting data about customers, robotize follow-up abandoned cart inquiries, and much more. We can help move customers through the channel by getting them engaged with chatbots for simple questions.
2. **Retaining existing customers:** Delivering targeted marketing and advertising messages tailored for their customers can increase retention of customers. Use

customer data to create personalized emails or messages that reflect their past purchases and preferences. Regularly seek customer feedback and engage with them through surveys or social media, showing that their opinions matter. Use automated reminders for reordering products or services based on their purchase history are some of the techniques adopted.

3. **Content marketing and advertising:** Personalization is a top priority, according to surveyed retailers, but only 15% say they've fully implemented personalization across channels. Stand out from the crowd with a more personalized message and must one conversation with your customers. Advances in AI and machine literacy have enabled deep personalization techniques to customize content by stoner. By analyzing big data from purchase histories and other client interactions, you can zero in on what your customers really want and deliver the message that will most reverberate
4. **Increased transformation and conversion rate:** Business that is investing in generative AI have gained 3 to 15 percent of increase in revenue and increase in the sales return on their investment.

Today Artificial Intelligence is being used by many Indian e-commerce players to improve customer experience by contextual messaging. The advantages of this technology in e-commerce will increase over a period that will bring mounting growth in the sales by bridging the gap between customization and privacy. Overall, the use of AI in e-commerce can benefit both businesses and consumers by improving efficiency, enhancing customer experiences, increasing sales and revenue, and improving supply chain management

5. **Inventory Management:** AI can examine the historical sales data, market trends, and other factors to maximize the inventory levels, to make sure that products are available as and when where they are required. This reduces stockouts and overstocking, leading to cost effectiveness and bringing in customer satisfaction

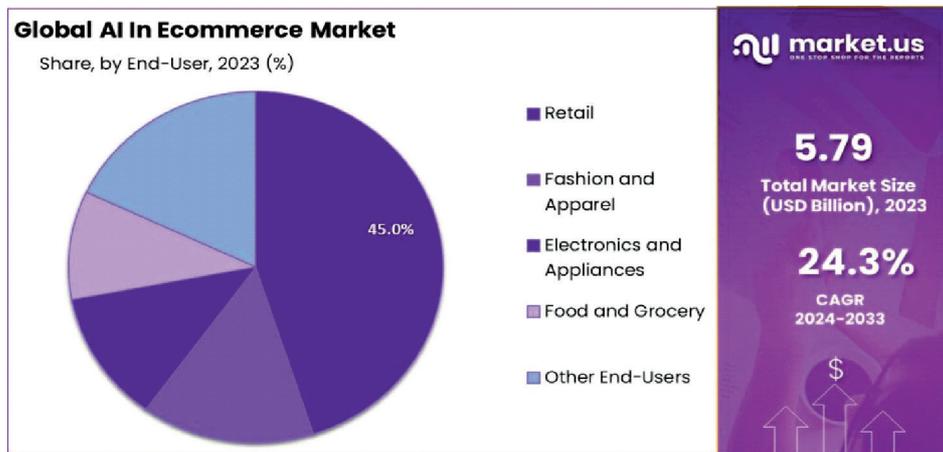
## CHALLENGES OF IMPLEMENTING AI IN E-COMMERCE

1. **Cost Factor:** Constituting and maintaining AI technologies can be exorbitant and may require consequential investments in hardware, software, and competent personnel. This may not be suitable for all businesses, especially smaller or startup companies.

2. **Complicated technology:** AI technologies can be complicated and require core competency and knowledge to perform and maintain. This may be a highly demanding for businesses that do not have the necessary proficiency or resources.
3. **Privacy of Data and safety:** AI technologies are dependent on large amounts of data, which can raise concerns about the security and privacy of the data. Businesses must be careful to protect customer data and make sure that their AI systems adhere to the laws and regulations.
4. **Human error:** AI systems can be prone to errors or mistakes, especially if they are not properly designed, accoutered, or maintained. This can lead to glitch in business processes or customer experiences, and can even damage the reputation of the company.
5. **Too much dependence on technology:** AI technologies can be susceptible to technical issues, such as malwares software bugs, system failures, or power outages. This can rattle business operations and can have an impact on customer experiences.

## SECONDARY DATA COLLECTION

Secondary data collection has been used in this paper. To collect data from secondary sources, a comprehensive search of relevant literature was conducted using a range of

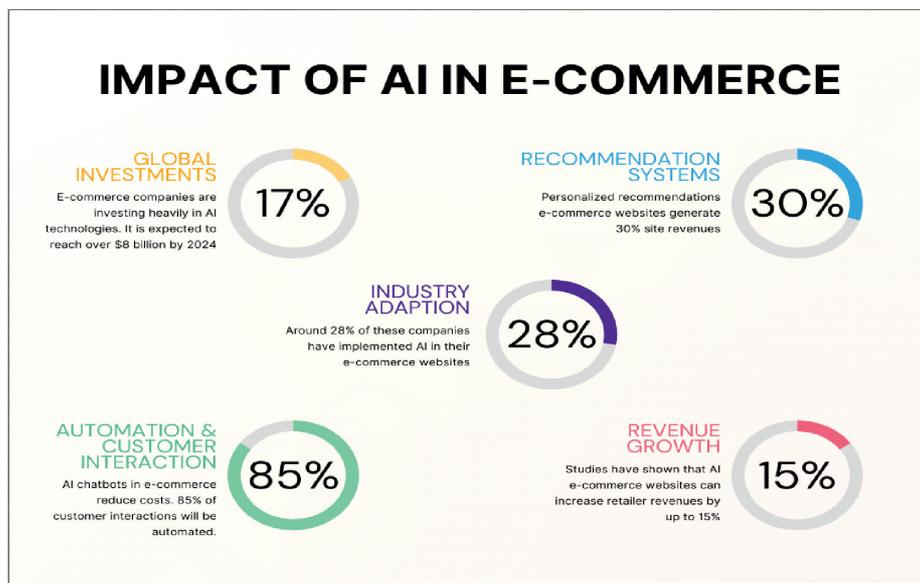


**Fig. 1: Global AI in E commerce Market**

Source: <https://www.google.com/url?sa=i&url=https%3A%2F%2Fmarket.us%2Freport%2Fai-in-ecommerce-market%2F&psig=AOvVaw3m5D6Ned0KXZH55wMYTDDJ&ust=1726999261064000>

databases, including the Web of Science, Google Scholar, and JSTOR government publications, and online news articles. A lot of secondary data materials were reviewed, and were finally included in this research paper. The main criteria to include the sources were that they must be related to the topic and within the past ten years. All sources were carefully reviewed and scrutinized, and relevant information was excised and synthesized. Overall, the use of secondary sources allowed for a thorough and comprehensive exploration of the impacts of AI in e-commerce and the ethical and societal implications of this technology.

The above pie chart Fig. 1, clearly shows that the contribution of AI in E commerce market is maximum in the retail and in electronics and appliances' at around 45 %, comparing to the line of fashion designing and food and grocery and other end users. The total market size is 5.79 in the year 2023, while the compound annual growth rate is 24.3%



**Fig. 2: Impact of AI in E Commerce Market**

Source: <https://www.google.com/url?sa=i&url=https%3A%2F%2Fwww.linkedin.com%2Fpulse%2Fimpact-ai-e-commerce-unveiling-data-statistics->

The above figure 2, Impact of AI in E commerce market shows that around 85% shows automation and customer interaction and 30 % shows Recommendation systems while another 28 % of these companies have implemented AI in their e-commerce

websites, and there is a revenue growth of around 15 % due to AI in e commerce not only that e commerce companies are also investing more now a days in AI technologies.

## CONCLUSION

As mentioned in this article, artificial intelligence in Ecommerce is playing a very dynamic role in driving creative solutions and customer experiences. Some the notable areas of artificial intelligence in Ecommerce is in the area of personalized shopping, product recommendations, content marketing and advertisement and inventory management.

However, the impact of AI in e-commerce is not without its provocations and issues. The automation of certain jobs may lead to people losing their job and displacement for human workers. Privacy concern is also another major issue that is being faced. By sorting out these issues, we can make sure that the impact of AI in e-commerce will become positive and viable to all in the society. To effectively strengthen the benefits, it is important for businesses to identify and deal with the challenges and execute responsible and effective strategies for using AI in a manner that benefits all parties.

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