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A Study Assessing the Influence of AI-Based Targeted Advertising on Digital Engagement of Consumers

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Abstract
Artificial Intelligence is transforming how efficiently targeted advertising works in digital marketing. Unlike traditional methods, AI advertising leverages big data, predictive analytics, and machine learning algorithms, allowing for the automated creation of personalized marketing messages for online consumers at scale. This research seeks to assess the impact of AI-enabled targeted advertising on online consumer engagement through the constructs of attention, interaction, and trust, in addition to imprinting purchase intention. This research employs secondary data. This research determined that AI-targeted advertising has improved the precision targeting of consumers relative to the relevance and effectiveness of digital marketing campaigns overall, which led to enhanced consumer engagement and higher conversion rates. Positive consumer experiences can arise from the tailoring of marketing messages. On the downside, lax data privacy, perceived intrusiveness, and ethics can erode trust and, ultimately, engagement. Sustainability of loyalty calls for a fusion of personalization and transparency. In the context of online shopping platforms, strengthened consumer engagement is primarily attributable to AI-targeted advertising. It enhances customer experiences and brand loyalty when it is utilized effectively and properly. There should be transparency and ethical data usage while optimizing the benefits of AI-based personalization strategies

Keywords: Targeted Advertising, Online Consumer Engagement, Personalization, Digital Marketing, E-commerce

Introduction
Artificial Intelligence (AI) has become a powerful tool in digital marketing. It allows for new levels of personalization and engagement. As e-commerce and digital platforms rapidly grow, businesses are using AI technologies to create targeted advertising strategies. Traditional methods are different from AI-powered advertising that uses consumer data and behavior patterns to send tailored messages at the right time through the right channels.
Consumer engagement is defined as the cognitive, emotional, and behavioral response to marketing. It is crucially impacted by experience from personalization. Businesses with the usage of AI tools communicate with consumers in effective and efficient ways. Usage of AI tools increases click-through rates and conversions, and also builds long-lasting brand loyalty. This method of targeted marketing increases concerns about data privacy, ethical issues, and consumer trust.
In our increasingly digital society, vying for a user's attention is more time-consuming, as the competition for engagement increases. To tackle this problem, AI offers real-time monitoring

and analysis of consumer insight and enables a user's activity-based ad reaction acceleration. Through AI, businesses can use interactions on social media, search engines, mobile applications, and websites, and utilize natural language processing, image recognition, and predictive analytics to make a business-relevant connection on a myriad of platforms.
Automation in tracing the entire customer journey is another benefit AI offers. This allows marketers to strengthen their campaigns and forecast user technologies. Marketing AI in the form of recommendation engines, chatbots, and programmatic advertising also increases user involvement and interaction through advertising.
This paper explores the relationship between AI-Powered targeted advertising and online consumer engagement, while examining all the aspects, such as advantages and disadvantages that arise from using these technologies.

Review of Literature

Neves & Pereira (2025) This paper presents a systematic literature review—using the PRISMA framework—of how artificial intelligence (AI) and machine learning (ML) are transforming programmatic advertising. It finds that AI and ML significantly enhance precision targeting, real-time optimization, operational efficiency, and consumer engagement. However, the authors also highlight critical challenges such as algorithmic bias, privacy concerns, and ethical implications. The study emphasizes the importance of accountability and consumer transparency while proposing directions for future research in AI-integrated creativity, privacy, ethics, and consumer trust. Ultimately, the paper calls for a balanced approach that aligns technological innovation with cultural sensitivity and responsible advertising practices.

Yusuf (2024) This paper explains how Artificial Intelligence (AI) and big data can be used to support digital marketing initiatives by enhancing conversion rates, customer engagement, and Return on Investment (ROI). The research suggests three major AI-based strategies: predictive analytics, real-time personalization, and segmentation that positively influence marketing efficiency. Though, while industries such as e-commerce and finance can derive much benefit from such technology, healthcare industries are held back by regulatory issues that restrict their full potential. Lastly, the research concludes that the use of AI in digital marketing provides a competitive advantage and highlights the role of AI and big data in formulating more engaging and suitable digital marketing solutions, though ethical concerns such as data protection cannot be overlooked.

Kotha (2024) This article examines the intersection of artificial intelligence (AI) and human know-how in contemporary marketing to harness customer understanding and personalization. It proposes the Dual Intelligence Marketing Framework (DIMF) to facilitate collaboration between human and AI in marketing. The study, based on a mixed-methodology involving data from 127 retail firms and interviews with 34 marketing experts, illustrates that the union of AI-driven analytics with human creative strategy increases customer engagement (47%) and conversion (31%) rates compared to conventional methods. While AI is superior in identifying patterns and predictive modeling, human marketers bring in valuable emotional intelligence and contextual awareness that makes personalization activities more effective. The research underscores that effective implementation of AI involves overcoming technical infrastructure, talent acclimatization, and ethical hurdles, ultimately resulting in actionable recommendations for organizations to build on the complementary strength of artificial and human intelligence in marketing

Daoud (2023) This study investigates the efficacy of user-oriented strategies in terms of mobile marketing with the aim of influencing consumer engagement and conversion rates. The research adopted a quantitative approach whereby 400 questionnaires were distributed and 385 validated responses were analyzed using the Partial Least Squares (PLS) method. The results state that user-oriented strategies such as personalized content, interactive features, ease of use, location-based services, social media integration, and push notifications are majorly influencing consumer behaviors, thereby creating a carry-on effect in enhancing engagement and conversion rates. It was concluded that, basically, it's a personalization drive with seamless user experiences and interactivity features that elevate consumer engagement and conversion rates in mobile marketing.

Efendıoğlu (2023). This study addresses the present inquiry by executing a comprehensive bibliometric appraisal of peer-reviewed investigations intersecting digital marketing, machine learning, and artificial intelligence, culling data from the Scopus repository for the period extending from 2007 to 2023. By applying standard quantitative metrics, the analysis delineates the academic cartography of the discipline, elucidating emergent trajectories, foremost scholars, and predominant journals that chronicle the fast-configuring arena. The results underscore an escalating alignment of artificial intelligence and machine learning paradigms with inquiries into consumer behaviour, advertising personalization, and marketing automation, whilst signalling the cross-disciplinary magnetism of the theme. The evidential synthesis concludes that, although empirical provisioning is evidently ascending, the field commands prompt architectural cultivation of cognitive frames and an accelerated agenda for inter-disciplinary clustering to fortify the maturation of the intellectual enterprise.

Objective of the Study

- To examine the effects of AI-powered targeted advertising on online consumer engagement.
- To explore the impact of AI-personalization on consumer trust and purchase intention.

Need for the Study

Integrated Artificial Intelligence (AI) tools in digital marketing have revolutionized brand engagements with consumers, especially with the precision offered by targeted advertising. Through AI-driven algorithms, brands can now tailor advertising and marketing collateral to the specific interests and behaviors of consumers, potentially elevating interactions and impacting buying behavior. Notwithstanding, privacy issues, questions of ethics relating to data use, algorithms, technology deployed, and consumer trust present paradoxical privacy risks that invite investigation. Though some relevant literature explores the phenomenon of AI in marketing, the comprehensive study of the impact of AI on online consumer engagement has not been undertaken within an all-encompassing framework. To fill this void, the present study seeks to advance critical and analytical insights that will enable marketers, policymakers, and academicians to develop AI-driven advertising frameworks that counterbalance technical engagement with ethical designs and consumer-centric supports.

Research Methodology

The study is based on a critical review of the literature, employing a conceptual approach grounded in empirical data, including reflections on peer-reviewed journals, case studies, and well-established models of consumer behavior as they relate to e-commerce. The impact of AI-driven personalization technology on consumer engagement, brand interactions, and trust was investigated in previous studies. The methodology emphasizes synthesizing insights from diverse studies to identify patterns and implications for targeted advertising in online markets.

Research Gap

Scholarly inquiries have largely acknowledged the impetus of AI technologies to deepen personalization and to sharpen targeting mechanisms; nonetheless, there remains an empirical gap where frameworks such as the Stimulus-Organism-Response (S-O-R) model and Consumer Engagement Theory coalesce to furnish an integrated appraisal of AI vis-à-vis consumer engagement and purchase intention, especially when ethical considerations and trust deficits reside at the fore in online environments.

Conceptual Framework

This study is rooted in the Stimulus–Organism–Response (S-O-R) model (Mehrabian & Russell, 1974) focuses on the relationship between environmental stimuli and behavior in depth and internal thinking and feeling processes. Targeted advertising propelled by AI constitutes the stimulus in the form of advertisements created on a user-specific basis through AI and machine learning algorithms, utilizing extensive behavioral and contextual user data. Such algorithms have the capability to deliver ads with a high contextual and behavioral relevance. Teepapal. (2025) indicate that such stimuli heighten engagement by presenting user-centric ad content increasing attention and receptiveness, improving overall engagement. Organism aspects of the model detail the consumer's psychological and emotional response to AI ads, in this case focusing on trust, relevance, and perception of intrusiveness. Trust relates to data privacy perception. When advertisements seem trustworthy and sufficiently targeted, a consumer is likely to react positively. Too relevant advertisements, aimed to a specific user, can be regarded as intrusiveness. Joyee De & Chattopadhyay (2025) explain that this is especially the case when privacy of data is a concern. Trust becomes a critical mediating variable, as ethical concerns over AI usage can dampen the positive effects of personalization on engagement (Hassan, 2025).

The response touches on the outcome behaviors like consumer attention, interaction with the ad, and intention to purchase, which are pivotal to engagement in the Consumer Engagement Theory. This theory posits that there is a cognitive, emotional, and behavioral investment on the consumer’s and brand’s sides during their interactions. Engagement is not confined to purchase and includes viewing, clicking, sharing, and emotional investment. AI personalization sharpens these engagement behaviors. Trust and ethical bounds being respected enhances the impact. Yet, feelings of being manipulated or surveilled can damage the brand-customer relationship and loyalty over time.

Applying the S-O-R framework along with Consumer Engagement Theory, this conceptual model examines the impact of AI-driven advertising on the consumer’s online behavior in a more structured manner. The model includes the considerations of positive impact and trust along with relevancy as well as negative impact of engagement.

Results and Discussion

A targeted advertisement's effectiveness is greatly enhanced by the use of AI, as it is capable of delivering individualized and situationally appropriate content that deeply impacts consumer behavior online. AI is able to deliver hyper-personalized content by using sophisticated algorithms that can analyze one's online emotional tone, browsing habits, previous purchases, and even location. As Teepapal. (2025) state, accurately tailored advertisements considerably escalate consumer engagement by extending both the duration of content viewed and the rate of clicks. AI personalized advertisements that are temporally relevant are provided on the consumer's needs and circumstances, standing a greater chance of being viewed.

The integration of new technologies and AI intelligence-supported algorithms into digital marketing has greatly changed the perception and thinking of marketers all over the world. AI can create targeted advertisements by using a consumer's online history, location, age, or previous purchases. Stimuli such as advertisements that AI generates to engage the user's attention considerably increase the relevance and personal connection to the consumer. Such targeted messages, by AI algorithms, aim to improve the memorability of the advertisements and stir interest and recall under the guise of personal resonance.

Engagement as an organism continues to evolve as internal psychological factors, such as trust, relevance, and intrusiveness, play a significant role. Trust, in this case, acts as a key component which influences personalized exposure to engagement. As noted by Dhayalan and Preethi (2024),AI systems which are transparent in data collection and usage processes tend to build strong trust between consumers and brands, which facilitates greater participatory interaction with the adverts. On the contrary, perceived intrusiveness, which is the other side of the coin, invokes discomfort and drives engagement lower. Joyee De & Chattopadhyay (2025) report that consumers tend to consider privacy a greater concern than relevant advertising content, rendering the ads irrelevant and ineffective.

Increased engagement, attention, and intention to purchase observed in the literature are all outcomes of the response. As previously noted, a trust- and relevance-driven AI advert will likely activate engagement by clicking, visiting product pages, and in some cases, sharing the advert with others. Positive brand-consumer interactions result in the consumer developing a positive attitude towards the brand, and as we noted earlier, fundamental objective of contemporary digital marketing strategies. As highlighted, the combination of emotional connection and trust is what engages users meaningfully and not just on an interaction metric level.

Nonetheless, the findings also suggest that there is a level of measure that achieves equilibrium, and that achieving this equilibrium is a measure that is both fragile and responsive. Artificial Intelligence can enhance engagement in the short term; however, a user who feels watched or manipulated will develop negative associations with the brand. This irony, which is the paradox of privacy and personalization, has become a common discursive thread in recent writing. Therefore, there needs to be an equilibrium of personalization and ethical social responsibility that is respected by businesses who will adhere to ethical social responsibility by collecting data with full transparency and opt-in procedures.

To sum up, the review confirms that AI-enabled targeted advertising, when ethically aligned with data requisites, boosts online consumer engagement. This interaction has many layers including cognitive (attention), emotional (trust and relevance), and behavioural (interactivity and purchase intention). The intended interaction has many levels due to both the sophisticated technology and AI models used, and the way that the intended target audience, as consumers, perceive and emotionally process their interaction with the advertising.

Conclusion:

In conclusion, targeted advertising that uses AI changes the way consumers engage with online advertising through personalization, data analysis, and algorithmic intelligence. Based on the Stimulus–Organism–Response (S-O-R) model and Consumer Engagement Theory, the conceptual framework helped to explain how A.I.-generated advertisements serve as stimuli that influence the consumers' psychological conditions, particularly trust, relevance, and perceived intrusiveness.

The analysis has established that where A.I. ads were relevant based on context and were used ethically, consumer engagement was maximized, particularly through required attention, interactivity, and an increase in purchase intentions. Users are typically positive about ads that they feel help them, with the advertised products perceived as being trustworthy. Personally perceived breaches of privacy and any indications of manipulation mean less engagement and potentially damage brand relationships.

In addition, the connection between personalization and transparency is a key factor to success in any successful AI strategy. AI offers considerable opportunities for advertising personalization, but how successful this will be depends on how transparent and respectful companies are in their data collection. Personalization will only be successful in the long term if businesses can align their personalization strategy with consumer expectations, ethics, and law.

In summary, AI-powered targeted advertising provides some challenges and opportunities for marketers and businesses, the opportunity to use the technological capabilities of AI must not sacrifice consumer trust. This balance will probably signal the future of digital engagement in an increasingly data-driven marketplace.

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