TRANSFORMING AUDITING AND CONTROL IN AGRICULTURE WITH BLOCKCHAIN AND AI

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Abstract

In this article, we introduce a comprehensive framework that integrates blockchain, digital signatures, and artificial intelligence (AI) into the auditing and accounting procedures of the agricultural industry. This framework merges the decentralized aspects of blockchain technology with the heightened security of digital signatures and the sophisticated analytics provided by AI, leading to a more effective and transparent auditing method in agriculture. We offer an in-depth description of how blockchain can securely document transactions, monitor assets, and guarantee product traceability, thus preventing fraud and fostering trust among participants. We also explore how digital signatures can enhance data integrity by verifying authenticity and confirming the information's origin within the system. Moreover, we examine the use of AI and machine learning algorithms in automating standard audit tasks, identifying anomalies, and analyzing agricultural data. This not only expedites the auditing process but also elevates audit quality by minimizing human errors and biases. The article also addresses the potential challenges of incorporating these technologies, such as managing the risks linked to AI adoption, including bias, transparency, and ethical considerations. We discuss the significant expenses involved in implementing these technologies, along with the requirement for suitable regulatory frameworks and policies to direct their application. Additionally, we propose future research avenues to further improve the amalgamation of blockchain, digital signatures, and AI, thereby fostering ongoing innovation in the auditing and control processes of the agricultural sector.

Keywords: blockchain, digital signatures, accounting, auditing, AI applications