

Role of Block Chain in Healthcare Supply Chain Management: Reducing Fraud and Improving Transparency

Vijay Pratap Raghuvanshi

Delhi Skill and Entrepreneurship University, Delhi, India

Pushpa

University of Delhi, Delhi, India

Saumya Jangid

Dr. B. R. Ambedkar University Delhi, India

Abstract: The healthcare supply chain is a multifaceted global network encompassing systems, components, and processes designed to ensure that medications and medical supplies move from point of origin to patient with absolute fidelity. This logistical ecosystem is characterized by extreme complexity, involving over 1,200 manufacturers, 330,000 frontline providers, and approximately 67,000 pharmacies in the United States alone. Despite its critical role, the traditional supply chain remains plagued by systemic vulnerabilities, including fragmented data silos, opaque transaction handoffs, and a reliance on centralized architectures that present single points of failure. These weaknesses have historically facilitated a range of illicit activities, from the infiltration of counterfeit pharmaceuticals to sophisticated billing fraud and identity theft, resulting in an annual loss of nearly \$100 billion for the industry. Block chain technology has emerged as a transformative architectural layer capable of addressing these deficiencies through a decentralized, immutable, and transparent ledger. By establishing a shared version of truth that does not depend on a central authority, block chain enables real - time traceability and secure information exchange among geographically dispersed stakeholders. This report provides an exhaustive analysis of the role of block chain in the healthcare supply chain, examining its capacity to mitigate fraud, enhance transparency, and align with rigorous global regulatory standards such as the Drug Supply Chain Security Act (DSCSA) and the General Data Protection Regulation (GDPR).

Keywords: Block Chain, Healthcare, Supply Chain Management, Fraud, Transparency