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ARTIFICIAL INTELLIGENCE AND ITS IMPACT ON ONLINE RETAIL WITH SPECIAL REFERENCE TO LENSKART 3D FACE IMAGING TECHNOLOGY IN MALAPPURAM DISTRICT

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Abstract

Artificial Intelligence (AI) has revolutionized the landscape of online retail by enhancing customer experience, personalization, and operational efficiency. This study explores the impact of AI on the online retail sector, with a special focus on Lenskart's 3D Face Imaging technology. Lenskart, a leading eyewear retailer in India, has integrated AI-driven 3D facial mapping to offer customized product recommendations and improve virtual try-on experiences. The research examines how this innovation bridges the gap between physical and digital shopping by simulating real-time product fitting, thereby increasing customer satisfaction and purchase confidence. A descriptive research design was used, collecting data from 50 respondents familiar with the feature. Results reveal that 82% of respondents rated their experience as good or excellent, indicating strong acceptance of the technology. The study concludes that AI-powered 3D imaging enhances consumer confidence, convenience, and engagement in online eyewear shopping while presenting challenges such as data privacy and user trust.

Keywords: **A**rtificial Intelligence, Online Retail, Lenskart, 3D Face Imaging, Virtual Try-On, Consumer Behavior

INTRODUCTION

The rapid advancement of Artificial Intelligence (AI) has significantly transformed the online retail industry. As e-commerce continues to expand, AI technologies are being integrated into various aspects of online shopping, offering new ways to enhance customer experience, improve operational efficiency, and drive business growth. AI-powered systems, such as recommendation engines, chatbots, inventory management tools, and fraud detection mechanisms, are helping retailers stay competitive in an increasingly digital marketplace. Lenskart, a leading eyewear retailer, has integrated AI-based 3D Try-On technology, allowing customers to virtually try different frames using facial recognition and augmented reality. This feature enhances the online shopping experience by eliminating the uncertainty of selecting eyewear without physical trials. By leveraging machine learning and computer vision, Lenskart's AI-driven tool accurately maps facial features and suggests frames based on suitability and preferences. By examining Lenskart's successful AI-driven approach, this study provides insights into how businesses can leverage AI to enhance digital shopping experiences, build customer trust, and drive growth in the competitive e-commerce landscape. This study aims to analyze how AI, particularly 3D imaging and augmented reality, is reshaping online retail. However, despite its benefits, AI adoption in online retail also presents challenges. Issues such as data privacy concerns, cyber security threats, ethical considerations, and high implementation costs can create barriers for businesses looking to integrate AI solutions. This study will examine these challenges while also highlighting potential solutions and future trends in AI-driven e-commerce. By understanding the role of AI in online retail, businesses can leverage these technologies to enhance customer engagement, improve decision-making processes, and achieve long-term success in the digital marketplace

SCOPE OF THE STUDY

This study explores the role of Artificial Intelligence (AI) in online retail, focusing on its applications, benefits, challenges, and future potential. It examines how AI-driven technologies are transforming e-commerce by enhancing customer experiences, optimizing operations, and driving business growth. This study examines the role of Artificial Intelligence (AI) in online retail, with a specific focus on Lenskart's 3D imaging technology. The scope of this research includes an in-depth analysis of how AI-driven innovations enhance customer experience, improve business efficiency, and drive sales in the e-

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commerce sector, particularly in the eyewear industry. This research helps businesses and researchers understand how AI-driven innovations can improve digital commerce and shape the future of online shopping.

STATEMENT OF THE PROBLEM

The rapid adoption of Artificial Intelligence (AI) in online retail has significantly transformed the shopping experience, particularly in industries where visual appeal and product fit are crucial, such as eyewear. However, despite the advancements in AI-driven solutions like Lenskart's 3D imaging technology, several challenges persist in ensuring seamless customer experiences, business efficiency, and widespread adoption. Lenskart's AI-powered 3D Try-On technology allows customers to virtually try on eyewear using facial recognition and augmented reality (AR). While this innovation aims to enhance customer confidence in online purchases, its effectiveness and impact on consumer behavior, sales conversion rates, and return rates require further exploration. By addressing the above problems, the research aims to provide insights into the effectiveness, challenges, and future potential of AI-driven innovations in e-commerce, ultimately helping businesses optimize AI integration for a better online shopping experience.

OBJECTIVES OF THE STUDY

1. To analyze the effectiveness of Lenskart's AI-driven 3D Try-On technology in enhancing the online shopping experience.

2. To evaluate the impact of AI on customer purchasing behavior and sales performance.

3. To assess the future potential and scalability of AI in online retail.

REVIEW OF LITERATURE

Ransome Epie Bawack (2022) . Bibliometric data from 4335 documents were analyzed, and 229 articles published in leading IS journals were reviewed. Sentiment analysis, trust, personalisation, and optimisation were identified as the core research themes. It also places China-based institutions as leaders in this researcher area. Also, most research papers on AI in e-commerce were published in computer science, AI, business, and management outlets.

Ashraf Alam (Aug 2022) "Employing Adaptive Learning and Intelligent Tutoring Robots for Virtual Classrooms and Smart Campuses" As a consequence of the advent of new technologies, teaching and learning methods have evolved dramatically. Artificial intelligence (AI) applications in educational settings are becoming increasingly apparent as a result of rapid development of AI technology in recent years. Adaptive learning, smart campus, teacher evaluation, intelligent tutoring robots, and virtual classrooms are only a few of the applications of educational-AI. After evaluating the impact of AI technology on teaching and learning, AI has a beneficial effect on both the quality of instruction provided by teachers and on the learning outcomes of students.

M.H Henry, R.T Rust (2021) "A strategic framework for AI in marketing" The authors develop a three stage framework for strategic planning ,incorporating multiple AI benefits, mechanical AI for automating repetitive marketing functions and activities , thinking AI for processing data to arrive at decision and feeling AI for analyzing interaction and human emotions. This frame lays on the way that AI can be used for marketing research, strategy (segmentation, targeting and positioning) and actions at the marketing research stage mechanical AI can be used for data collection, thinking AI for market analysis and feeling AI for customer understanding.

P.S Varsha, S Alter (2021) "the impact of AI on branding": This explorative research covers a complete bibliometric analysis of the impact of AI on branding. The sample for this research included all 117 articles from the period of 1982-2014 in the Scopus database. The empirical analysis investigates the value propositions of AI on branding.

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MS Ullal, I.T Hawaldar (2020) "The effect of AI on the sales graph in Indian market" experiments the effect of marketing on 4500 customers using AI and humans, the outcomes of the research reveal experienced salesman and 2.7 times better than inexperienced salesman is closing the sales caller the sales graph experienced a clip by over 86.23% when it was revealed to the customer that the interface is within the machine not human and reduced the duration of the cell substantially.

Artificial Intelligence in Retail

Behind the scenes of any Al-powered systems, there's a protracted and complicated machine method involved the trained knowledge set for the rule to perform so the user gets an awesome expertise. This expertise is therefore quick and seamless that the user thinks everything is occurring as if by magic.

Here are some measures and fascinating facts regarding Al and retail:

* By 2020, 85% of client interactions in retail are managed by computing, as per Gartner.

* According to Business corporate executive, shoppers UN agency move with on-line reviews and opinions measures that 97% of a lot seemingly to convert with a distributor than customers.

* 70% folks millennials and 62% of millennials within the developed and developing countries say they might appreciate a complete or distributor exploitation Al technology to indicate a lot of fascinating merchandise.

DATA ANALYSIS

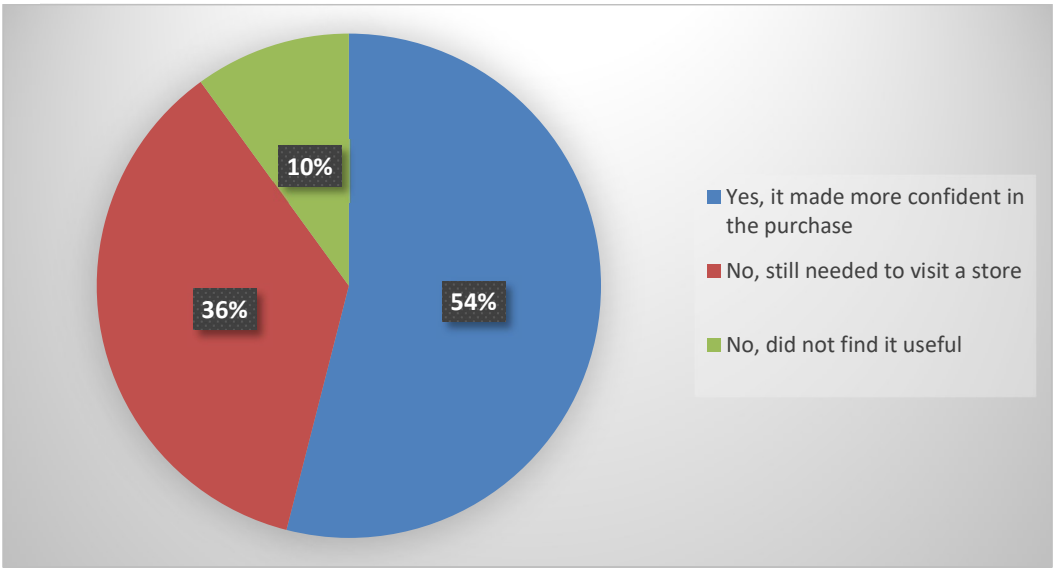

Figure 1.1

Figure 1.1 reveals that the influence of 3D Face Imaging technology on purchasing decisions for eyewear. A majority of respondents (54%) stated that the technology made them more confident in their purchase. However, 36% still felt the need to visit a physical store before making a decision, while 10% did not find the feature useful.

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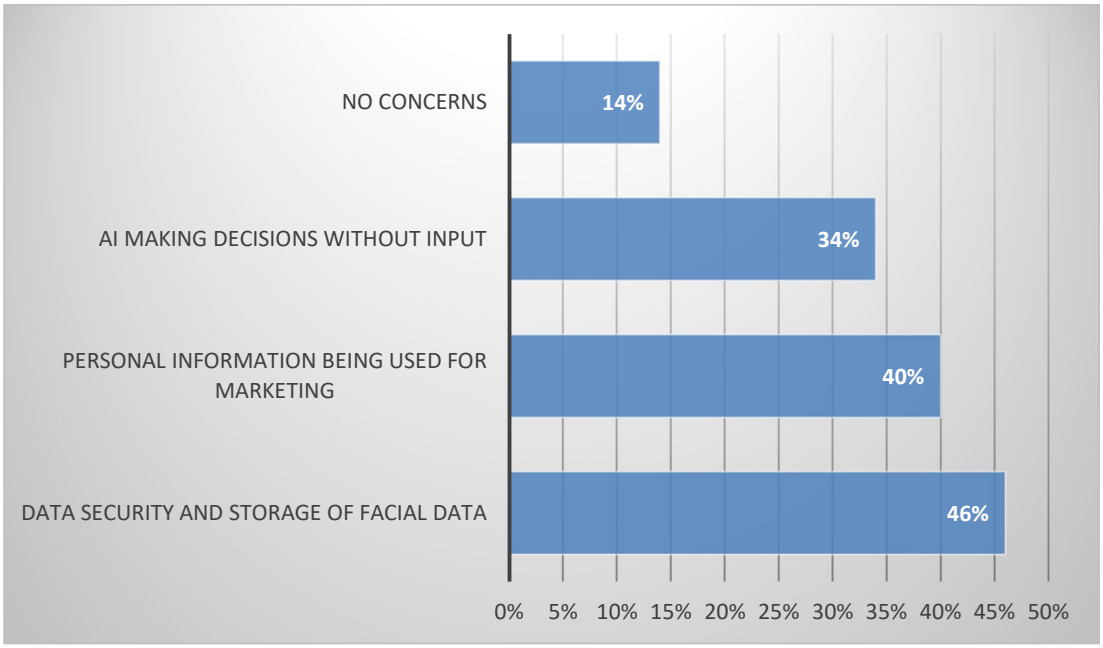

Figure 1.2

Figure 1.2 highlights users' privacy concerns regarding Lenskart's 3D face imaging technology. The most significant concern, expressed by 46% of respondents, is data security and the storage of facial data. Additionally, 40% worry about their personal information being used for marketing purposes, reflecting fears of data misuse. Another 34% are concerned about AI making decisions without user input. However, 14% of respondents have no privacy concerns.

DATA DISCUSSIONS

The majority (56%) of respondents rated their experience as *good*, while 26% rated it *excellent*. About 70% considered the technology *somewhat accurate*, and 30% *very accurate*. Over half (54%) said it made them more confident in purchasing eyewear online.
However, **64% expressed privacy concerns**, particularly regarding facial data storage and marketing use. Awareness of the technology was primarily driven by social media ads (52%). Overall, the study found that AI-powered features like 3D Face Imaging enhance convenience, engagement, and personalization, leading to increased satisfaction and confidence among online shoppers.

RECOMMENDATION

- Strengthen data privacy and transparency measures to build consumer trust.
- Simplify the user interface for smoother experiences across all devices.
- Combine AI recommendations with human consultation to reassure hesitant customers.
- Enhance accuracy in frame size detection and color representation through machine learning improvements.
- Use influencer marketing and customer testimonials to expand awareness.

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Conclusion

AI has emerged as a transformative force in online retail, reshaping the way customers interact with brands and make purchasing decisions. Lenskart's 3D Face Imaging Technology demonstrates how AI can bridge the gap between virtual and physical shopping experiences. While most users respond positively to the innovation, addressing privacy and usability concerns is crucial for wider adoption. The study concludes that the integration of AI technologies in online retail not only enhances user satisfaction but also contributes significantly to business efficiency and competitive advantage.

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