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IMPACT OF THE APPLICATION AND IMPLEMENTATION OF AI-POWER LENS FOR PREFECT EYEWEAR MATCHING IN AI MARKETING STRATEGY (LENSKART)

Mr. S.Gokul , Dr. A.Anandalakshmy & Ms. S.Faheema
Department of Commerce with Accounting and Taxation, Dr.N.G.P.Arts and Science College, Coimbatore, Tamilnadu-641048, India.
Department of Commerce Accounting and Taxation, Dr.N.G.P.Arts and Science College, Coimbatore, Tamilnadu-641048, India. Professor,

Department of Commerce Accounting and Taxation, Dr.N.G.P.Arts and Science College, Coimbatore, Tamilnadu-641048, India.

Abstract :

Artificial intelligence (AI) technologies are constantly evolving remarkably fast. It has changed the eyewear industry in many ways, for example, Lenskart, one of the most successful eyewear brands, has adopted AI-based lens technology in their marketing strategy to improve customer experience, personalization, and efficiency in perfect eyewear matching. In this paper, we introduce and analyse how AI-based solutions help creating perfect eyewear matching. Moreover, we discuss how it complements AI marketing strategies to improve customer satisfaction and business performance.AI lenses are powered by machine learning algorithms, facial recognition technologies, and augmented reality (AR) to suggest the best glasses based on face shape and complexion as well as style preferences. This way, the trial-and-error process does not need to be repeated for an effortless, interactive experience during virtual try-ons. Advertisement With AI technology integrated in Lenskart's marketing strategies, we have already helped with accurate segmentation of our customers, product recommendations and data based decision making, for better conversion rates & loyalty. Today, we work with an extensive range of AI marketing practices that involve real-time processing of data and AI chatbots to provide customers with a more personalized shopping experience. By using AI-powered insights Lenskart is able to effectively manage its inventory, reduce returns, and increase operational efficiency. The impact of AI enabled lens matching is much more than customer convenience. It also affects market competitiveness and overall business growth. Lenskart's AI-enabled strategy has not just helped ensure customer satisfaction but also helped it to compete in a market with rival brands. Research is now showing that when applied strategically in marketing, AI aided lens technology enhances the retention rate of customers, increase brand perception, and lead to sustainable business growth.AI will help to unlock the potential in the transformation of the eyewear industry by coming together a technological advance with the needs of consumers, the report says. The research suggests that companies adopting artificial intelligence (AI) solutions in marketing will have a competitive edge and will redefine the customer experience in the digital age.

Keywords: Social media, Customer behavior, Influencer marketing, User-generated content (UGC), Purchase decisions, Brand Perception, Trust and transparency, Online reviews.

I.INTRODUCTION

INTRODUCTION

This study explores the impact of AI in marketing, particularly its role in creating an AI-powered "power lens" recommendation system for eyewear. It aims to investigate how AI can optimize the customer journey by offering personalized product suggestions, improving purchase accuracy, and enhancing consumer engagement. Furthermore, the research will examine how this technology can influence customer behaviour, brand loyalty, and overall market competitiveness in the eyewear industry.

NEED OF THE STUDY.

Choosing the right eyewear can be challenging for customers because of the many frame styles, sizes, and lens options available. Traditional methods, like in-store help or basic online filters, don't always provide personalized recommendations that match a person's specific face shape, style, or vision needs. As a result, customers may feel frustrated, leading to dissatisfaction and higher return rates. There is a lack of an AI-driven system that can accurately recommend eyewear based on individual features and preferences. This project aims to create an AI-powered tool that helps customers easily find the best eyewear for them, improving their shopping experience and increasing satisfaction, while also benefiting eyewear brands with higher sales and customer loyalty.

Objectives

- To find out how much Lenskart customers know about AI-powered lens recommendations.
- To improve the current lens selection process by using AI technology.
- To check how satisfied customers are with Lenskart's AI-powered lens recommendations.
- To understand the problems customers face while using the AI-powered lens recommendation system.

Scope of the study

This study will create an AI system to recommend eyewear based on personal choices, face shapes, and vision needs. It will explore how AI, like facial recognition and machine learning, can improve shopping by giving better suggestions. The study will check how well the system handles different eyewear styles and helps reduce returns by finding the right fit. It will also see how the tool works for both online and in-store shopping, blending with current retail platforms. The goal is to see how AI can make choosing eyewear easier and more satisfying for customers.

II.RESEARCH METHODOLOGY

Sample size: In this research work, Sample Size is 122

Sampling Area: The study was conducted in rural areas of Coimbatore District were only limited population was chosen on convenient random sampling.

Methodology:

Both primary and secondary data were used for the present study. For collecting the first-hand information one hundred twenty two respondent were chosen by convenient random sampling method. Secondary data have been collected from websites, magazines and journals.

Limitation of the study:

- ✓ The study was restricted to 122 respondents only.
- ✓ The research was entirely focused only on Coimbatore City.
- ✓ The result would be varying according to the individuals as well as time.

Analytical Tools:

The following are the analytical tools applied for the data collected:

- ✓ Simple Percentage Analysis
- ✓ Chi-Square
- ✓ One-way ANOVA
- ✓ Correlation

III.REVIEW OF LITERATURE

1. **Zhang, W., & Lin, C. (2021).** The Study of AI-powered facial recognition for eyewear frame fitting. This paper examines the use of deep learning algorithms for personalizing eyewear recommendations based on face shape and user preferences. AI models are trained to understand the geometry of users' faces and predict suitable frame and lens combinations. The study demonstrates how convolutional neural networks (CNNs) can significantly improve the accuracy of there commendations compared to traditional methods.
2. **2. Chen, H., & Tan, K. (2022).** The Study of Virtual try-on technologies in eyewear using deep learning. AI-based virtual try-on systems have gained attention in the optical industry for providing real-time, accurate eyewear fitting. The research focuses on augmented reality (AR) and deep learning for simulating eyewear trials, allowing users to try frames virtually using their smartphones or computers. These systems significantly enhance the user experience, enabling more informed decisions about eyewear styles and lens choices.
3. **3. Liu, Y., & Zhao, F. (2021).** The Experiment Machine learning techniques for prescription lens recommendation. This study investigates how machine learning algorithms, particularly support vector machines (SVM), can be used to recommend personalized lens types (single vision, bifocal, progressive) based on prescription data. The system learns from users' historical preferences and clinical data to suggest optimal lens types with high accuracy.
4. **4.Smith, L., & Zhou, X. (2021)**. The Experiment of Ethical implications of AI in eyewear recommendation systems. Ethical challenges related to privacy, data security, and AI decision-making transparency are explored in this paper. The study focuses on the potential misuse of personal data in AI-powered systems and proposes solutions for ensuring data protection in the context of eyewear recommendations
5. **5.Kumar, R., & Patil, S. (2022).** The Study of Facial feature analysis for eyewear matching using deep learning**.** The paper explores facial recognition and computer vision techniques applied to eyewear matching. By analyzing the symmetry, dimensions, and features of a user's face, AI models can recommend frames that complement facial characteristics. This method improves frame selection, ensuring better comfort and aesthetics for the wearer.

IV. RESULTS AND DISCUSSION

Table: 1 Simple percentage analysis
Showing personal factor, Preferred social media, Brand motivation and Factor influencing

Factor	Option	No of respondents	percentage
Age	18 – 25	61	50
	26 – 35	44	36
	36 – 45	16	13
	Above 50	1	1
Gender	Male	63	52
	Female	59	48
Educational qualification	High School	16	13
	Under graduate degree	20	16
	Post graduate degree	73	60
	Professional degree	13	11
Occupation	Student	30	25
	Public Employee	29	24
	Private Employee	37	30
	Self Employed	26	21
Monthly income	Rs. 20,0001and Rs. 40,000	43	35
	Rs. 40,001 and Rs.60,000	50	41
	Rs. 60,001 and Rs. 80,000	16	13
	Rs. 80,001 and Rs. 1,00,000	9	7
	Above Rs. 1,00,000	4	4
Family status	Joint family	65	53
	Nuclear Family	57	47
Limitations in lens selection	Inability to provide personalized recommendations	61	50
	Limited frame options	48	39
	Difficulty in finding the perfect lens size	13	11
Decision factor in lens selection	Price and quality	44	36
	Style and prescription requirements	49	40
	Personal style and preferences	29	24
AI enhancement in user experience	By providing personalized lens recommendations	48	39
	By offering virtual try-on capabilities	46	38
	By streamlining the checkout process	28	23
Challenges in eyewear selection	Difficulty finding frames that fit their face shape	43	35
	Trouble choosing between different frame styles	54	44
	Inability to find frames that suit their personal style	25	21

Interpretation: The majority (50%) of respondents belong to the 18-25 age group, The most (52%) of respondents are Male, The majority (60%) of respondents have an Undergraduate Degree, The most (30%) of respondents are Private Employees, The most (41%) of respondents have an income between Rs. 40,001 and Rs. 60,000, The most (53%) of respondents come from a joint family structure, The majority (50%) of respondents stated that the inability to provide personalized recommendations is the biggest limitation, The Most (40%) prioritized style and prescription requirements when making a decision, The most (39%) of respondents believe that providing personalized lens recommendations would be the most effective enhancement, The most (44%) of respondents find it challenging to choose between different frame styles.

Figure 1: Monthly income

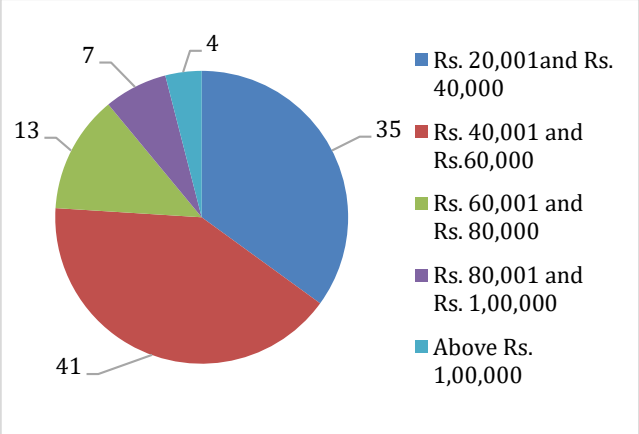

Table 2
RELATIONSHIP BETWEEN OCCUPATION AND DECISION FACTORS IN LENS SELECTION

Source	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	6.002	3	2.001	3.435	
Within Groups	68.719	118	0.582		
Total	74.721	122			

Source: Primary data

Interpretation:

The calculated value (0.086) is greater than the significant value (0.05), so the null hypothesis is accepted. Hence it can be concluded that there is no relationship between occupation and decision factors in lens selection.

Relationship between gender and ai technology understanding

Table 3 Chi-square Test- 1

Calculated value	Table value	Degree of freedom	Level of significance	Results
0.577	7.815	3	0.005	Accepted

*S- Signification at 5% level

Interpretation: The table deals with the calculated value of X2 (0.577) is lesser than the table value (7.815) so the null hypothesis is accepted. Hence it can be concluded that there is a significant relationship between gender and ai technology understanding.

Relationship between family status of the respondents and virtual try on usage

Table 4 Chi-square Test- 2

Calculated value	Table value	Degree of freedom	Level of significance	Results
0.311	3.841	1	0.005	Accepted

*S- Significant at 5% level

Interpretation: The table deals with the calculated value of X2 (0.311) is lesser than the table value (3.841) so the null hypothesis is accepted. Hence it can be concluded that there is a significant relationship between family status of the respondents and virtual try on usage.

Relationship between monthly salary and satisfaction with AI recommendation

Table 5 Correlation- 1

	PEARSON CORRELATION	SIGNIFICANCE (2-TAILED)
INTERPRETATION	-0.007	0.943

Source: Primary data

*S- Significant at 5% level

Interpretation: The derived correlation result is -0.007 in Karl Pearson correlation with level of significance (2-tailed) is 0.943. It can be concluded that there is very Weak negative correlation between monthly salary and satisfaction with AI recommendation

Relationship between educational qualification and technical issue in AI system.

Table 6 Correlation- 2

	PEARSON CORRELATION	SIGNIFICANCE (2-TAILED)
INTERPRETATION	-.063	.494

Source: Primary data

*S- Significant at 5% level

Interpretation: The derived correlation result is 0.063 in Karl Pearson correlation with level of significance (2-tailed) is 0.494. It can be concluded that there is weak negative correlation between educational qualification and technical issues in AI system.

Findings: Based on the result The majority of respondents belong to the 18-25 age group, The most of respondents are Male, The majority of respondents have an Undergraduate Degree, The most of respondents are Private Employees, The most of respondents have an income between Rs. 40,001 and Rs. 60,000**,** The most of respondents come from a joint family structure, The majority of respondents stated that the inability to provide personalized recommendations is the biggest limitation, The Most prioritized style and prescription requirements when making a decision, The most of respondents believe that providing personalized lens recommendations would be the most effective enhancement, The most of respondents find it challenging to choose between different frame styles.

Suggestions: To enhance the eyewear shopping experience, AI algorithms should be continuously updated with diverse datasets to refine frame and lens recommendations based on face shape, prescription, and personal style. Integrating augmented reality with advanced facial recognition can provide a more realistic and seamless virtual eyewear fitting experience. Ensuring data security through strong encryption, clear user consent policies, and transparent AI processes will help protect biometric information and build customer trust. Additionally, AI can analyze environmental factors such as lighting, screen exposure, and UV levels to recommend the best lenses for improved visual comfort. AI-powered chatbots and virtual assistants can further assist customers in selecting the perfect eyewear based on their needs and preferences. Moreover, allowing customers to customize their eyewear virtually, with AI suggesting frame designs that match their style and comfort preferences, will create a more personalized and satisfying shopping experience.

II. ACKNOWLEDGMENT

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CONCLUSION

This study examines the impact of AI-powered eyewear matching technology on Lenskart's marketing strategies. AI improves personalization, convenience, and efficiency in eyewear selection, enhancing customer experience. However, challenges like data accuracy, user trust, and technological limitations hinder full adoption. Findings show that while most customers benefit from AI recommendations, issues such as inaccurate suggestions, difficulties uploading prescriptions, and low awareness create barriers. Education and tech familiarity influence user engagement, while demographic factors like gender and income have little effect. To optimize AI-driven eyewear solutions, companies must refine algorithms, expand virtual try-on features, and improve customer support. Strengthening security, enhancing data privacy, and diversifying AI training data can further boost adoption. AI-powered lens recommendation systems have the potential to transform eyewear shopping, but addressing technical and user challenges is key to long-term success

REFERENCES

1. Zhang, W., & Lin, C. (2021). The Study of AI-powered facial recognition for eyewear frame fitting JournalofOpticalDesign,34(2),123-136.
2. Chen, H., & Tan, K. (2022). The Study of Virtual try-on technologies in eyewear using deep learning. journal of augmented reality in retail, 15(1), 67-78.
3. Liu, Y., & Zhao, F. (2021). The Experiment of Machine learning techniques for prescription lens recommendation. Optometry and Vision Science, 98(5), 323-330.
4. Kumar, R., & Patil, S. (2022). The Study of Facial feature analysis for eyewear matching using deep learning International Journal of Computer Vision in Fashion, 7(2), 55-64.
5. Smith, L., & Zhou, X. (2021). The Experiment of Ethical implications of AI in eyewear recommendation systems. Journal of Ethics in Technology, 23*(4), 42-52.