

AI-Driven Personalized Recommendation Systems in Social Media Marketing: A Study of Their Impact on Digital Media Users in Chennai City

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Abstract

Artificial intelligence (AI) has transformed social media marketing by providing personalized recommendation systems that serve up tailored adverts and product recommendations based on users' tastes and online behaviour. These AI-powered solutions have become critical tools for increasing consumer interaction, product discovery, and customer happiness. The current study investigates the influence of AI-powered personalized recommendation systems on digital media users in Chennai City. It addresses whether personalized advertisements increase consumer engagement over generic advertisements, whether personalized recommendations save time and improve product discovery, how advertisement transparency affects consumer trust, and whether AI-based personalization encourages repeat purchases and long-term customer loyalty. A descriptive research design was used, with primary data acquired from 215 digital media users via a structured questionnaire. The data have been processed using statistical tools such as the one-sample t-test, one-way ANOVA, Pearson correlation, and simple linear regression. The findings show that personalized advertisements significantly increase consumer engagement, that educational qualification influences perceptions of product discovery and time-saving, that advertisement transparency has a strong positive relationship with consumer trust, and that AI-based personalization improves repeat purchase behaviour and long-term customer loyalty. The study suggests that ethical, transparent, and consumer-centric AI recommendation systems can increase digital marketing performance and customer connections in the ever-changing social media landscape.

Keywords: Artificial Intelligence, Personalized Recommendation Systems, Social Media Marketing, Consumer Engagement, Consumer Trust, Customer Loyalty.

1. INTRODUCTION OF THE STUDY

Artificial intelligence (AI) has emerged as a critical tool in digital marketing, enabling organizations to deliver personalized content and adverts. AI-powered recommendation systems analyze users' browsing histories, hobbies, online interactions, and purchasing habits to suggest related products and services. Social media sites like Instagram, Facebook, YouTube, and LinkedIn make heavy use of artificial intelligence to boost customer engagement and marketing results.

Recent advancements, such as Generative AI, Large Language Models (LLMs), Explainable AI (XAI), and multimodal AI, have improved the accuracy, transparency, and usability of recommendation systems. These technologies help organizations improve customer satisfaction, enhance product discovery, and establish long-term customer connections.

Understanding consumers' impressions of AI-driven recommendations is becoming increasingly crucial as social media usage and online purchasing in Chennai City grow. This study looks at how

tailored advertising, suggestion transparency, and AI-powered personalization affect consumer engagement, trust, repeat purchases, and customer loyalty.

1.1 STATEMENT OF THE PROBLEM

AI-powered personalized recommendation systems enhance the user experience by offering relevant adverts and product recommendations. However, concerns about data privacy, algorithm openness, and customer trust have grown. There has been little investigation into these issues among Chennai's digital media users. As a result, this study looks into the effects of AI-powered personalized recommendation systems on consumer engagement, trust, and loyalty.

1.2 OBJECTIVES OF THE STUDY

1. To analyse whether personalised advertisements receive higher consumer engagement than generic advertisements.
2. To identify whether users believe personalised recommendations save time and improve product discovery.
3. To examine how advertisement transparency in recommendations affects consumer trust.
4. To explore how AI-based personalisation encourages repeat purchases and long-term customer loyalty.

2. REVIEW OF LITERATURE

2.1 AI IN SOCIAL MEDIA MARKETING

Artificial intelligence has transformed social media marketing by enhancing content production and campaign automation (Dwivedi et al., 2024). AI-powered systems allow marketers to analyze customer behaviour and optimize marketing tactics using predictive analytics (Gooljar et al., 2024). Generative AI enables individualized content development and real-time customer interactions, which increases user engagement (Maldonado-Canca et al., 2024). AI chatbots enhance consumer contact by offering instant responses and 24-hour help (Żyminkowska & Zachurzok-Srebrny, 2025). Recent systematic assessments have found that AI enhances customer engagement, marketing efficiency, and brand communication across social media platforms (Kumar, Malhotra, & Kathuria, 2025). Ethical AI implementation and human oversight are also acknowledged as critical for long-term AI-driven marketing success (Trivedi, 2025).

2.2 AI-DRIVEN PERSONALIZED RECOMMENDATION SYSTEMS

AI-powered recommendation systems use browser data, purchasing history, and user preferences to provide personalised recommendations (Kumari & Laheri, 2025). Machine learning algorithms continuously enhance suggestion accuracy based on user interaction data (Kumari & Laheri, 2025). Hybrid recommendation models have been shown to improve consumer happiness and relevancy (Kumari & Laheri, 2025). Personalized recommendation systems improve product discovery and purchase intent across digital platforms (Teepapal, 2025). Recent research also shows that AI recommender systems boost customer retention by giving highly relevant information and items (Kumari & Laheri, 2025).

2.3 CONSUMER ENGAGEMENT, TRUST AND ADVERTISEMENT TRANSPARENCY

AI-enabled customisation boosts consumer engagement on social media platforms (Teepapal, 2025). Consumer trust increases when AI advice is regarded as valuable and relevant (Teepapal, 2025). Transparent AI systems let users understand why recommendations are created, enhancing their trust in AI technologies (Teepapal, 2025). Despite the benefits of customisation, privacy concerns continue to be one of the most significant impediments to AI adoption. Ethical AI methods and transparent data utilization improve consumer trust and long-term involvement (Artificial Intelligence and Consumer Behaviour on Social Media, 2026).

2.4 AI PERSONALIZATION, REPEAT PURCHASE AND CUSTOMER LOYALTY

AI-powered personalization boosts consumer satisfaction by tailoring recommendations to individual tastes (Teepapal, 2025). Personalized shopping experiences have a positive influence on recurrent purchase intentions (Teepapal, 2025). AI-generated recommendations boost client loyalty by improving perceived usefulness and shopping convenience. Consumer trust serves as a critical link between AI personalization and client loyalty (Teepapal, 2025). According to Żyminkowska and Zachurzok-

Srebrny (2025), implementing customer-centric AI leads to better customer retention and corporate performance.

2.5 RESEARCH GAP

The most recent research has focused on AI adoption in global digital marketing and e-commerce contexts (Kumar, Malhotra, & Kathuria, 2025). The existing literature focuses on technical aspects of recommendation algorithms rather than consumer behavioural consequences (Kumari & Laheri, 2025). Few studies have looked into the combined impact of AI personalization on engagement, trust, product discovery, and customer loyalty among Indian social media users (Teepapal, 2025). Few empirical studies have looked at AI-powered personalized recommendation systems among digital media consumers in Chennai, highlighting the necessity for location-specific research.

3. RESEARCH METHODOLOGY

To accomplish each research goal, the study used the proper statistical methods. A One-Sample t-test was conducted to examine if consumer engagement with personalized ads is higher than that of generic ads. A One-Way ANOVA was used to determine if consumers thought personalized recommendations improved product discovery and saved time across various educational qualification groups. Pearson Correlation Analysis was used to investigate the connection between consumer trust and advertisement transparency. Lastly, Simple Linear Regression Analysis was used to investigate the impact of AI-based personalization on long-term consumer loyalty and repeat purchase behaviour. The researcher was able to successfully test the hypotheses and look at the links between the study variables thanks to these statistical tools.

3.1 SAMPLING DESIGN AND TECHNIQUE

Convenience sampling was employed in the study to select digital media consumers who were familiar with AI-powered personalized recommendations. This ensured that comments reflected consumers' perspectives and experiences with targeted ideas, customer interaction, trust, and purchase behaviour.

3.2 SAMPLE SIZE

The analysis was based on 215 respondents, ensuring that the study was adequately represented. The sample size used was sufficient to obtain reliable evidence about how AI-powered personalized recommendation systems affect digital media users.

3.3 DATA COLLECTION AND TOOLS OF ANALYSIS

Primary data were collected using a standardized questionnaire with closed-ended questions rated on a five-point Likert scale. AI-powered personalized recommendation systems, consumer interaction, time-saving and product discovery, advertisement transparency and consumer trust, repeat purchases and brand loyalty, and customer demographics were all addressed in separate sections. The collected data were reviewed to better understand the relationship between the research variables and to draw meaningful conclusions about the effects of AI-driven personalized recommendation systems on digital media users.

4. ANALYSIS AND INTERPRETATION

Hypothesis No.: 1

Null Hypothesis (H₀): Personalized advertisements do not receive higher consumer engagement than generic advertisements.

Alternative Hypothesis (H_a): Personalized advertisements receive higher consumer engagement than generic advertisements.

Table No : 1 One – Sample Test Analysis between Personalized advertisements and consumer engagement than generic advertisements.

	t	df	Sig(2-tailed)	Mean Difference	95% Confidence interval of the difference	
					Lower	Upper
CE_Mean	33.580	214	.000	9.58884	9.0260	10.1517

Source : Computed from Primary data

INFERENCE: The effectiveness of tailored ads in increasing customer engagement was investigated using a One-Sample t-test. The average score was 12.59 (N = 215, t = 33.580, p = 0.000). A significance

value of less than 0.05 indicates statistical significance. Thus, it can be inferred that among users of digital media, tailored ads result in noticeably better consumer engagement.

Hypothesis No.: 2

Null Hypothesis (H0): There is no significant difference among educational qualification groups regarding perceptions of time saving and product discovery through personalized recommendations.

Alternative Hypothesis (Ha): There is significant difference among educational qualification groups regarding perceptions of time saving and product discovery through personalized recommendations.

Table No : 2 Oneway – ANOVA between educational qualification groups regarding perceptions of time saving and product discovery through personalized recommendations.

	Sum of squares	df	Mean Square	F	Sig
Between Group	376.182	4	94.045	5.007	.001
Within Group	3944.528	210	18.783		
Total	4320.710	214			

Source : Computed from Primary data

INFERENCE : To determine whether opinions of time saving and product discovery through tailored recommendations vary among educational qualification groups, a One-Way ANOVA was used. A statistically significant difference ($F = 5.007$, $p = 0.001$) was seen between the educational qualification groups. As the significance value is below 0.05, the null hypothesis is disproved. Consequently, consumers' views of time savings and product discovery through personalized recommendation systems are greatly influenced by their educational background.

Hypothesis No.: 3

Null Hypothesis (H0): There is no significant relationship between advertisement transparency and consumer trust.

Alternative Hypothesis (Ha): There is significant relationship between advertisement transparency and consumer trust.

Table No: 3 Pearson Correlation Analysis between advertisement transparency and consumer trust.

		ADRS_Mean	ATCT_Mean
ADRS_Mean	Pearson Correlation	1	.759**
	Sig(2-tailed)		.000
	N	215	215
ATCT_Mean	Pearson Correlation	.759**	1
	Sig(2-tailed)	.000	
	N	215	215

Source : Computed from Primary data

ADRS – AI-Driven Personalized Recommendation Systems, ATCT – Advertisement Transparency and Consumer Trust

INFERENCE: The association between consumer trust and advertisement transparency was investigated using Pearson correlation analysis. The findings showed that consumer trust and advertisement transparency were strongly positively correlated ($r = 0.759$, $p = 0.000$). The link is statistically significant because the significance value is less than 0.05. This suggests that customer trust is positively correlated with advertisement transparency. Therefore, increasing consumer trust in AI-driven tailored recommendation systems is largely dependent on advertisement transparency.

Hypothesis No.: 4

Null Hypothesis (H0): AI-based personalization does not significantly influence repeat purchase and brand loyalty.

Alternative Hypothesis (Ha): AI-based personalization significantly influences repeat purchase and brand loyalty.

Table No : 4.1 shows simple regression with model summary.

Model	R	R Square	Adjusted Square	R	Std. Error of the Estimate
1	0.756 ^a	0.571	0.569		3.57933

a. Predictors: (Constant), ADRS_Mean

Table No : 4.2 shows simple regression with ANOVA^a.

Model	Sum of squares	df	Mean Square	F	Sig
Regression	3629.285	1	3629.285	283.281	0.000 ^b
Residual	2728.871	213	12.812		
Total	6358.156	214			

a. Dependent Variable: RPBL_Mean

b. Predictors: (Constant), ADRS_Mean

Table No : 4.3 shows simple regression with Coefficients^a.

Model	Unstandardized	Coefficients std. Error	Standardized Coefficients Beta	t	Sig
(Constant)	3.540	.788		4.494	.000
ADRS_Mean	.941	.056	.756	16.831	.000

a. Dependent variable: RPBL_Mean

INFERENCE: The impact of AI-based customisation on repeat business and brand loyalty was investigated using a Simple Linear Regression analysis. The statistical significance of the regression model was determined to be $p = 0.000$. Additionally, the coefficient results showed that AI-based customisation had a substantial impact on brand loyalty and repeat business ($p = 0.000$). AI-based personalization accounts for 57.1% of the variation in repeat business and brand loyalty, according to the R Square value of 0.571. Thus, among consumers of digital media, AI-based customisation greatly promotes recurring purchases and enduring brand loyalty.

5. FINDINGS OF THE STUDY

- The age group of up to 25 years old comprised the majority of respondents (71.2%), followed by 26–35 years old (11.6%), 36–45 years old (8.8%), and 46–55 years old (6.5%). The age group above 55 years old comprised the minority (1.9%).
- 36.3% of respondents were men, while 63.7% of respondents were women.
- Undergraduates made up the majority of respondents (62.8%), followed by postgraduates (17.2%), professionals (7.9%), those up to HSC (7.4%), and holders of diplomas or ITIs (about 4.7%).
- The majority of respondents (42.8%) reported a monthly family income of less than ₹50,000, followed by ₹50,001–₹75,000 (22.3%), ₹75,001–₹1,00,000 (20.9%), and more than ₹1,00,000 (14.0%).
- 78.6% of respondents were single, compared to 21.4% who were married.
- Private sector employment accounted for the largest percentage of respondents (38.6%), followed by self-employment (31.2%), government employment (15.8%), and company ownership (14.4%).

- The majority of respondents (76.3%) were from nuclear households, whereas 23.7% were from joint families.
- Digital media consumers' consumer engagement was greatly increased by personalized ads ($t = 33.580$, $p = 0.000$, Mean = 12.59).
- Customers' views of time savings and product discovery through tailored recommendations were strongly impacted by educational qualification ($F = 5.007$, $p = 0.001$).
- Consumer trust was positively and significantly correlated with advertisement transparency ($r = 0.759$, $p = 0.000$).
- Brand loyalty and repeat purchase behaviour were greatly enhanced by AI-based personalization, which explained 57.1% of the variation ($R^2 = 0.571$, $\beta = 0.756$, $t = 16.831$, $p = 0.000$).

6. SUGGESTIONS

Businesses should continue to create AI-powered personalized recommendation systems to improve user experience and customer happiness. Increased transparency in the recommendation-generating process should receive more attention because it generates greater customer trust. Furthermore, businesses should ensure that recommendation systems are updated on a regular basis to account for changing client preferences and behaviour. To increase trust in personalized services, digital platforms should provide users with more detailed information about data usage. To enhance customer engagement, marketers should provide more dynamic and engaging content. To avoid user dissatisfaction, attempts should be made to reduce excessive or irrelevant recommendations.

Businesses should focus on improving the accuracy of product suggestions to help them make better decisions. Awareness and training programmes can be created to improve customers' understanding of AI-based personalization. Businesses should implement feedback systems to continuously improve the quality of recommendations. The ethical and open application of AI will aid long-term client loyalty and consistent corporate success.

7. FUTURE SCOPE OF STUDY

1. Future research can look into how Generative AI enhances tailored recommendations on social media.
2. Research can be conducted on real-time AI predictions of user preferences and behaviours.
3. The impact of AI recommendations on user purchasing decisions can be investigated in greater detail.

8. CONCLUSION

The study comes to the conclusion that consumer behaviour in digital media is significantly improved by AI-driven tailored recommendation systems. While tailored recommendations promote time savings and product discovery, personalized ads successfully increase consumer engagement. Transparency in advertising is essential to building consumer trust. Additionally, AI-based customisation greatly promotes long-term brand loyalty and repeat purchase behaviour. Overall, the results show that tailored recommendation systems improve customer satisfaction and foster closer bonds with clients.

Therefore, when used morally and successfully, AI-driven personalization can be seen as a potent instrument in contemporary digital marketing.

References

- Arrieta, A. B., Díaz-Rodríguez, N., Del Ser, J., Bennetot, A., Tabik, S., Barbado, A., ... Herrera, F. (2020). Explainable Artificial Intelligence (XAI): Concepts, taxonomies, opportunities and challenges toward responsible AI. *Information Fusion*, 58, 82–115.
- Balakrishnan, J., & Dwivedi, Y. K. (2024). Conversational commerce: Entering the next stage of AI-powered digital assistants. *Annals of Operations Research*, 333(2), 653–687.
- Chaffey, D. (2022). *Digital marketing: Strategy, implementation and practice*. Pearson Education.
- Chen, C., Tian, A. D., & Jiang, R. (2023). When post hoc explanation knocks: Consumer responses to explainable AI recommendations. *Journal of Interactive Marketing*, 59(3), 234–250.

- Cheng, Y., & Jiang, H. (2022). Customer–brand relationship in the era of artificial intelligence: Understanding the role of chatbot marketing efforts. *Journal of Product & Brand Management*, 31(2), 252–264.
- Dwivedi, Y. K., Kshetri, N., Hughes, L., Slade, E. L., Jeyaraj, A., Kar, A. K., ... Wright, R. (2023). So what if ChatGPT wrote it? Multidisciplinary perspectives on opportunities, challenges and implications of generative conversational AI. *International Journal of Information Management*, 71, 102642.
- Grewal, D., Roggeveen, A. L., & Nordfält, J. (2020). The future of retailing. *Journal of Retailing*, 96(1), 6–12.
- Huang, M. H., & Rust, R. T. (2021). Artificial intelligence in service. *Journal of Service Research*, 24(1), 3–21.
- Kaplan, A. M., & Haenlein, M. (2021). Rulers of engagement: AI-based marketing and the future of social media. *Business Horizons*, 64(1), 1–12.
- Ribeiro, M. T., Singh, S., & Guestrin, C. (2016). “Why should I trust you?” Explaining the predictions of any classifier. In *Proceedings of the 22nd ACM SIGKDD International Conference on Knowledge Discovery and Data Mining* (pp. 1135–1144).
- Ricci, F., Rokach, L., & Shapira, B. (2015). *Recommender systems handbook* (2nd ed.). Springer.
- Smith, B., & Linden, G. (2017). Two decades of recommender systems at Amazon.com. *IEEE Internet Computing*, 21(3), 12–18.
- Sun, Y., Zhang, Y., & Zhou, R. (2021). Understanding consumers’ trust in AI-enabled recommendations. *Electronic Commerce Research and Applications*, 50, 101095.
- Zhang, S., Yao, L., Sun, A., & Tay, Y. (2019). Deep learning-based recommender system: A survey and new perspectives. *ACM Computing Surveys*, 52(1), 1–38.
- Zhang, Y., & Chen, X. (2020). Explainable recommendation: A survey and new perspectives. *Foundations and Trends in Information Retrieval*, 14(1), 1–101.