Svādhyāya - International Journal of Transdisciplinary Research and Development (SIJTRD) ISSN Online : 2583-1739

Vol 4 (2), May 2025, 44-52

A STUDY ON THE TRANSFORMATIVE ROLE OF ARTIFICIAL INTELLIGENCE IN HEALTHCARE, EDUCATION, AND ONLINE SHOPPING

A Naheshwari[a] , R. Mehala[b*]

[A] Student, Department of Commerce , Shrimathi Devkunvar Nanalal Bhatt Vaishnav College for Women (Autonomous), Chromepet, Chennai-44

[b*]Corresponding Author- Assistant Professor Department of Commerce, Shrimathi Devkunvar Nanalal Bhatt Vaishnav College for Women (Autonomous), Chromepet, Chennai-44

E-Mail: mehala.r@sdnbvc.edu.in, naheshwariarulraj@gmail.com

ABSTRACT

Artificial Intelligence (AI) is reshaping several critical industries, including healthcare, education, and online shopping. By leveraging AI technologies such as machine learning, natural language processing (NLP), and computer vision, these sectors are experiencing significant transformations. In healthcare, AI improves diagnostic accuracy, enables personalized medicine, and optimizes treatment plans. In education, AI is enhancing personalized learning and automating administrative tasks. Meanwhile, in online shopping, AI drives personalized recommendations, improves customer service, and optimizes product discovery. This paper explores the latest findings from 2023-2024 to assess AI's impact on these sectors, discusses its potential, and highlights the challenges, including ethical concerns and the need for effective regulation.

KEYWORDS *Artificial Intelligence, Healthcare, Education, Online Shopping, AI Algorithms*

Svādhyāya - International Journal of Transdisciplinary Research and Development (SIJTRD) ISSN Online : 2583-1739

Vol 4 (2), May 2025, 44-52

INTRODUCTION

Artificial Intelligence (AI) has emerged as a pivotal force in transforming industries, particularly in healthcare, education, and online shopping. These sectors are now experiencing enhanced operational efficiencies, better customer experiences, and improved decision-making processes, thanks to AI's ability to analyze large volumes of data quickly and accurately. In healthcare, AI technologies are revolutionizing disease diagnosis, treatment planning, and patient management. AI algorithms, capable of analyzing medical data from various sources, offer unprecedented diagnostic accuracy and speed. Similarly, in education, AI is advancing the personalization of learning, automating administrative processes, and providing new ways for students to interact with educational material. Finally, in online shopping, AI enables personalized marketing, predictive product recommendations, and smarter customer service, significantly improving the consumer shopping experience. This paper delves into the recent advancements in AI in these fields, drawing from research published in 2024-2025, and evaluates both the positive impacts and the challenges AI poses to each sector. Learning, Data Privacy, Ethical Challenges.

OBJECTIVES

The main objectives of this research are to:

• To explore the role of AI in diagnostic accuracy, personalized medicine, and predictive healthcare systems.

• To assess the impact of AI on personalized learning, intelligent tutoring systems, and educational automation.

• To discover AI's influence on the online shopping industry, including personalized shopping experiences, customer service, and product discovery.

• To identify ethical challenges of AI in healthcare, education, and e-commerce, including data privacy, algorithmic bias, and fairness.

• To predict future trends in AI and explore potential opportunities and challenges in these sectors (2024 and beyond).

METHODOLOGY

This study employs a literature review methodology, synthesizing qualitative data from recent research papers and case studies related to AI applications in healthcare, education, and online

Svādhyāya - International Journal of Transdisciplinary Research and Development (SIJTRD) ISSN Online : 2583-1739

Vol 4 (2), May 2025, 44-52

shopping. The data were sourced from peer-reviewed journals, industry reports, and authoritative sources from 2023 and 2024. The review focuses on three primary domains:

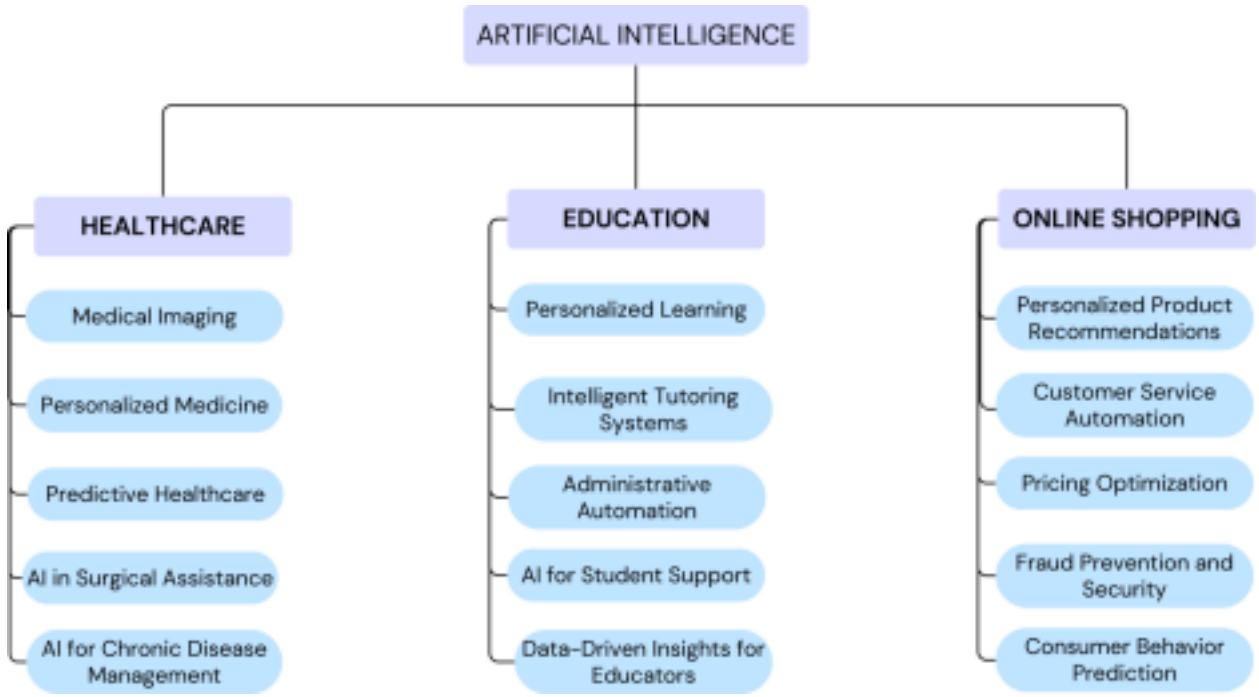
Healthcare: AI in diagnostics, personalized medicine, and predictive analytics.

Education: AI-driven personalized learning, intelligent tutoring systems, and administrative automation.

Online Shopping: AI-powered recommendation systems, customer service, and product discovery.

The selected papers were analyzed to identify trends, challenges, and opportunities within these domains, providing a comprehensive overview of how AI is shaping everyday life

Figure 1 AI applications



Source: Author

Svādhyāya - International Journal of Transdisciplinary Research and Development (SIJTRD) ISSN Online : 2583-1739

Vol 4 (2), May 2025, 44-52

RESULTS

Table No.1 AI in Healthcare

AI Application	Feature	Example	Pros
Medical Imaging	AI algorithms aid in diagnostics by analyzing medical images with high accuracy.	Pesapane et al. (2025) in *Nature Medicine*: Translating in-house AI research into certified medical devices, ensuring ethical and regulatory integrity.	Ensures rigorous development, validation, and regulatory compliance for medical devices..
Personalized Medicine	AI's transformative potential in personalized healthcare.	Mangairkarasi et al. (2025) in *Advancing Healthcare Through AI*: Explores the impact of AI in various healthcare domains, including personalized medicine.	AI is revolutionizing healthcare by enabling more personalized, effective, and tailored treatments.
Predictive Healthcare	AI addressing healthcare disparities, particularly in underserved "medical deserts" through telemedicine & LLMs.	Srika et al. (2025) in *Postgraduate Medical Journal*: AI improving healthcare access, quality, and efficiency in "medical deserts."	AI improves healthcare access and efficiency in underserved areas, bridging gaps in medical care.
AI in Surgical Assistance	AI's role in advancing diagnostic tools, robotic surgery, and decision support systems in surgery.	Bobade et al. (2025) in *Multidisciplinary Reviews*: AI improving surgical precision and workflow	Enhances precision, improves outcomes, and optimizes workflows in surgical procedures.
AI for Chronic Disease Management	AI enabling predictive analytics and personalized treatment plans for chronic disease management.	Joshi (2025) in *Generative AI Techniques for Healthcare Security*: Shows AI's role in personalizing chronic disease management and optimizing outcomes.	Improves chronic disease management by predicting health events and optimizing treatment plans for better outcomes.

Svādhyāya - International Journal of Transdisciplinary Research and Development (SIJTRD) ISSN Online : 2583-1739

Vol 4 (2), May 2025, 44-52

Table No.2 AI in Education

AI Application	Feature	Example	Pros
Personalized Learning	AI-powered platforms tailor learning to individual student needs.	AI-powered platforms like Knewton and Duolingo (Singh et al., 2025)	Boost student retention, deliver personalized learning experiences, and enhance student engagement.
Intelligent Tutoring Systems	AI-driven systems that adapt to students' learning styles and progress.	AI-powered Intelligent Tutoring Systems (Lin et al., 2023)	Enhance personalized learning, improve educational outcomes, and contribute to sustainable education.
Administrative Automation	AI streamlines administrative tasks, improving efficiency and equity.	AI in Transnational Higher Education (Ahmed et al., 2025)	AI in Transnational Higher Education (Ahmed et al., 2025)
AI for Student Support	AI chatbots and virtual assistants provide real-time, around-the-clock support.	AI chatbots and virtual assistants (Abdallah & Abdallah, 2025)	Provide immediate, personalized assistance, increase student satisfaction, and offer 24/7 availability for support.
Data-Driven Insights for Educators	AI analyzes educational data to improve decision making and outcomes.	Addressing data privacy concerns in AI-driven education (Ismail & Aloshi, 2025)	Safeguard student privacy while providing data-driven insights and addressing challenges.

Svādhyāya - International Journal of Transdisciplinary Research and Development (SIJTRD) ISSN Online : 2583-1739

Vol 4 (2), May 2025, 44-52

Table No.3 AI in Online Shopping

AI Application	Feature	Example	Pros
Personalized Product Recommendations	AI analyzes user behavior and preferences to recommend products.	Ismail & Aloshi (2025) provide guidance on safeguarding student privacy in AI-driven education.	Provides essential solutions for protecting student privacy while enhancing personalized learning experiences.
Customer Service Automation	AI chatbots automate customer interactions, improving service efficiency.	Khneyzer, Rebeiz, and Touma (2025) examine the impact of AI chatbots on CRM in business contexts.	AI chatbots revolutionize customer service, boost operational efficiency, and give businesses a competitive edge.
Pricing Optimization	AI uses market data and trends to optimize pricing strategies in real time.	Jandwani et al. (2025) introduce an ontology for leveraging AI and ML in business strategy.	Provides businesses with a strategic framework for AI driven decision making and gaining market competitiveness.
Fraud Prevention and Security	AI systems detect and prevent fraud through advanced data analysis.	Selvalakshmi et al. (2025) advocate for AI-powered Intrusion Detection Systems (IDS) to enhance e commerce security.	AI-powered IDS strengthens security, boosts consumer trust, and enhances data privacy in e commerce.
Consumer Behaviour Prediction	AI and IoE analyze customer data to predict purchasing behaviors.	Kumar et al. (2025) demonstrate how IoE and AI transform e commerce by delivering personalized experiences.	Enables businesses to offer real-time, personalized experiences and gain a competitive advantage in e commerce.

Svādhyāya - International Journal of Transdisciplinary Research and Development (SIJTRD) ISSN Online : 2583-1739

Vol 4 (2), May 2025, 44-52

SCOPE FOR FURTHER RESEARCH

1. **Enhancing Data Privacy Protocols**
   AI systems in healthcare, education, and e-commerce handle sensitive data, necessitating more robust security frameworks and privacy-enhancing technologies. Research should focus on developing global regulations for AI-driven data security.
2. **Reducing Algorithmic Bias**
   There is a pressing need to ensure that AI models are fair and inclusive. Research should be directed at creating more diverse datasets and refining algorithms to minimize bias in healthcare diagnoses, educational outcomes, and e-commerce recommendations.
3. **Developing Explainable AI (XAI)**
   Many AI systems are "black boxes," particularly in healthcare and education, making it difficult to understand decision-making processes. Research in explainable AI (XAI) is critical to enhancing transparency and building trust with users.
4. **Addressing Job Displacement**
   AI-driven automation in sectors like education (e.g., automated grading systems) and e-commerce (e.g., AI customer service) is leading to job losses. Research on re-skilling programs and the creation of new roles in AI-related fields will be essential to counteract these challenges.
5. **Consumer Autonomy and Ethical Marketing**
   In e-commerce, AI can manipulate consumer behavior through personalized recommendations. Research should explore ethical AI marketing practices to ensure consumer autonomy and avoid exploitative techniques.

ETHICAL CHALLENGES

1. **Data Privacy and Security**
   AI systems collect large amounts of personal data, raising concerns about privacy breaches. Effective encryption, data storage methods, and compliance with global privacy laws are critical to safeguarding sensitive information, particularly in healthcare and education.
2. **Algorithmic Bias and Fairness**
   AI algorithms can reflect historical biases in training data, resulting in unfair outcomes. Ensuring equitable AI models requires the development of more diverse data sets, particularly in fields like healthcare, where biased algorithms can lead to misdiagnoses or unequal treatment.
3. **Lack of Transparency**
   Many AI systems operate in ways that are difficult to explain, especially those using deep learning techniques. This lack of transparency in decision-making processes poses risks, particularly in sectors like healthcare, where AI decisions can impact patient care.
4. **Job Displacement**
   Automation through AI poses a significant challenge to job markets, particularly in sectors like education and customer service. Job displacement can exacerbate economic inequality, and strategies such as upskilling and new job creation need further investigation.

Svādhyāya - International Journal of Transdisciplinary Research and Development (SIJTRD) ISSN Online : 2583-1739

Vol 4 (2), May 2025, 44-52

5. **Manipulation of Consumer Behavior**

In e-commerce, AI-driven recommendation engines can subtly influence consumer behavior, potentially manipulating purchasing decisions. Ethical concerns arise about whether these systems undermine consumer autonomy, requiring guidelines to ensure fair practices.

CONCLUSION

AI is undeniably transforming industries like healthcare, education, and e-commerce, offering tremendous potential for innovation. In healthcare, AI improves diagnostic accuracy, while in education, it personalizes learning. E-commerce benefits from AI-driven personalized shopping experiences. However, these advancements bring significant **ethical challenges**, such as **data privacy**, **algorithmic bias**, and the potential for **job displacement**. It is essential to address these issues through continued research in **AI ethics**, **transparency**, and **inclusive datasets**. By fostering responsible AI development, we can maximize its benefits while minimizing its risks, ensuring that AI serves to benefit all sectors and their stakeholders equitably.

REFERENCES

1. Pesapane, F., Hauglid, M. K., Fumagalli, M., Petersson, L., Parkar, A. P., Cassano, E., & Horgan, D. (2025). The translation of in-house imaging AI research into a medical device ensuring ethical and regulatory integrity. European Journal of Radiology, 182, 111852.
2. Mangairkarasi, S., Ramana, T. V., Vaishnavi, R., Agalya, S., Sathya, V., & Subramanian, R. S. (2025). Advancing Healthcare Through Artificial Intelligence: Applications, Challenges, and Future Directions. In *Responsible AI for Digital Health and Medical Analytics* (pp. 113-134). IGI Global Scientific Publishing.
3. Strika, Z., Petkovic, K., Likic, R., & Batenburg, R. (2025). Bridging healthcare gaps: a scoping review on the role of artificial intelligence, deep learning, and large language models in alleviating problems in medical deserts. Postgraduate Medical Journal, 101(1191), 4-16.
4. Bobade, S., Asutkar, S., Nagpure, D., & Kadav, A. (2025). A brief review of practical use of artificial intelligence in surgery in the current era. Multidisciplinary Reviews, 8(3), 2025085- 2025085.
5. Joshi, H. (2025). AI and Chronic Diseases From Data Integration to Clinical Implementation. In Generative AI Techniques for Sustainability in Healthcare Security (pp. 17-40). IGI Global Scientific Publishing.
6. Singh, T. M., Reddy, C. K. K., Murthy, B. R., Nag, A., & Doss, S. (2025). Ai and education: Bridging the gap to personalized, efficient, and accessible learning. In Internet of Behavior Based Computational Intelligence for Smart Education Systems (pp. 131-160). IGI Global.
7. Lin, C. C., Huang, A. Y., & Lu, O. H. (2023). Artificial intelligence in intelligent tutoring systems toward sustainable education: a systematic review. *Smart Learning Environments*, *10*(1), 41.
8. Ahmed, Y., Ahmed, T., Raza, A., & Jan, I. (2025). Harnessing AI for Personalized Learning, Equity, and Administrative Efficiency in Transnational Higher Education. Bridging Global Divides for Transnational Higher Education in the AI Era, 191-204.
9. Abdallah, A. K., & Abdallah, R. K. (2025). Smart Solutions for Smarter Schools: Leveraging Artificial Intelligence to Revolutionize Educational Administration and Leadership. In Encyclopedia of Information Science and Technology, Sixth Edition (pp. 1-14). IGI Global. Ismail, I. A., & Aloshi, J. M. R. (2025). Data Privacy in AI-Driven Education: An In-Depth Exploration Into the Data Privacy Concerns and Potential Solutions. In AI Applications and Strategies in Teacher Education (pp. 223-252). IGI Global.

10. Vashishth, T. K., Sharma, K. K., Kumar, B., Chaudhary, S., & Panwar, R. (2025). Enhancing Customer Experience through AI-Enabled Content Personalization in E-Commerce Marketing. Advances in Digital Marketing in the Era of Artificial Intelligence, 7-32.
11. Khneyzer, C., Rebeiz, K. S., & Touma, J. (2025). A Comprehensive Review of Economic and Managerial Factors: The Implications of AI Chatbots in Customer Relationship Management. Navigating Business Through Essential Sustainable Strategies, 217-238.
12. Jandwani, A., Verma, B., Mittal, A., Jandwani, P., & Narula, G. S. (2025). Deployment of AI and ML Techniques in the Form of Ontology for Improving Business Management Perspectives. Artificial Intelligence-Enabled Businesses: How to Develop Strategies for Innovation, 39-55.
13. Selvalakshmi, B., Sudhakar, G., Anbalagan, A., Subashini, K., Vijayalakshmi, P., & Kavin, F. (2025). Enhancing E-Commerce Data Privacy in India's Rapidly Evolving Cybersecurity Landscape Through AI-Driven Intrusion Detection Systems. In Strategic Innovations of AI and ML for E-Commerce Data Security (pp. 261-280). IGI Global.
14. Kumar, M. S., Manju, G., Pandey, N., Nagalakshmi, M., Reddy, C., & George, A. S. (2025). IoE and AI in Real-Time E-Commerce Personalization. In Role of Internet of Everything (IOE), VLSI Architecture, and AI in Real-Time Systems (pp. 213-228). IGI Global Scientific Publishing.