Research Paper
Impact Factor: 7.184
Peer Reviewed & Indexed Journal
www.iibarr.com

IJBARR
E- ISSN -2347-856X
ISSN -2348-0653

BEYOND AUTOMATION: ROLE AND RELEVANCE OF ARTIFICIAL INTELLIGENCE (AI) IN VISUAL SEARCH AND CONSUMER EXPERIENCE ENHANCEMENT TOWARDS TEXTILE SHOWROOMS IN COIMBATORE CITY, TAMILNADU

Ashika T N* **Dr. R. Guna Sundari****

**Assistant Professor, Department of B.Voc Retail Management, MES KEVEEYAM College, Valanchery, Malappuram District, Kerala -676552.*

***Associate Professor and Head, Department of Commerce with Accounting and Finance, Sri Krishna Adithya College of Arts and Science, Coimbatore, Tamil Nadu.*

Abstract

The textile retail industry in Coimbatore is experiencing a digital transformation with the advent of Artificial Intelligence (AI). One of the most promising applications of AI in this sector is visual search technology, which enhances consumer experience by streamlining product discovery and personalizing the shopping journey. This study aims to explore the role of AI-driven visual search in textile showrooms and its impact on customer satisfaction and sales. By leveraging image recognition algorithms, AI allows customers to search for textiles using photos instead of keywords, offering an intuitive and efficient method of browsing. The technology not only enhances the accuracy of product recommendations but also reduces the time spent on manual searching, resulting in a seamless shopping experience. Through a detailed analysis of textile showroom operations in Coimbatore, the research evaluates AI-powered visual search improves customer engagement, personalizes shopping experiences, and boosts sales conversion rates. The study employs a quantitative approach, collecting data from showroom customers and managers to understand these AI technologies influence purchasing decisions, brand loyalty, and customer satisfaction. The findings of this research will provide information into the effectiveness of AI in reshaping retail practices and its potential to drive innovation in the textile industry. It will explore the challenges faced by textile retailers in adopting AI solutions and offer recommendations for effective implementation to enhance consumer experience.

Keywords: ***Artificial Intelligence, Visual Search, Consumer Experience, Textile Showrooms, Automation.***

Introduction

In the rapidly evolving retail landscape, the integration of Artificial Intelligence (AI) has sparked a transformation, particularly in consumer-facing technologies. Among the most innovative advancements, AI-powered visual search technology has gained immense traction, reshaping the way customers interact with products, find items, and make purchasing decisions. The role of AI in visual search allows consumers to search for products using images rather than traditional text-based queries. This study delves into the role and relevance of AI in visual search and consumer experience enhancement within the context of textile showrooms in Coimbatore City, Tamil Nadu. The textile industry in Coimbatore is known for its rich tradition, innovative designs, and ever-expanding market. With increased competition and consumer demand for seamless shopping experiences, textile retailers are compelled to adopt cutting-edge technologies like AI to remain competitive. Visual search technologies are particularly promising in this industry as they allow customers to quickly identify and purchase fabric, apparel, and other textile products through a simple image, reducing friction in the purchasing process and enhancing overall consumer satisfaction. AI in visual search is a paradigm shift in the retail sector. The technology leverages machine learning algorithms and computer vision to analyse the content of an image, compare it to a database of products, and offer relevant product

IJBARR
E- ISSN -2347-856X
ISSN -2348-0653

matches. For textile showrooms, this not only improves the discovery process but also enhances personalization, offering suggestions based on consumer preferences and previous purchase history. AI's role extends beyond just facilitating product discovery; it offers insights into customer behavior, helping retailers optimize their inventory, improve sales strategies, and design a personalized shopping experience that resonates with consumers.

The relevance of this study lies in understanding how AI technologies, specifically visual search, can offer tangible benefits to textile showrooms in Coimbatore. This analysis, conducted using quantitative methods, aims to evaluate the impact of AI-driven visual search on consumer behavior, satisfaction levels, and sales outcomes in textile retail environments. By surveying consumers and showroom owners, the study will provide empirical evidence of how AI can enhance customer engagement, streamline product discovery, and contribute to long-term business success in the highly competitive textile retail market of Coimbatore. This research will fill the knowledge gap by exploring how AI in visual search affects consumer engagement in the traditional textile showroom format, providing actionable insights for the industry stakeholders. The introduction of AI-driven visual search in textile showrooms offers a significant opportunity to enhance the overall consumer experience. The study will quantitatively measure the influence of AI on consumer satisfaction, purchase intentions, and the operational efficiencies achieved by textile retailers in Coimbatore. The results will serve as a foundation for future innovations in textile retail technology, contributing to both academic literature and practical applications in the retail industry.

Review of Literature

Artificial Intelligence (AI) has revolutionized the way consumers interact with retail spaces, particularly in enhancing visual search and personalization. Chen and Zhang (2024) emphasized that AI-powered visual search significantly improves consumer engagement by reducing search friction and facilitating quicker decision-making. Similarly, Kumar and Rajan (2023) observed that AI integration in Indian textile retail helped bridge critical customer experience gaps through hyper-personalization and intelligent recommendation engines. The role of AI in shaping consumer behavior was further highlighted by Sanchez and Liu (2023), who noted that AI-driven visual tools influence purchasing intent by matching visual inputs with relevant product inventories in real time. Mehta and Singh (2022) supported this view, stating that personalized fashion recommendations enabled by AI lead to higher satisfaction and brand loyalty among shoppers. Lee and Choi (2022) confirmed that machine learning algorithms used in AI personalization positively impact customer retention and showroom revisit rates.

Ravikumar and Babu (2021) provided region-specific insights, showing that textile retailers in South India, particularly Tamil Nadu, have begun integrating visual AI technologies to modernize traditional shopping experiences. Nguyen and Adams (2021) echoed this by indicating that AI tools such as chatbots, smart mirrors, and virtual assistants contribute significantly to digital customer experience across both physical and digital platforms.Thomas and Menon (2020) offered a comprehensive review of AI applications in fashion retail, finding that visual recognition technologies are among the most effective tools for improving product discoverability. Supporting this, Patel and Iyer (2020) found that consumers perceive AI-enabled retail spaces as more efficient and responsive to their needs, especially in apparel and textile sectors. Ghosh and Dutta (2019) explored the spillover of AI benefits from online fashion platforms to brick-and-mortar textile outlets, noting increased customer expectations for personalization and search accuracy.

Wang and Li (2019) emphasized that trust in AI visual systems plays a crucial role in adoption, particularly when consumers depend on them for style suggestions and availability confirmation. In a regional study, Balaji and Narayanan (2018) pointed out that textile showrooms in Tamil Nadu that adopted AI saw higher footfall and customer retention due to enhanced in-store experiences. Reddy and Joseph (2018) also found that visual AI used in retail spaces led to a rise in impulse buying and improved product visibility. Singh and Sharma (2017) discussed how intelligent search systems reduce the cognitive load on customers, leading to faster and more satisfying shopping outcomes. Ahmed and Rehman (2017) concluded that AI's role has shifted from mere backend automation to becoming a key driver of consumer experience through advanced interfaces and interactive technologies.

Statement of the Problem

The textile retail industry in Coimbatore is currently navigating a complex landscape marked by evolving consumer expectations and increasing competition. One of the most pressing challenges faced by retailers in this sector is the need to deliver a seamless, personalized, and efficient shopping experience to customers who are becoming increasingly tech-savvy and demand convenience in product discovery. Traditional search methods, particularly keyword-based systems, are often inadequate in addressing these expectations, as they tend to be time-consuming, imprecise, and incapable of fully capturing the nuances of customer preferences, especially in a visually rich domain like textiles. This disconnect between consumer needs and available retail technology has led to reduced engagement levels, missed sales opportunities, and overall dissatisfaction among customers. In response to these challenges, the integration of Artificial Intelligence (AI) particularly visual search technology offers a promising solution. AI-driven visual search enables customers to search for products using images rather than text, thereby simplifying and accelerating the discovery process. It also allows for more intuitive and accurate results, bridging the gap between customer intent and product availability. This study aims to explore the transformative potential of AI in enhancing the textile shopping experience in Coimbatore showrooms. It seeks to investigate how AI can streamline product discovery, personalize customer interactions based on individual preferences and behaviors, and assist retailers in optimizing their marketing and operational strategies.

Scope of the Study

This study focuses on understanding the impact and relevance of Artificial Intelligence (AI), specifically visual search technology, in enhancing the consumer experience within textile showrooms in Coimbatore City, Tamil Nadu. The research covers key areas such as product discovery, personalized shopping experiences, and the effectiveness of AI in improving operational and marketing strategies of textile retailers. It examines consumer perceptions, satisfaction levels, and behavioral changes resulting from the adoption of AI-based tools in retail environments. The study is limited to textile showrooms operating in the urban regions of Coimbatore and targets both consumers and retail professionals who have experienced or implemented AI technologies. It includes an analysis of how AI tools assist in reducing product search time, increasing search accuracy, and supporting personalized recommendations.

Significance of the Study

This study holds significant value for multiple stakeholders in the textile retail sector, particularly in the rapidly evolving market of Coimbatore. As consumer expectations shift toward faster, more personalized, and visually intuitive shopping experiences, the integration of Artificial Intelligence (AI), especially visual search technology, has emerged as a transformative tool. By examining how AI enhances product discovery and customer engagement, this research provides practical insights into how

IJBARR
E- ISSN -2347-856X
ISSN -2348-0653

textile retailers can modernize their operations to meet these emerging demands. For showroom owners and retail managers, the study offers guidance on leveraging AI to increase customer satisfaction, reduce product search time, and improve marketing effectiveness through personalized interactions. For technology providers and AI developers, it highlights key areas where innovation can be aligned with retail requirements. Additionally, the study contributes to academic literature by bridging the gap between theoretical concepts of AI in retail and real-world applications in regional markets like Coimbatore. Overall, the research supports the advancement of intelligent retail ecosystems and promotes data-driven decision-making for sustainable business growth.

Objectives of the Study

1. To explore AI-driven visual search technology enhances the proficiency of product discovery in textile retail in Coimbatore city
2. To evaluate the impact of AI on personalising consumer experiences and improving customer satisfaction.
3. To examine the role of AI in providing Strategies to textile retailers for optimizing marketing and operational efficiency.

Research Methodology

This study will employ a quantitative research approach to achieve the outlined objectives. The research will primarily focus on textile retailers as the target respondents, specifically those who have implemented or are in the process of integrating AI-driven visual search technologies in their physical textile retail environments. The area of study will be Coimbatore city based, allowing for a focused examination of AI influences retail operations and consumer behaviour in a specific geographical region.

Sampling Method and Respondents:

A random sampling method will be used to select textile retailers from Coimbatore city. The sample will include textile retailers who have implemented AI-driven visual search technologies. A sample of 160 textile retailers will be targeted to ensure a representative of businesses.

Tools for Analysis

Paired Samples t-Test: Used to compare the differences in search time and search accuracy before and after AI implementation to determine statistical significance.

Pearson Correlation Analysis: Applied to assess the strength and direction of the relationship between the use of AI for personalization and customer satisfaction.

Chi-Square Test of Independence: Used to examine the association between the use of AI suggestions and perceived strategy effectiveness, based on categorical data.

Data Analysis and Interpretation

Table No: 1 Paired Samples t-Test for Pre-AI and Post-AI Search Performance Metrics

H_0 (Null Hypothesis): There is no significant difference in user search performance before and after AI implementation.

		Paired Differences					t	df	Sig.(2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Time Taken to Find Product (Before AI) - Time Taken to Find Product (After AI)	.11875	.51849	.04099	.03779	.19971	2.897	159	.004
Pair 2	Search Accuracy (Before AI) - Search Accuracy (After AI)	-1.10000	.55173	.04362	-1.18615	-1.01385	-25.219	159	.000

Interpretation

The paired samples t-test compares user experiences before and after AI integration. For time taken to find a product, the mean difference is 0.11875 (p = 0.004), indicating a significant reduction in time after AI use. For search accuracy, the mean dropped by -1.1 (p = 0.000), suggesting a significant improvement post-AI. Since both p-values are below 0.05, the null hypothesis is rejected. This confirms AI significantly enhances both the speed and accuracy of product search for users.

Table No: 2 Correlation Between Use of AI for Personalization and Customer Satisfaction

H_0 (Null Hypothesis): There is no significant relationship between the use of AI for personalization and customer satisfaction.

		Use of AI for Personalization	Customer Satisfaction Score
Use of AI for Personalization	Pearson Correlation	1	.909**
	Sig. (2-tailed)		.000
	N	160	160
Customer Satisfaction Score	Pearson Correlation	.909**	1
	Sig. (2-tailed)	.000	
	N	160	160
**. Correlation is significant at the 0.01 level (2-tailed).			

Interpretation

The Pearson correlation coefficient between the use of AI for personalization and customer satisfaction is 0.909, with a p-value of 0.000, indicating a strong and statistically significant positive relationship at the 0.01 level. This suggests that as AI personalization increases, customer satisfaction also tends to increase substantially. Therefore, the null hypothesis is rejected, confirming that AI-driven personalization significantly enhances customer satisfaction.

IJBARR
E- ISSN -2347-856X
ISSN -2348-0653

Table No: 3 Chi-Square Test: Use of AI Suggestions vs. Perceived Strategy Effectiveness

H_0 (Null Hypothesis): There is no association between the use of AI suggestions and perceived strategy effectiveness

		Perceived Strategy Effectiveness		
		Effective	Very Effective	Total
Use of AI Suggestions	Yes	70	30	100
	No	30	30	60
Total		100	60	160

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	6.400[a]	1	.011		
Continuity Correction[b]	5.575	1	.018		
Likelihood Ratio	6.350	1	.012		
Fisher's Exact Test				.018	.009
Linear-by-Linear Association	6.360	1	.012		
N of Valid Cases	160				
a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 22.50.					
b. Computed only for a 2x2 table					

Interpretation

The Chi-Square test result ($\chi^2 = 6.400$, $p = 0.011$) indicates a statistically significant association between AI suggestions and how effective strategies are perceived. Among users who used AI suggestions, 70% rated strategies as effective and 30% as very effective. In contrast, only 50% of those who didn't use AI suggestions found them very effective. Since $p < 0.05$, we reject the null hypothesis, concluding that AI suggestions positively influence the perceived effectiveness of strategies.

Findings

1. From the Paired Samples t-Test, it was found that the time taken to find products significantly decreased and search accuracy significantly improved after the implementation of AI. This indicates that AI positively impacts the efficiency and effectiveness of user interactions.
2. The Pearson Correlation analysis showed a strong positive relationship ($r = 0.909$, $p < 0.01$) between the use of AI for personalization and customer satisfaction. This suggests that increased use of AI-driven personalization significantly enhances customer satisfaction levels.
3. The Chi-Square Test revealed a statistically significant association ($\chi^2 = 6.400$, $p = 0.011$) between the use of AI suggestions and perceived strategy effectiveness. Users who utilized AI suggestions perceived strategies to be more effective compared to those who did not use AI.

Suggestions

1. Textile showrooms in Coimbatore should adopt AI-enabled visual search technologies to reduce customer search time and improve product discovery efficiency, as shown by the significant improvement in post-AI interaction.

2. Given the strong positive correlation between AI-based personalization and customer satisfaction, showrooms should utilize AI to offer tailored product recommendations based on user preferences, purchase history, and browsing behavior.
3. To maximize the perceived effectiveness of AI-driven strategies, showroom employees should be trained to understand and utilize AI suggestions efficiently during customer interactions, ensuring smoother integration into daily operations.
4. Since customers find AI suggestions impactful, showrooms can incorporate AI-generated trend analysis and consumer insights into their marketing strategies to better meet customer expectations.
5. While implementing AI tools, attention must be given to the user interface and accessibility to ensure a seamless and intuitive shopping experience, especially for less tech-savvy consumers.

Conclusion

The study clearly highlights the transformative role of Artificial Intelligence in enhancing consumer experience and operational efficiency in textile showrooms. The findings demonstrate that AI significantly reduces the time taken to find products and improves the accuracy of search results, thereby streamlining the shopping process. A strong positive correlation between AI-based personalization and customer satisfaction further reinforces the value of integrating intelligent systems in retail environments. Moreover, the significant association between AI-generated suggestions and perceived strategy effectiveness underscores the growing consumer trust in AI-driven decision-making. Overall, the research confirms that AI is not merely a tool of automation but a strategic enabler of personalized, efficient, and engaging retail experiences in the textile sector of Coimbatore city. Adopting such technologies is not only relevant but essential for showrooms aiming to stay competitive in a digital-first retail landscape.

References

1. Ahmed, Z., & Rehman, S. (2017). AI in the fashion industry: From automation to experience. *Journal of AI & Retail Innovation*, *2*(1), 55–68.
2. Balaji, M., & Narayanan, V. (2018). Technology-driven shopping experience in Tamil Nadu textile retail. *South Indian Management Review*, *5*(1), 75–88.
3. Chen, Y., & Zhang, M. (2024). AI-powered visual search and its impact on consumer engagement in fashion retail. *Journal of Retail Technology*, *18*(1), 25–37.
4. Ghosh, S., & Dutta, A. (2019). AI-powered personalization in Indian fashion e-retail and its spillover to physical outlets. *Indian Retail Journal*, *4*(2), 50–63.
5. Kumar, R., & Rajan, V. (2023). Artificial intelligence in Indian retail: Bridging customer experience gaps. *International Journal of Retail Management*, *11*(2), 102–114.
6. Lee, J., & Choi, K. (2022). The effect of machine learning-based personalization on retail satisfaction. *AI in Commerce*, *12*(1), 89–100.
7. Mehta, P., & Singh, S. (2022). AI for personalized fashion: A roadmap for Indian textile retailers. *Journal of Business and Innovation*, *9*(3), 45–58.
8. Nguyen, L., & Adams, C. (2021). AI technologies and their influence on digital customer experience. *International Journal of AI in Business*, *5*(4), 134–147.
9. Patel, D., & Iyer, R. (2020). Smart retail: Consumer perception towards AI-enabled retail environments. *Journal of Emerging Markets Technology*, *3*(3), 110–122.
10. Ravikumar, A., & Babu, S. (2021). Integrating visual AI into the textile retail sector in South India. *Asian Journal of Retail Research*, *7*(2), 60–73.

11. Reddy, K., & Joseph, T. (2018). Visual AI and consumer behavior: Evidence from Indian malls. *Marketing Intelligence & Analytics*, *3*(4), 123–138.
12. Sanchez, A., & Liu, H. (2023). Visual intelligence and consumer decision-making: A study of AI-driven search tools. *Computational Retail Journal*, *15*(4), 200–213.
13. Singh, D., & Sharma, L. (2017). Enhancing customer satisfaction through intelligent visual search systems. *Retail and Technology Quarterly*, *6*(2), 97–109.
14. Thomas, J., & Menon, R. (2020). Artificial intelligence in fashion retail: A review of applications and implications. *Journal of Consumer and Retailing*, *6*(1), 28–42.
15. Wang, X., & Li, M. (2019). Consumer trust in AI visual search systems. *Retail Tech Review*, *8*(3), 90–103.