



Original Article

ROLE OF ARTIFICIAL INTELLIGENCE IN GLOBAL E-COMMERCE GROWTH

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Manuscript ID:

IJAAR-130322

ISSN: 2347-7075

Impact Factor – 8.141

Volume - 13

Issue - 3

January – February 2026

Pp. 116 - 120

Submitted: 15 Jan.2026

Revised: 20 Jan. 2026

Accepted: 30 Jan. 2026

Published: 10 Feb. 2026

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Quick Response Code:



Website: <https://ijaar.co.in/>



DOI: 10.5281/zenodo.18537604

DOI Link:

<https://doi.org/10.5281/zenodo.18537604>



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Abstract:

One of the most revolutionary technologies propelling the quick development of international e-commerce is artificial intelligence (AI). AI has completely changed how online business is done globally, from improving consumer experience through personalization to streamlining logistics and detecting fraud. This study explores the various roles AI plays, the advantages it offers, the difficulties it presents, and its future possibilities, given that the worldwide market for AI in e-commerce is expected to develop significantly over the next ten years. Secondary data from academic studies, industry publications, and actual cases from top businesses serve as the foundation for the analysis. The results demonstrate that AI is helping firms compete globally through automation, insight generation, and improved customer interactions, in addition to accelerating the expansion of online commerce.

Keyword: Artificial Intelligence, Global E-Commerce, Digital Trade, Online Retailing.

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How to cite this article:

Mr. Redekar Akshaykumar Tanaji, Mr. Kashid Kapil Arvind & Mr. Salate Sachin Gangaram. (2026). Role Of Artificial Intelligence In Global E-Commerce Growth. International Journal of Advance and Applied Research, 13(3), 116–120. <https://doi.org/10.5281/zenodo.18537604>

Introduction:

In past few years there are significant changes global e-commerce. New opportunities are opened for global as well as local sellers. AI has improved technology and make it smarter, faster and

more impactful. AI work on previously available data and identify the patterns of customers purchase decisions and provide readymade data to e-commerce companies.



The COVID-19 pandemic has expedited the adoption of digital commerce, prompting businesses to innovate to meet unexpected surges in online demand. This move highlighted the critical role of AI technologies in managing rising transaction volumes, personalization, and complicated logistics operations. Today, AI applications are not confined to huge corporations; even small and medium-sized firms are using scalable AI solutions to access global markets and improve consumer engagement. This study examines the multifaceted role of AI in global e-commerce growth, focusing on market expansion, consumer experience, operations, and strategic decision-making.

Objectives of the Study:

The present study has been undertaken with the following objectives:

1. To understand the concept of Artificial Intelligence in the context of e-commerce.
2. To examine the role of Artificial Intelligence in the growth of global e-commerce.

Research Methodology:

A descriptive and analytical research methodology is used in this work. Only secondary data is used in the study. Books, essays and research journals have all provided information. Additionally, reports from institutions including the World Bank, WTO, OECD, and UNCTAD were utilized. Information on artificial intelligence and e-commerce was gathered from reliable websites. It focuses on topics including supply chain management, customer service, online commerce, and logistics. A thorough analysis of the literature was done. Simple qualitative analysis was used to examine the data. There were no interviews or surveys done. The research is restricted to international e-commerce.

Roles of AI in Global E-Commerce Growth:

1. AI-driven personalization and improved customer experience:

One of AI's most visible responsibilities in e-commerce is to create personalized shopping experiences. AI algorithms evaluate massive volumes of client data, including as search history, purchase behavior, demographics, and engagement patterns, to provide personalized product suggestions in real time. Personalized content improves engagement and conversion rates by making it more relevant to specific consumers.

2. Intelligent Search and Product Discovery:

Traditional search engines in online stores frequently provided results that were not contextually appropriate. AI technologies, such as natural language processing and machine learning, now allow for intelligent search that understands user intent and context. Customers can utilize conversational inquiries or incomplete phrases using semantic search to discover accurate product results. AI's image recognition features have also enabled visual search tools, which allow users to upload an image and find related products online. This improves consumer ease and reduces friction in the shopping process, particularly for mobile shoppers who prefer visual exploration to text search.

3. AI for Logistics and Supply Chain Optimization:

Logistics are important component in e-commerce, any company wants to expand their business in global market they have focus on logistics. AI can help them in properly estimate the delivery time, calculating warehouse products and help in choose the route for delivery to avoid perils.

AI algorithms can estimate demand for certain products, allowing firms to pre-position inventories in strategic areas while lowering transportation delays and costs. This predictive capability guarantees that in-demand products are accessible



for prompt delivery, increasing customer happiness and operational efficiency.

4. Fraud Detection and Secure Transactions:

As e-commerce traffic grows, so does the potential for fraudulent conduct. Artificial intelligence technologies are used to monitor transactions in real time and find patterns that indicate fraud. Machine learning algorithms can detect suspicious conduct, such as strange shopping patterns or irregular account activity, far more reliably than manual systems.

5. Dynamic Pricing and Revenue Optimization:

Supply and demand of products are important parts of every business AI can help businesses to calculate exact price for the products on their supply in the market. AI also help in to get about competitor's price of products. Such pricing flexibility enables e-commerce platforms to remain competitive in rapidly changing marketplaces, attract price-sensitive customers, and boost conversion rates. Businesses can effectively balance competitiveness and profitability via adaptive pricing.

6. AI enables cross-cultural market entry:

Companies needs to understand local languages of every country where they want to expand their business. They need to understand their culture which different from any other. AI can help to companies understand which product can suit in any country. Companies can take advantage to become first in competition to provide right product to right customers.

7. Automation in Backend and Warehousing Operations:

Employees faces the customer and they need to act quickly to fulfill their demand. AI can be quick in selecting products and info right position of products and pack them in proper manner. In fulfillment centers, automated technology help lower human error, enhance safety, and boost

operational throughput. This automation is especially important for managing periods of high shopping demand, such holiday seasons or international sales events, allowing e-commerce platforms to grow without sacrificing delivery standards.

Findings of the Study:

Based on the analysis of secondary data, the following findings have been observed:

1. Artificial Intelligence plays a crucial role in accelerating the growth of global e-commerce by improving speed, accuracy, and efficiency of online business operations.
2. AI-driven personalization significantly enhances customer satisfaction, leading to higher sales and customer loyalty.
3. Intelligent recommendation systems and search engines improve product discovery and conversion rates.
4. AI-based logistics and supply chain optimization reduce delivery time, operational costs, and inventory problems.
5. Fraud detection and secure payment systems powered by AI increase trust in online transactions.
6. Dynamic pricing strategies enabled by AI help e-commerce firms remain competitive in global markets.
7. AI supports cross-border e-commerce growth through language translation, localization, and market analysis.
8. Large e-commerce platforms benefit more from AI adoption compared to small businesses due to high investment requirements.
9. Data privacy, cyber security risks, and skill gaps remain major challenges in AI-driven e-commerce.



Suggestions:

Based on the findings of the study, the following suggestions are made:

1. Governments should promote digital infrastructure and AI adoption to support e-commerce growth.
2. Training and skill development programs should be introduced to reduce the skill gap in AI technologies.
3. Small and medium e-commerce enterprises should be supported through subsidies and affordable AI tools.
4. Strong data protection and cyber security laws should be implemented to safeguard consumer information.
5. Ethical guidelines should be developed to ensure fair and transparent use of AI in online commerce.
6. Businesses should adopt a balanced approach by combining human judgment with AI systems.
7. AI solutions should be customized according to local market needs for effective global expansion.
8. International cooperation is necessary to develop uniform regulations for AI in cross-border e-commerce.
9. Continuous monitoring and upgrading of AI systems should be ensured to avoid technical failures.
10. Awareness programs should be conducted to build trust among consumers regarding AI-enabled e-commerce platforms.

Conclusion:

Artificial Intelligence plays a central and expanding role in the growth of global e-commerce. From enhancing personalized customer experiences and search functionality to optimizing logistics and fraud prevention, AI technologies enable companies

to operate more effectively, reach broader markets, and deliver greater value to customers. While challenges remain — particularly around costs, skills, and data privacy — the benefits of AI adoption far outweigh the hurdles. As businesses continue to innovate and scale AI capabilities, the future of global e-commerce will be increasingly driven by intelligent systems that support smarter, faster, and more secure digital commerce.

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