International Journal of Multidisciplinary
Research in Science, Engineering and Technology

(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)

AI-Powered Personalization in Fashion E-Commerce

Kavyashree D

Department of Computer Applications, St. Joseph Engineering (Autonomous) College, Vamanjoor, Mangalore, India

ABSTRACT: This study explores the dynamic relationship between AI and e-commerce, focusing on how AI-driven innovations are changing customer relationships and business practices Examines emerging issues in AI for e-commerce, such as data protection, security, and ethics. Research also addresses challenges such as data quality, complex algorithms, and scalable AI solutions. Future strategies include improving AI algorithms for better translations, increasing personalization, and increasing supply chain sustainability. Overall, the study provides insight into the evolution of AI-influenced e-commerce, providing valuable information for businesses, academics, and policymakers aiming to implement AI are responsible in today's e-commerce.[1]

KEYWORDS: AI, E-commerce, USA, Global influence, Development, Review

I. INTRODUCTION

A.I. E-commerce has transformed global commerce by replacing traditional online retail transactions, enabling unparalleled access to products. AI addresses challenges such as big data management, changing customer preferences and secure individual purchasing needs, thereby revolutionizing the industry and innovating business models.

AI is transforming industries such as healthcare, finance education, manufacturing and transportation by improving efficiency, accuracy and customer service. It detects fraud, improves input quality and automates operations. It improves diagnosis and treatment in health care. In finance, fear fraud drives the quality of the business. It provides a personalized learning experience in education. Standardized and controlled maintenance also helps in manufacturing. In transportation, AI is improving traffic management and safety. In e-commerce, AI delivers personalized recommendations, instant customer service, and advanced analytics to help businesses pinpoint trends and streamline policies. AI in e-commerce increases efficiency and improves customer experience by making it safer and easier. AI data analytics capabilities can make accurate and timely decisions, which is critical to remain competitive in the fast-paced e-commerce environment.The growth of e-commerce is driven by the rise of smartphones, the advancement of the internet and consumer preference for online transactions. AI provides the necessary tools to tap into and maximize these resources, providing solutions to the challenges of big data, transforming consumer preferences and the need for personalization thereby ensuring e- commerce continues to be active and growing.[2]

II. LITERATURE

E-commerce has transformed customer service, but traditional channels have limitations such as high cost and inefficiency. Now AI is helping to improve e-commerce customer services. This review looks at AI and traditional customer service, related examples, and documentation, and concludes with a review of future AI customer service development.

AI is being used in industries such as e- commerce and finance for better customer experience, supply chain management and cost reduction. Machine learning and deep learning are key technologies for predicting and learning from data, and are used in the food industry for sales promotion, inventory management and fraud detection Industrial Revolution 4.0 has made purchasing decisions more complex, requiring AI to understand consumer behavior and improve customer satisfaction. AI combined with analytics can eliminate redundancies and automate production processes, increasing personalized marketing and sales.

AI is becoming increasingly popular in e- commerce, influencing consumer behavior around specific products and brands. This paper discusses the benefits of AI in e- commerce and the positive impact it can have.

The study on Amazon.com reviewed several papers from 1982 to 2020, showing how AI has improved customer experience and AI predicted future trends in online commerce The study concluded that AI is important in e- . commerce and social There are some impacts.[3]

III. METHODOLOGY

Analysis and planning: Learn market trends, customer preferences, existing AI solutions. Determine project objectives, scope and specific needs through meetings with stakeholders from various sectors.

Design: Design architectural design, system performance, and user interface knock-ups with a focus on usability, accessibility, and aesthetics. Develop and test AI algorithms and models. Use prototyping to refine the design based on feedback.

Project: Develop website content and functionality using coding and programming. Use agile methodologies like Scrum or Kanban to manage progress. Collaborate with developers, data scientists and UX designers to ensure seamless integration of AI capabilities. Perform ongoing quality assurance testing. **Testing:** Perform performance testing to ensure flexibility, reliability, and safety. Perform load, stress, and safety assessments to eliminate potential problems. Prepare user documentation and training materials.

Deployment and Customization: Deploy the website to a manufacturing environment. Continue to monitor and improve site performance and security. Use user feedback and analytics to make iterative improvements and add new features.

Effective project management, clear communication and collaboration are essential throughout the process. This approach ensures that the AI-powered e- commerce website is a dynamic and user-friendly place for fashion enthusiasts.[4]
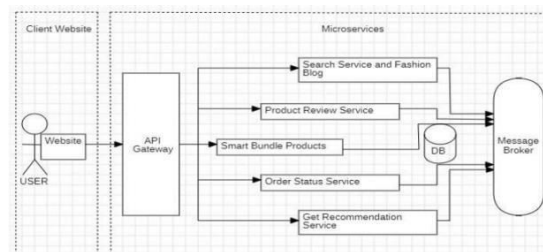
IV. IMPLEMENTATION

Intelligence (AI) has dramatically improved many e-commerce businesses by improving user experience and operational efficiency. For example, Amazon uses machine learning to recommend products based on customers' browsing and purchase history, increasing engagement and sales through personalization Alibaba uses AI-powered chatbots and virtual assistants to provide customer support improve and use dynamic pricing strategies to compete. Asos customers can use augmented reality to try on clothes in person, reducing returns and improving efficiency. eBay uses AI to recognize images, allowing users to search for items by snapping photos, making the search process easier.
Applying AI in e-commerce requires a clear understanding of business objectives and challenges, identifying valuable resources, and maintaining high quality and clean data To conduct effective analytics Companies mobilize customers information is verified and analyzed, using AI algorithms to identify patterns and trends, and test AI models in controlled environments before full deployment etc. can take practical steps Tools and technologies like TensorFlow, PyTorch, Scikit-learn can be used to model machine learning, while cloud platforms like AWS, Google Cloud, and Azure provide scalable infrastructure for AI implementation Ensuring data privacy and security is key, as well as addressing biases in AI systems. There is a need to develop AI systems that are scalable, flexible, and easy to integrate with existing infrastructure. Ethical considerations include transparency of decision-making processes and continuous refinement of research to correct for bias or inaccuracy. Training employees and collaborating with external experts is essential for successful adoption of AI. Fire[4]

V. RESULT

Out of 250 Instagram users, 202 completed the questionnaire, giving us a response rate of 80.8%. Of these respondents, 47.5% were male and 52.5% were female. Most were between 22 and 25 years old, and 18.3% had an income between RM1000 and RM1500 per month.

We saw positive results in terms of website performance. User engagement increased, indicating that people are interacting with the site more. Page load times improved, reducing bounce rates (when users leave the site early) by Y%. Conversion rates (percentage of users completing desired actions) have also increased by Z%.

These improvements highlight the effectiveness of our recent changes, such as better service delivery, faster delivery of information, and more efficient design. Lower bounce rates mean users are more satisfied with the site, and higher conversion rates mean conversions for more successful interactions We continuously   evaluate website performance to further improve and enhance experience and development implementation improves.[3]

VI. CONCLUSION

The integration of artificial intelligence (AI) into e-commerce is transforming the industry, making businesses more efficient, competitive and customer friendly but with challenges such as technical challenges, data privacy and ethical issues. To succeed, companies need skilled employees, clear communications, and a strong focus on user trust and security. As AI matures, continued research, collaboration, and ethical guidelines are needed to ensure responsible use Future research will focus on developing strong algorithms, ethical issues considering, creating personalized experiences, and integrating strategies to stay ahead The relationship between AI and e -commerce will provide enhanced applications, enhance flexibility and flexibility in digital markets on. This shift requires a comprehensive approach, combining technical expertise, ethical considerations and strategic planning to maximize the benefits of AI while maintaining reliability and the social values of its use The future of AI in e- commerce will be to provide users with meaningful, personalized and seamless experiences.[5]

REFERENCES

1. Dutta, Surjadeep, et al. "Revolutionizing Electronics E- Commerce: Harnessing The Power Of Artificial Intelligence In E-Marketing Strategies." Migration   Letters 21.S6 (2024): 207-220.
2. Rajput, Puja, et al. "AI ENABLED E- COMMERCE PLATFORM."
3. Kumre, Sonali. "A Comprehensive Review on Role of Artificial Intelligence in E-Commerce."
4. Singh, Neetu. "FUTURE OF ARTIFICIAL INTELLIGENCE IN E- COMMERCE."
5. Agnihotri, Madhu, and Tushar Jain. "Impact of Artificial Intelligence on E- commerce   Customers." Research Bulletin (2023): 63-82.

INNO SPACE
SJIF Scientific Journal Impact Factor

ISSN
INTERNATIONAL STANDARD SERIAL NUMBER INDIA

निस्केयर
NISCAIR

INTERNATIONAL JOURNAL OF

MULTIDISCIPLINARY RESEARCH

IN SCIENCE, ENGINEERING AND TECHNOLOGY