

The Influence of AI-based Personalized Advertising on Consumer Perception and Purchase Intention: A Study of Instagram Users in Amravati City

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Abstract

Artificial intelligence (AI) has become an important part of digital advertising, especially on social media platforms. Nowadays, Instagram uses AI algorithms to understand users' interests, search history, and online behavior so that advertisements can be shown according to individual preferences. Because of this, users often come across ads that closely match their needs and interests. This study attempts to examine the effect of AI-based personalized advertising on consumer perception and purchase intention among Instagram users in Amravati City.

For the purpose of this study, a descriptive research design was used. Primary data were collected from 30 active Instagram users living in Amravati City with the help of a structured questionnaire. The respondents were selected using the convenience sampling method. The study mainly focused on factors such as relevance of advertisements, usefulness, visual appeal, trust in advertisements, privacy concerns, and their influence on purchase intention.

The analysis of the responses shows that most users have a favorable opinion about AI-based personalized advertisements on Instagram. Many respondents stated that these advertisements are relevant to their interests and visually attractive, which helps them in making better purchase decisions. It was also observed that repeated exposure to personalized ads increases user interest and improves brand recall. However, a few respondents expressed concerns related to privacy and

the use of personal data for advertisement personalization.

The study concludes that AI-based personalized advertising on Instagram can be an effective marketing tool if used carefully. Transparency in data usage and responsible advertising practices are important to maintain user trust. The findings of this study may be useful for marketers and can also help future researchers who wish to study AI-driven advertising in greater detail.

Keywords: AI-Based Personalized Advertising, Instagram Advertising, Consumer Perception, Purchase Intention, Social Media Marketing.

Introduction

In the present business environment, advertising has undergone major changes due to the rapid development of digital technology and artificial intelligence (AI). Earlier, businesses mainly depended on traditional advertising media such as television, radio, newspapers, and magazines. These methods followed a mass marketing approach where the same message was shown to all consumers. Due to this, advertisements often failed to match individual consumer needs, which resulted in low engagement and interest.

With increasing competition and changing consumer expectations, companies have started shifting towards more personalized and data-based advertising methods. AI-based personalized advertising helps businesses analyze consumer information such as online searches,

browsing behaviour, interests, and past interactions. Using this data, advertisements are customized for individual users. Many earlier studies have shown that personalized advertisements are more relevant to consumers and help improve engagement as well as brand connection. Therefore, understanding consumer reactions to AI-driven advertising has become important for marketers.

Social media platforms play a key role in the use of AI-based advertising, and Instagram is one of the most popular platforms in this area. Initially, Instagram was only used for sharing photos, but over time it has developed into a strong advertising platform. It uses AI algorithms to suggest content and advertisements based on users' activities and preferences. This type of personalization helps in improving user experience and also supports better interaction between brands and consumers.

In India, the use of Instagram has increased rapidly due to easy access to smartphones and affordable internet services. Although many studies focus on metropolitan cities, the use of Instagram and personalized advertisements is also increasing in tier-II cities such as Amravati. People in these cities are becoming more active on digital platforms, which makes it important to study their views on AI-based personalized advertising.

Consumer perception plays an important role in deciding how effective an advertisement is. When personalized advertisements are seen as relevant and trustworthy, they are more likely to influence consumers positively. At the same time, concerns related to privacy and personal data usage may create negative attitudes. Purchase intention refers to the likelihood of a consumer buying a product after seeing an advertisement and is closely related to consumer perception. Positive perception towards AI-based personalized advertising often leads to higher purchase intention.

Most existing research studies focus on metro cities or international markets. Very few studies have examined smaller cities. Therefore, the present study attempts to analyze the influence of AI-based personalized advertising on consumer perception and purchase intention among Instagram users in Amravati City.

Statement of the Problem

The increasing use of artificial intelligence (AI) has changed the way advertising is carried out on social media platforms like Instagram. AI-based systems

collect and analyze users' online behaviour, interests, and browsing patterns to show personalized advertisements. This approach helps businesses reach potential customers more effectively and improves the chances of product purchase. However, it also raises issues related to privacy, personal data usage, and repeated exposure to similar advertisements.

Most research related to AI-based personalized advertising has been conducted in metropolitan cities or foreign countries. Very limited studies focus on non-metro or tier-II cities. Cities such as Amravati have different social, economic, and digital characteristics, which may affect how consumers respond to personalized advertisements on Instagram.

Due to the lack of city-specific research, there is a gap in understanding how AI-based personalized advertising influences consumer perception and purchase intention in tier-II cities. Hence, the present study focuses on examining the perception of Instagram users in Amravati City towards AI-based personalized advertising and studies its impact on their purchase intention.

Review of Literature

The increasing use of artificial intelligence (AI) in digital marketing has brought major changes in advertising practices, especially on social media platforms such as Instagram. Many studies have pointed out that AI-based personalized advertising helps marketers design advertisements according to consumer interests, preferences, and online behaviour. By using consumer data, marketers are able to deliver more relevant messages, which improves engagement and communication with consumers. As a result, several researchers have focused on studying the impact of personalized advertising on consumer perception, brand relationship, and purchase intention.

Elrizal and Astuti (2024) conducted a study on personalized advertising on Instagram with a focus on Generation Z consumers. The study was based on data collected from 310 respondents aged between 16 and 25 years and was analyzed using Structural Equation Modeling. The results showed that perceived personalization positively influences brand involvement, brand commitment, and brand loyalty. The study suggests that personalized advertisements play an important role in strengthening consumer–brand relationships, particularly among younger users who spend significant time on Instagram.

Gia Khuong An and Ngo (2024) examined how AI-powered personalized advertising affects purchase intention in the Vietnamese digital market. Their study highlighted that factors such as trust, relevance, and usefulness act as important mediators. The findings revealed that personalization by itself is not enough to increase purchase intention. Consumers are more likely to respond positively only when they perceive advertisements as trustworthy and relevant. This study clearly emphasizes the importance of consumer perception in determining the success of AI-based advertising.

Younis and Safeer (2024) focused on the role of AI-driven personalization in improving customer experience in online shopping environments. Their research examined the use of tools such as recommendation systems, chatbots, and personalized digital content. The findings indicated that AI-based personalization significantly enhances customer satisfaction and customer loyalty. The study concluded that personalized digital experiences help improve engagement and support long-term relationships with customers.

Muralidharan (2024) studied the impact of artificial intelligence on personalized targeting in social media advertising. The research reported that companies using AI-based targeting techniques were able to reach more relevant audiences, which resulted in higher engagement and better business performance. However, the study also raised concerns related to consumer privacy and data security. It was observed that excessive personalization may create discomfort among consumers and negatively affect their trust towards brands.

Sharma and Singh (2024) examined the influence of personalized social media promotions on consumer purchase intention in the Indian context. Their findings showed that personalized advertisements on platforms like Facebook and Instagram positively affect consumer trust, engagement, and purchase intention. The study highlighted that perceived relevance of advertisements plays a major role in shaping consumer responses.

Li (2024) explored the role of artificial intelligence in improving personalized digital advertising through recommendation systems and behavioural data analysis. The study concluded that AI helps in delivering customized advertising content that matches consumer interests, thereby improving advertising effectiveness. At the same time, the study pointed out challenges

related to technology adoption and rapidly changing market conditions. It also emphasized the importance of ethical practices and continuous innovation while using AI in advertising. The findings suggest that personalized advertisements strengthen consumer-brand relationships, particularly among younger consumers who are highly active on Instagram.

Mehta and Kulkarni (2020) investigated the impact of personalized social media advertisements on consumer purchase intention. Their study identified that factors such as advertisement relevance, frequency, and usefulness positively influence purchase intention, while privacy concerns negatively affect consumer trust. The findings suggest that although personalization improves engagement, excessive personalization may lead to irritation and reduced confidence among consumers.

Research Gap

Although several studies have examined AI-based personalized advertising and its influence on consumer behavior, most existing research has primarily focused on metropolitan cities, international markets, or specific demographic groups such as Generation Z and millennials. Limited empirical evidence is available from smaller, non-metro cities like Amravati, where consumer behavior, cultural factors, income levels, and digital awareness may differ significantly. Moreover, few studies have simultaneously examined the combined influence of AI-based personalized Instagram advertising on consumer perception and purchase intention in such contexts. This gap highlights the need for the present study focusing on Instagram users in Amravati City.

4. Objectives of the study

1. To study the perception of Instagram users in Amravati city towards AI-based personalized advertisements.
2. To study the influence of AI-based personalized advertisements on the purchase intention of Instagram users.

6. Research methodology

Research methodology represents the structured approach used to carry out research in a systematic and scientific manner. It explains the methods and procedures employed for collecting, analyzing, and interpreting data to fulfill the objectives of the study. The present research follows an appropriate

methodological framework to investigate the influence of AI-based personalized advertising on consumer perception and purchase intention among Instagram users in Amravati City.

6.1. Research Design

The present study follows a descriptive research design to explore and describe the influence of AI-based personalized advertising on consumer perception and purchase intention among Instagram users in Amravati City. This design is suitable as the study aims to capture and summarize existing consumer opinions, attitudes, and behavioural tendencies related to AI-driven advertisements rather than establishing cause-and-effect relationships.

6.2 Sources of Data

The present study is based on both primary and secondary sources of data.

Primary data were collected directly from Instagram users in Amravati City through a structured questionnaire designed to examine their perception of AI-based personalized advertising and its influence on purchase intention. This source provided first-hand and specific information relevant to the objectives of the study.

Secondary data were obtained from previously published research articles, academic journals, books, conference papers, and reliable online sources related to artificial intelligence, personalized advertising, consumer perception, and social media marketing. These sources were used to develop the theoretical background and support the findings of the study.

6.3 Sampling Design

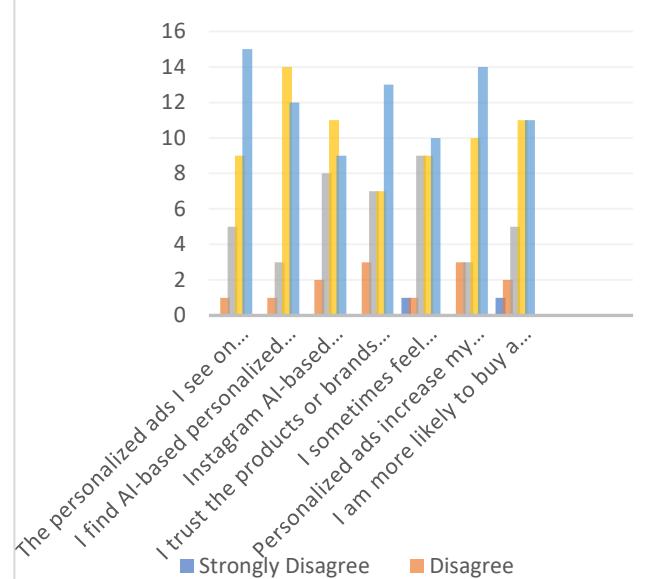
The study focused on active Instagram users in Amravati City who were exposed to AI-based personalized advertisements. The population included frequent Instagram users encountering AI-driven ads such as sponsored posts, product recommendations, and story ads. Individual Instagram users served as the sampling unit, and the sampling frame was formed through local social media groups, community pages, and college networks. A sample size of 30 respondents was selected using the convenience sampling technique based on availability and willingness to participate. Primary data were collected through a structured questionnaire administered to Instagram users in Amravati City.

7. Data Analysis and Interpretation

1. Perception and purchase intention of Instagram Users towards AI-Based Personalized Advertisements

Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
The personalized ads I see on Instagram usually match my interests.	0	1	5	9	15
I find AI-based personalized ads useful in helping me make purchase-related decisions.	0	1	3	14	12
Instagram AI-based personalized ads are visually appealing to me.	0	2	8	11	9
I trust the products or brands shown in AI-Based Instagram personalized ads.	0	3	7	7	13
I sometimes feel uncomfortable with how much Instagram knows about my preferences.	1	1	9	9	10

Personalized ads increase my interest in buying products on Instagram.	0	3	3	10	14
I am more likely to buy a product after seeing a AI-based personalized ad on Instagram	1	2	5	11	11

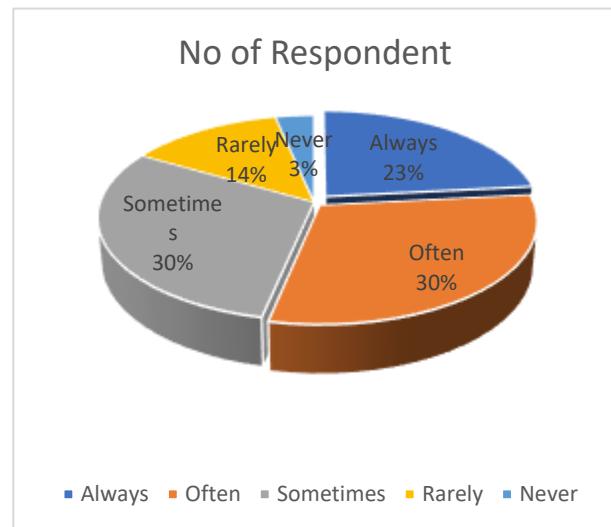


The findings show that most Instagram users in Amravati City have a positive perception of AI-based personalized advertisements, as the majority agreed that such ads match their interests and are useful in making purchase-related decisions. Respondents also perceived these advertisements as visually appealing, which enhances user engagement on the platform. Trust in the products and brands promoted through AI-based personalized ads was found to be reasonably high, indicating a favorable brand perception.

However, a section of respondents expressed discomfort regarding the extent of data usage and personalization by Instagram, reflecting concerns related to privacy. Despite this, the results clearly indicate that AI-based personalized advertisements increase users' interest in purchasing products and positively influence their likelihood of buying after viewing such ads. Overall, the study confirms that AI-driven personalization plays a significant role in shaping

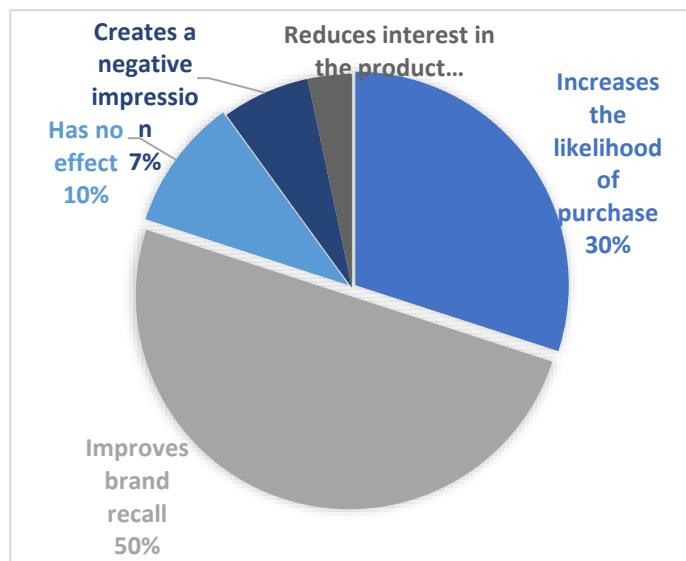
consumer perception and purchase intention on Instagram.

2. How often do you buy a product after seeing a personalized ad on Instagram



The table indicates how frequently respondents purchase products after viewing personalized advertisements on Instagram. Out of 30 respondents, 9 respondents (30%) reported that they often purchase products, while another 9 respondents (30%) stated that they sometimes make purchases after seeing such advertisements. Additionally, 7 respondents (23.3%) mentioned that they always buy products after viewing personalized ads. On the other hand, a smaller number of respondents reported low influence, with 4 respondents (13.3%) rarely purchasing products and only 1 respondent (3.3%) never purchasing products after seeing personalized advertisements. Overall, the results clearly show that personalized Instagram advertisements have a strong influence on purchase behavior, as a majority of respondents fall under the categories of always, often, or sometimes.

3. When the same personalized advertisement appears repeatedly, how does it affect your buying decision?



The data shows that repeated personalized advertisements have a mainly positive influence on buying decisions. Half of the respondents (50%) stated that repeated ads improve brand recall, while 30% reported that they increase the likelihood of purchase. A small proportion of respondents (10%) felt that repeated ads have no effect. However, only a few respondents perceived negative effects, with 7% indicating that repeated ads create a negative impression and 3% stating that they reduce interest in the product.

8. Findings of the Study

1. The data shows that a majority of respondents agree or strongly agree that AI-based personalized advertisements on Instagram match their interests, indicating effective ad targeting.

2. Most respondents feel that AI-based personalized ads are useful in helping them make purchase-related decisions, showing a practical influence of such advertisements.

3. Instagram's AI-based personalized advertisements are generally perceived as visually appealing, as more respondents agreed than disagreed with this statement.

4. Trust in products or brands shown through AI-based personalized advertisements is present but not very strong, as responses are divided between agreement and neutrality.

5. A noticeable number of respondents feel uncomfortable with how much Instagram knows about their preferences, highlighting the presence of privacy concerns among users.

6. Personalized advertisements increase buying interest for most respondents, as a higher number agreed or strongly agreed with this statement.

7. In terms of actual buying behavior, most respondents reported that they often or sometimes purchase products after seeing personalized advertisements, while very few reported never purchasing.

8. Repeated appearance of the same personalized advertisement mainly helps in improving brand recall and increasing the likelihood of purchase, as reported by most respondents.

9. Only a small proportion of respondents stated that repeated personalized advertisements reduce interest or create a negative impression.

10. Overall, the findings indicate that AI-based personalized advertisements on Instagram positively influence consumer interest and purchase behavior, though privacy concerns remain a limiting factor.

9. Managerial Implications

The findings of the study indicate that marketers can effectively continue using AI-based personalized advertising on Instagram, as most users consider such advertisements relevant and helpful while making purchase-related decisions. Managers should give special attention to improving the visual quality, design, and creativity of personalized advertisements so that user interest and engagement can be maintained over time.

Since the level of trust in advertised brands was found to be moderate, companies need to focus on building stronger credibility. This can be achieved by sharing clear and honest product information, encouraging genuine customer reviews, and maintaining consistent brand communication. The study also reveals that some users have concerns related to privacy and data usage. Therefore, marketers should clearly explain how consumer data is used and provide users with better control over advertisement preferences to reduce discomfort.

Additionally, repeated exposure to personalized advertisements was found to improve brand recall and increase the likelihood of purchase. Managers should

therefore ensure consistency in messaging while carefully controlling advertisement frequency to avoid irritation or negative impressions. Overall, the effective use of AI-based personalization, along with trust-building and privacy-sensitive practices, can help marketers improve consumer interest and positively influence purchase behaviour on Instagram.

10. Limitations of the Study

The present study has certain limitations that should be considered while interpreting the findings. The study is based on a small sample size, which may not fully represent the views of all Instagram users. It focuses only on consumers' perceptions of AI-based personalized advertisements and does not examine the technical functioning of Instagram's AI algorithms.

The research is limited to Instagram as a single social media platform and does not consider consumer behaviour on other platforms. Moreover, the study examines perception and purchase intention rather than actual purchase behaviour, which may differ in real-life situations. These limitations suggest that the findings should be interpreted with caution.

11. Recommendations

Based on the findings of the study, it is recommended that companies using Instagram for advertising should continue investing in AI-based personalization, as users generally perceive such advertisements as relevant and useful in their purchase decision-making process. Marketers should place greater emphasis on improving the visual appeal and creativity of advertisements to sustain user engagement.

As trust in advertised brands was found to be moderate, businesses should work on improving transparency by providing accurate product details, genuine customer feedback, and clear brand messaging. Since some users expressed concerns related to data usage, companies should follow transparent data privacy practices and allow users greater control over advertisement settings. In addition, as repeated exposure to personalized advertisements improves brand recall and purchase likelihood, managers should maintain consistent advertising messages while ensuring that ad frequency is carefully managed.

12. Scope for Future Research

The present study focuses on AI-based personalized advertising and its influence on consumer perception and purchase intention among Instagram users in

Amravati City. Future research can expand the scope by increasing the sample size and including respondents from different cities or regions to improve the generalizability of the results.

Further studies may compare the effectiveness of AI-based personalized advertising across multiple social media platforms such as Facebook, YouTube, and Snapchat to understand platform-specific differences. Researchers may also study actual purchase behaviour instead of relying only on perception and purchase intention to gain deeper practical insights.

In addition, advanced statistical techniques such as regression analysis or structural equation modeling can be used to examine the relationship between personalization, trust, privacy concerns, and consumer behaviour in greater detail. Qualitative methods such as interviews or focus group discussions may also be used to explore consumer emotions, attitudes, and ethical concerns related to AI-driven advertising. Future research can also examine the long-term impact of personalized advertising on brand loyalty, customer satisfaction, and trust.

13. Conclusion

The present study was conducted to examine the influence of AI-based personalized advertising on consumer perception and purchase intention among Instagram users in Amravati City. With the rapid adoption of artificial intelligence in digital marketing, understanding consumer responses to personalized advertisements has become increasingly important.

The findings of the study show that AI-based personalized advertisements are generally viewed positively by Instagram users. Most respondents felt that such advertisements match their interests, are visually appealing, and provide useful information that helps in making purchase-related decisions. The study also indicates that personalized advertisements increase consumer interest and positively influence purchase intention. Many respondents reported purchasing products after being exposed to personalized advertisements, highlighting the role of AI-driven targeting in shaping buying behaviour.

At the same time, the study identifies concerns related to privacy and data usage. Some respondents expressed discomfort regarding the extent to which Instagram tracks their preferences. This suggests that while personalization improves relevance and engagement, lack of transparency may negatively affect consumer

trust. Therefore, marketers must strike a balance between effective personalization and ethical data practices.

Overall, the study concludes that AI-based personalized advertising on Instagram is an effective marketing tool when used responsibly. By focusing on relevance, visual appeal, trust-building, and privacy protection, marketers can positively influence consumer perception and purchase intention. The findings of this study offer useful insights for businesses and also provide a base for future research in the field of AI-driven digital advertising.

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