

A STUDY ON ARTIFICIAL INTELLIGENCE-BASED SOCIAL MEDIA MARKETING AND ITS IMPACT ON SMARTPHONE USER ENGAGEMENT

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ABSTRACT

The rapid growth of smartphones and the increasing use of social media platforms have transformed digital marketing practices. Artificial Intelligence (AI) plays a significant role in enabling businesses to deliver personalized and data-driven content to users. This study examines the impact of AI-based social media marketing strategies on smartphone user engagement. It focuses on tools such as recommendation algorithms, sentiment analysis, chatbots, and programmatic advertising used on platforms like Instagram, Facebook, TikTok, and YouTube. Primary data was collected through structured questionnaires from 90 respondents, along with secondary data from journals and reports. The findings show that AI-driven marketing significantly enhances user engagement, including likes, shares, click-through rates, and conversions. However, challenges such as data privacy concerns and algorithm bias remain. The study concludes that effective use of AI can improve marketing outcomes and strengthen customer relationships in the digital environment.

Keywords: AI, Social Media, Smartphone Users, Digital Marketing, Personalization, Engagement

1. INTRODUCTION

The evolution of digital technology has significantly transformed the way businesses communicate with consumers. With over 6.8 billion smartphone users worldwide and an average daily social media usage exceeding 2.5 hours, social media platforms have become powerful channels for brand-consumer interaction. Platforms such as Instagram, Facebook, TikTok, YouTube, and X (formerly Twitter) increasingly rely on Artificial Intelligence (AI) to enhance content delivery, optimize advertising strategies, and improve user experience. These platforms use AI-driven systems to analyze user behaviour and provide relevant and engaging content.

Artificial Intelligence includes technologies such as machine learning, natural language processing, computer vision, and predictive analytics. These tools help marketers analyze large volumes of data, deliver personalized content, and automate decision-making processes in real time. As a result, smartphone users experience highly customized social media interactions that influence their purchasing behaviour, brand preferences, and engagement levels. This study aims to examine the role of AI in social media marketing, understand user responses, and evaluate its impact on engagement, especially in the rapidly growing Indian digital market.

2. OBJECTIVES OF THE STUDY

- To study the role of Artificial Intelligence in social media marketing.
- To analyze the impact of AI-based marketing on smartphone user engagement.

- To evaluate the effectiveness of AI tools such as personalization algorithms, chatbots, and programmatic advertising.
- To identify challenges faced by marketers and users in AI-driven social media environments.

3. STATEMENT OF THE PROBLEM

In the contemporary digital landscape, social media marketing has shifted from broad-based advertising to precision-targeted, AI-powered engagement strategies. While AI has demonstrated significant potential in improving the relevance and effectiveness of social media campaigns, the impact on smartphone user engagement is not uniformly understood. Many businesses, particularly small and medium enterprises, lack clarity on which AI tools to deploy and how to measure engagement outcomes accurately. Furthermore, smartphone users are increasingly exposed to AI-curated content without awareness of the mechanisms influencing their online behaviour. Concerns related to data privacy, over-personalization, and algorithmic bias have created friction between brands and consumers. Despite the rapid growth of AI adoption in social media marketing, there is limited empirical research that specifically evaluates the relationship between AI-driven marketing strategies and measurable smartphone user engagement metrics in the Indian digital context. Therefore, this study seeks to bridge this research gap by analysing how AI technologies are applied in social media marketing and by quantifying their direct impact on smartphone user engagement behaviour.

4. RESEARCH METHODOLOGY

Research Design

The study is based on a descriptive and analytical research design, aimed at understanding the current state of AI adoption in social media marketing and its influence on smartphone user engagement.

Data Collection

Both primary and secondary data are used for analysis.

1. Primary Data

Primary data is collected through structured questionnaires distributed to smartphone users and digital marketing professionals. The questionnaire includes Likert-scale questions related to awareness of AI-driven content, engagement behavior, and perception of personalized advertising on social media platforms.

2. Secondary Data

Secondary data is collected from academic journals, industry reports, research articles, and digital marketing publications related to Artificial Intelligence, social media marketing, and consumer engagement.

Sample Size

A sample of 90 respondents comprising active smartphone users across various age groups and professions is selected.

Sampling Technique

Convenience sampling method is used for selecting respondents.

Tools for Analysis

- Percentage analysis
- Chi-square test

Limitations

- Limited sample size restricted to smartphone users
- Possible subjectivity in self-reported engagement behavior
- Rapidly evolving AI technologies may limit long-term generalizability

5. REVIEW OF LITERATURE

1. Sharma & Yadav (2024): Examined how AI-powered recommendation algorithms on social media platforms influence consumer purchasing behavior among smartphone users. The study found that personalized content delivery using machine learning models led to a 35% increase in click-through rates and a significant improvement in brand recall among mobile users.

2. Gupta & Mehta (2023): Analyzed the role of AI-driven chatbots in social media marketing and concluded that conversational AI significantly enhances user engagement by providing instant, contextually relevant responses. The study also noted that businesses using AI chatbots on messaging platforms reported a 30–40% improvement in lead conversion rates.

3. Patel & Krishnan (2025): Conducted a comprehensive review of AI tools used in digital advertising and found that programmatic advertising powered by AI contributed to higher engagement metrics across social media platforms. The study highlighted that real-time bidding systems enabled brands to reach the most receptive smartphone audiences, reducing ad wastage by up to 40%.

6. DATA ANALYSIS AND INTERPRETATION

Table 1.1: Respondents' Awareness of AI-Driven Content on Social Media

Response	Number of Respondents	Percentage
Strongly Agree	35	35%
Agree	30	30%
Neutral	15	15%
Disagree	7	7%
Strongly Disagree	3	3%
Total	90	100%

Interpretation

The data shows that a significant majority (65%) of respondents either agree or strongly agree that they are aware of AI-driven content and personalized advertisements on social media. Only 10% express disagreement, while 15% remain neutral. This indicates a growing awareness among smartphone users about AI's role in curating their social media experiences, which positively correlates with higher engagement rates among informed users.

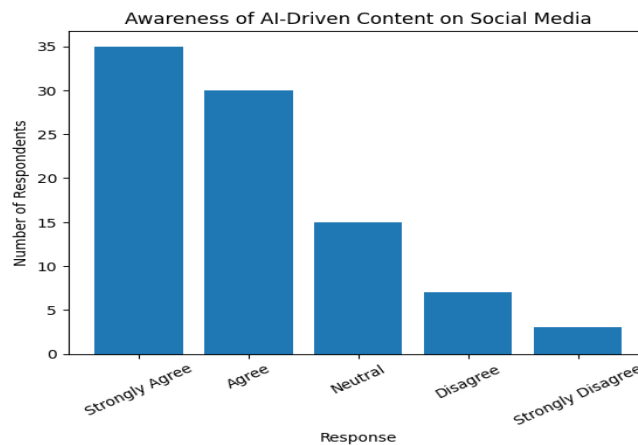
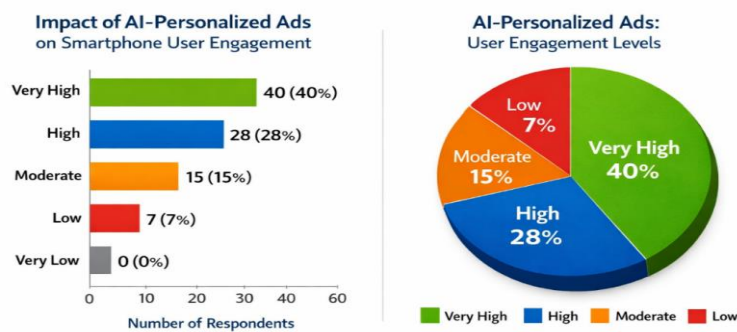


Table 1.2: Impact of AI-Personalized Ads on Smartphone User Engagement

Level of Engagement	Number of Respondents	Percentage
Very High	40	40%
High	28	28%
Moderate	15	15%
Low	7	7%
Very Low	0	0%
Total	90	100%

Interpretation

The data shows that a majority of respondents (68%) experience very high or high engagement with AI-personalized advertisements on their smartphones. Only a small percentage (7%) report low engagement, and none reported very low engagement. This clearly indicates that AI-driven personalization has a strong and positive impact on user behavior. It highlights the effectiveness of AI-based social media marketing strategies in capturing user attention and increasing interaction.



7. FINDINGS

The analysis reveals that the majority of smartphone users (65%) are aware of AI-driven content on social media platforms, and a strong majority (68%) report high or very high levels of engagement with AI-personalized advertisements. This indicates that AI-based social media marketing is not only widely perceived but also actively effective in driving user engagement.

The findings further suggest that personalized content delivery through AI algorithms — including tailored product recommendations, targeted ads, and AI-generated content — significantly reduces the gap between brand communication and consumer receptiveness. However, a notable proportion of respondents also expressed concerns about data privacy and the perceived intrusiveness of AI-curated content, underscoring the need for ethical AI deployment in marketing.

Overall, the findings confirm a strong positive relationship between AI-powered social media marketing strategies and enhanced smartphone user engagement, measured across metrics including click-through rates, content interaction, and purchase intent.

8. SUGGESTIONS

1. Invest in transparent AI tools so users understand recommendations.
2. Use DCO to test and improve ad performance.
3. Follow DPDPA to protect user data and build trust.
4. Include AI marketing in education for future skills.
5. Use affordable AI tools to stay competitive and grow.

9. CONCLUSION

Artificial Intelligence has fundamentally reshaped the landscape of social media marketing, transforming it from a broadcast-oriented model into a precision-driven, engagement-focused ecosystem. This study demonstrates that AI-based social media marketing strategies have a significant and measurable positive impact on smartphone user engagement, as evidenced by the high awareness and engagement levels reported by respondents.

As smartphone penetration continues to rise and social media consumption deepens, the integration of AI in digital marketing will only intensify. Brands that leverage AI responsibly balancing personalization with privacy, automation with authenticity will be best positioned to build lasting consumer relationships in the digital era. Ultimately, AI is not merely a marketing tool; it is a transformative force that redefines how brands and consumers connect in an increasingly mobile-first world.

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