#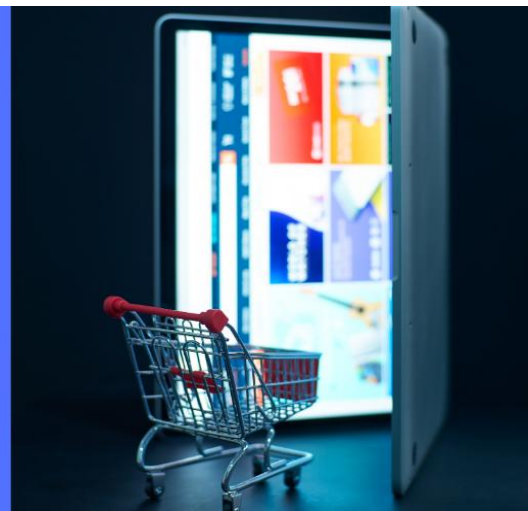 AI-Powered Personalization in E-Commerce: Enhancing Customer Engagement and Retention Through AI-Driven Recommendation Systems in Emerging Markets

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Abstract: *This article examines the implementation and impact of artificial intelligence (AI) powered personalization techniques in e-commerce platforms operating within emerging markets. With a focus on recommendation systems, it analyzes how these technologies can drive customer engagement and retention in regions with unique technological, economic, and cultural contexts. Emerging markets present distinct challenges including limited connectivity infrastructure, device constraints, data sparsity, and cultural diversity. Through comprehensive analysis of core algorithmic approaches and implementation strategies, the article demonstrates how AI-driven recommendation systems can be effectively adapted to address these constraints. It explores tiered deployment architectures, lightweight model implementations, offline functionality, and cultural adaptation mechanisms that enable effective personalization despite resource limitations. Case studies from Southeast Asia, Latin America, and Sub-Saharan Africa illustrate successful adaptations of recommendation technologies to regional challenges, while future research directions highlight emerging innovations including transformer architectures, on-device AI, multimodal recommendations, and integration with blockchain, IoT, and autonomous agents. This article provides e-commerce platforms with strategies to harness AI-powered personalization as a competitive differentiator in high-growth, resource-constrained environments.*

Keywords: AI-powered personalization, recommendation systems, emerging markets, resource-constrained computing, cross-cultural e-commerce