

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

Revathi G

Assistant Professor

Department of Commerce, Rathinam College of Arts and Science, Coimbatore, Tamil Nadu

Dhanabalan R

III B.Com BPS

Department of Commerce, Rathinam College of Arts and Science, Coimbatore, Tamil Nadu

ABSTRACT

The proliferation of smartphones and the exponential growth of social media platforms have collectively created a fertile ground for AI-driven marketing strategies. This study investigates how Artificial Intelligence (AI)-based social media marketing influences smartphone user engagement across key platforms such as Instagram, YouTube, and WhatsApp. Employing a descriptive research design with structured questionnaires administered to 120 respondents in Coimbatore, the study examines AI tools including algorithmic content curation, chatbots, sentiment analysis, and predictive advertising. Findings reveal that AI-powered personalization significantly enhances user interaction, dwell time, and brand recall among smartphone users. The research also identifies challenges such as data privacy concerns and algorithm opacity. The study concludes with actionable recommendations for marketers seeking to leverage AI responsibly and effectively in mobile-first digital ecosystems.

Keywords: Artificial Intelligence, Social Media Marketing, Smartphone User Engagement, Personalization, Digital Advertising, Coimbatore

1. INTRODUCTION

The advancement of digital technologies has significantly transformed modern marketing practices, particularly through the integration of Artificial Intelligence (AI) in social media platforms. AI enables businesses to deliver personalized content, targeted advertisements, and automated customer interactions, thereby enhancing overall marketing efficiency. With the rapid growth of smartphone usage, mobile devices have become the primary medium for accessing social media, making user engagement a critical factor for marketers. AI technologies such as machine learning, natural language processing, and deep learning are widely embedded in social media platforms to analyse user behaviour and preferences. These technologies support content recommendation systems, chatbots, and data-driven decision-making, allowing organizations to interact with consumers more effectively and in real time. In India, increasing digital literacy and affordable internet access have accelerated smartphone adoption, particularly in emerging cities like Coimbatore. Businesses in these regions are increasingly adopting AI-driven social media marketing strategies to remain competitive. However, limited academic research exists on the impact of AI in social media marketing within Tier-2 cities. This study aims to examine the role of AI in social media marketing and its impact on smartphone user engagement, along with consumer awareness and perceptions.

2. OBJECTIVES OF THE STUDY

1. To assess the level of AI adoption in social media marketing strategies targeting smartphone users in Coimbatore.
2. To examine the impact of AI-based personalization and content curation on smartphone user engagement metrics such as likes, comments, shares, and dwell time.
3. To evaluate consumer awareness of and attitudes toward AI-driven marketing techniques on social media platforms.
4. To identify the key challenges and ethical considerations associated with AI integration in social media marketing.
5. To suggest strategic recommendations for businesses and marketers aiming to optimize AI-based social media campaigns for smartphone audiences.

3. STATEMENT OF THE PROBLEM

Despite the rapid proliferation of AI tools in digital marketing, a significant knowledge gap persists regarding their specific impact on smartphone user engagement, particularly within the socio-economic and cultural context of emerging commercial hubs like Coimbatore. While global platforms routinely deploy AI-driven algorithms, local businesses often lack the technical infrastructure, expertise, and awareness necessary to harness these tools effectively. Simultaneously, smartphone users are increasingly exposed to algorithmically curated content without a clear understanding of how AI shapes their online experiences, raising concerns about informed consent, data privacy, and manipulative marketing practices. This study seeks to bridge these gaps by systematically examining the relationship between AI-based social media marketing and smartphone user engagement in Coimbatore.

4. REVIEW OF LITERATURE

A substantial body of research underscores the transformative role of AI in reshaping digital marketing landscapes. The following selected studies provide the theoretical and empirical foundation for this research:

4.1 AI in Consumer Behaviour

Farooq and Yuen (2024) conducted a systematic literature review establishing that AI-driven recommendation systems and chatbots significantly influence consumer attitudes and purchase decisions. Their study noted that while AI tools enhance convenience and personalization, trust deficits and data privacy concerns remain persistent barriers to consumer acceptance.

4.2 AI Features and Purchase Intention

Erliana (2025) examined AI features such as personalization engines, chatbots, and virtual try-on tools in web commerce, finding that these technologies materially enhance customer experience and elevate purchase intention. The study emphasized the role of perceived usefulness and ease of use as mediating variables in AI adoption.

4.3 Consumer Perception of AI in Retail

Khandelwal and Singh (2025) investigated consumer perception of AI in online retail, identifying trust, transparency, and ethical AI deployment as critical determinants of adoption. They highlighted the importance of designing consumer-centric AI interfaces that prioritize user empowerment over algorithmic manipulation.

4.4 Social Media Algorithms and Engagement

Research by Huang et al. (2023) demonstrated that AI-powered content recommendation algorithms on platforms like YouTube and TikTok substantially increase session duration and interaction rates, with personalized feeds generating up to 70% higher engagement compared to non-personalized content streams.

4.5 AI in Mobile Marketing

Verma and Sharma (2024) explored AI applications in mobile marketing, concluding that push notifications, location-based advertising, and in-app AI assistants improve click-through rates and user retention when appropriately calibrated to individual behavioral patterns.

5. RESEARCH METHODOLOGY

5.1 Research Design

The study adopts a descriptive research design, integrating both quantitative and qualitative methodologies to comprehensively examine AI-based social media marketing and its impact on smartphone user engagement. The mixed-method approach enables triangulation of findings, enhancing the validity and reliability of conclusions.

5.2 Data Collection

Primary data were gathered using a structured questionnaire administered to smartphone users and business owners/marketers in Coimbatore. The questionnaire covered dimensions of AI awareness, platform usage patterns, engagement behaviors, attitudes toward personalized advertising, and data privacy concerns. Secondary data were sourced from peer-reviewed journals, industry reports (NASSCOM, Statista, IAMAI), and institutional publications.

5.3 Sample Design

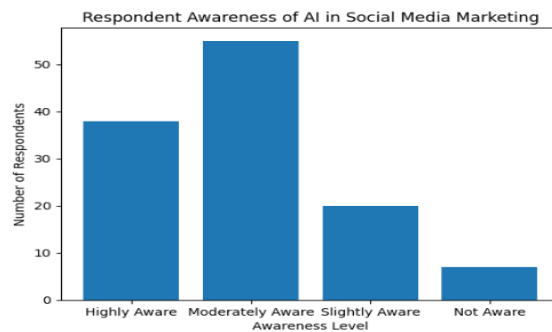
Parameter	Details
Population	Smartphone users and digital marketers in Coimbatore
Sample Size	120 respondents
Sampling Technique	Convenience & Purposive Sampling
Age Group	18 – 45 years
Data Collection Period	January – March 2025
Tools for Analysis	Percentage analysis, Chi-square test, Likert scale

6. DATA ANALYSIS AND INTERPRETATION

Table 1: Respondent Awareness of AI in Social Media Marketing

Awareness Level	Number of Respondents	Percentage (%)
Highly Aware	38	31.7%
Moderately Aware	55	45.8%
Slightly Aware	20	16.7%

Awareness Level	Number of Respondents	Percentage (%)
Not Aware	7	5.8%
Total	120	100%

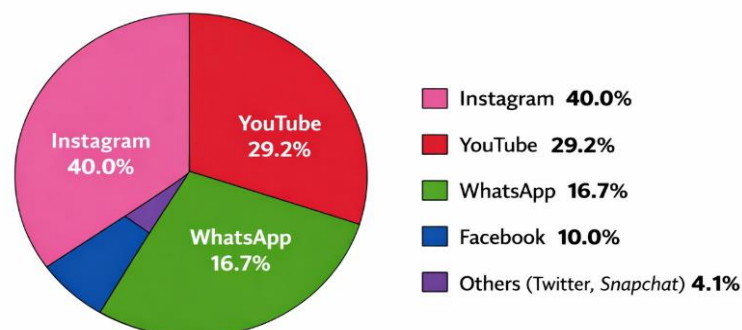


Interpretation: The majority of respondents (45.8%) demonstrate moderate awareness of AI applications in social media marketing, while 31.7% exhibit high awareness. Only 5.8% are entirely unaware, suggesting that AI-driven marketing has achieved meaningful visibility among Coimbatore's smartphone users, though significant room for deeper consumer education remains.

Table 2: Most Preferred Social Media Platforms for AI-Driven Content

Platform	Respondents	Percentage (%)
Instagram	48	40.0%
YouTube	35	29.2%
WhatsApp	20	16.7%
Facebook	12	10.0%
Others (Twitter, Snapchat)	5	4.1%
Total	120	100%

Table 2: Most Preferred Social Media Platforms for AI-Driven Content

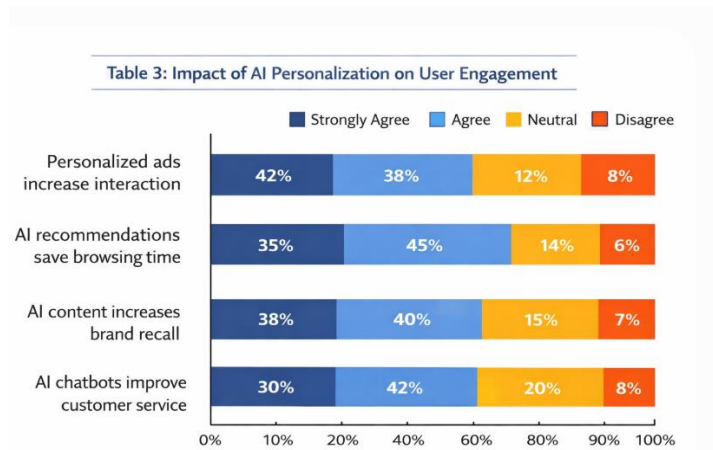


Interpretation: Instagram and YouTube emerge as the dominant platforms through which AI-curated content reaches smartphone users, accounting for nearly 70% of responses. This

underscores the centrality of visual and video content in AI-driven social media marketing strategies targeting younger demographics.

Table 3: Impact of AI Personalization on User Engagement

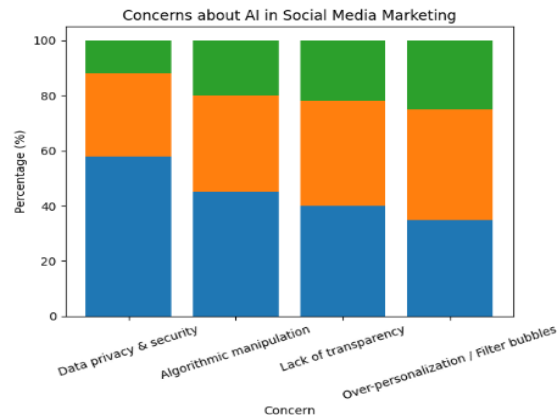
Engagement Factor	Strongly Agree (%)	Agree (%)	Neutral (%)	Disagree (%)
Personalized ads increase interaction	42%	38%	12%	8%
AI recommendations save browsing time	35%	45%	14%	6%
AI content increases brand recall	38%	40%	15%	7%
AI chatbots improve customer service	30%	42%	20%	8%



Interpretation: A consistent pattern of positive perception emerges across all engagement dimensions. Over 75% of respondents either agree or strongly agree that AI-driven personalization enhances interaction, reduces information overload, improves brand recall, and elevates customer service quality. These findings affirm the effectiveness of AI as a marketing enabler in the smartphone context.

Table 4: Consumer Concerns Regarding AI-Based Marketing

Concern	High (%)	Moderate (%)	Low (%)
Data privacy & security	58%	30%	12%
Algorithmic manipulation	45%	35%	20%
Lack of transparency	40%	38%	22%
Over-personalization / Filter bubbles	35%	40%	25%



Interpretation: Data privacy and security constitutes the most significant concern (58% high concern), followed by worries about algorithmic manipulation and transparency deficits. These findings signal that consumer trust remains a critical challenge for marketers deploying AI tools, necessitating greater emphasis on ethical AI practices and transparent communication.

7. FINDINGS

- The majority of smartphone users in Coimbatore are aware of AI-driven social media content, with Instagram and YouTube serving as primary touchpoints for algorithmically curated experiences.
- AI-based personalization — including targeted advertisements, content recommendations, and chatbot interactions — demonstrably enhances user engagement metrics such as interaction rates, session duration, and brand recall.
- Local businesses in Coimbatore are in early-to-intermediate stages of AI adoption, constrained by limited technical expertise, budget constraints, and insufficient awareness of available tools.
- Younger respondents (18–28 years) exhibit significantly higher engagement with AI-curated content compared to older cohorts, highlighting the importance of age-segmented AI marketing strategies.

8. SUGGESTIONS

- Businesses should invest in AI marketing platforms such as Meta Advantage+, Google Performance Max, and HubSpot AI to automate and optimize social media campaigns targeting smartphone users.
- Marketers must adopt a privacy-first approach by implementing clear data consent mechanisms, complying with the Digital Personal Data Protection Act (DPDPA) 2023, and communicating data usage policies transparently to consumers.
- Small and medium enterprises (SMEs) in Coimbatore should participate in government-sponsored digital upskilling programs (e.g., NASSCOM FutureSkills, Digital India initiatives) to build in-house AI marketing capabilities.
- Brands should develop omnichannel AI strategies that integrate social media engagement data with CRM systems, enabling a seamless and personalized customer journey across digital and physical touchpoints.
- Platforms and businesses alike should work toward greater algorithmic transparency, providing users with comprehensible explanations of why specific content or

advertisements are being served, thereby rebuilding trust and reducing perceived manipulation.

9. CONCLUSION

This study conclusively demonstrates that AI-based social media marketing exerts a significant and positive influence on smartphone user engagement. Personalized content delivery, intelligent advertising algorithms, and AI-powered customer interaction tools have transformed the social media landscape into a dynamic, responsive marketing ecosystem. For businesses operating in Coimbatore's vibrant commercial environment, embracing AI-driven marketing is no longer optional — it is a strategic imperative. However, the benefits of AI in social media marketing must be balanced against the legitimate concerns of consumers regarding data privacy, algorithmic transparency, and ethical targeting practices. Sustainable competitive advantage will accrue to those organizations that deploy AI responsibly — placing human values and consumer trust at the center of their digital marketing strategies. Future research should investigate the longitudinal impact of AI marketing on brand loyalty and explore the efficacy of specific AI tools across different industry verticals and demographic segments.

REFERENCES

1. Erliana, N. (2025). AI features driving purchase intention in web commerce. *EJOURNAL Unesa*. <https://ejournal.unesa.ac.id/index.php/jdbim/article/view/71956>
2. Farooq, A., & Yuen, K. (2024). Artificial Intelligence in consumer behaviour: A systematic literature review. *Research Gate*. <https://www.researchgate.net/publication/377658451>
3. Huang, L., Zhang, M., & Chen, X. (2023). Algorithmic content curation and user engagement on video platforms: Evidence from YouTube. *Journal of Digital Media & Policy*, 14(2), 145–168.