


Chapter 4

How TikTok's AI Algorithms are Driving Customer Engagement in the age of Social Media Marketing

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ABSTRACT

The current chapter investigates TikTok's AI personalization tools which revolutionize marketing approaches as they redefine digital engagement. TikTok employs machine learning alongside natural language processing and computer vision to provide hyper-personalized content based on user behaviour analysis (Zaharia et al., 2024). AI systems optimize campaign targeting efforts while increasing ROI and adapting to user preference changes in real time (Babadoğan, 2024; Gungunawat et al., 2024). Growing concerns about data privacy issues alongside algorithmic bias and manipulation exist according to recent research by Saura et al., 2024 and Sarioguz & Miser, 2024. Personalization triggers user discomfort when it becomes intrusive (Ding et al., 2024), which underscores the necessity of ethical AI governance (Vukmirović et al., 2025). Using case studies this chapter demonstrates that real-time analytics and influencer campaigns boost engagement while providing a conceptual framework to explain how AI creates stronger brand-audience relationships (Lu, 2024; Shen, 2023; Suhardi et al., 2024).

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BACKGROUND

ByteDance introduced TikTok to the world in 2017 and the platform quickly revolutionized digital content creation by utilizing an AI-driven short-form video approach. TikTok utilizes an algorithm that values engagement indicators like watch time and likes enabling universal viral potential unlike follower-centric platforms (Nowacki, 2024; Shen, 2023; Lu, 2024). A dynamic system achieves robust retention by leveraging continuous AI learning which analyses user interactions according to Morales-Navarro et al. (2024). TikTok's success is rooted in artificial intelligence. The application of machine learning together with natural language processing and computer vision along with predictive analytics powers real-time content optimization and accurate audience targeting that enhances campaign ROI (Anshu & Sharma, 2024; Apostol et al., 2024). YouTube and Instagram rely on comparable artificial intelligence systems to deliver personalized content and enhance user engagement according to research by Aggarwal et al., 2024 and Bhattacharya et al., 2025. Through content moderation and sentiment analysis alongside chatbot and video editing automation AI enhances brand communication and user experience (Babatunde et al., 2024; Rajput et al., 2024; Manoharan, 2024). Generative AI tools tailor content to current trends while influencer partnerships utilize AI analytics to target niche audience segments (Minh et al., 2024; Okeke et al., 2024; Gungunawat et al., 2024). Brands such as Adidas and The Originote implemented TikTok's AI features to generate high user engagement (Adzhani & Widodo, 2023; Sitorus et al., 2024). However, ethical concerns persist. The presence of algorithmic bias along with transparency deficits and personalized content approaches creates challenges concerning equity and user privacy as well as personal control (Gowri, 2024; Ding et al., 2024; Vukmirović et al., 2025). Echo chambers and exclusionary algorithms demand explainable AI alongside inclusive data practices according to Apostol and colleagues (2024). Industry experts recommend implementing audits alongside transparency measures and user education to promote ethical AI deployment according to Jawad et al. (2024) and Morales-Navarro et al. (2024). The success of TikTok demonstrates AI's potential to revolutionize marketing but also highlights the necessity for ethical transparency in AI operations.

FOCUS OF THE CHAPTER

The current chapter examines TikTok's transformation of digital marketing strategies through its sophisticated artificial intelligence (AI) applications. TikTok distinguishes itself through its ability to provide each user with content that feels uniquely personalized while consumer interaction depends more on automated content

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