



# PRESIDENCY UNIVERSITY



Presidency University Act, 2013 of the Karnataka Act No. 41 of 2013 | Established under Section 2(f) of UGC Act, 1956  
Approved by AICTE, New Delhi  
Bengaluru

## Blockchain-based Medical Supply Chain

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### ABSTRACT

The medical supply chain plays a crucial role in delivering essential medicines and equipment to healthcare providers. However, it faces persistent challenges such as **counterfeiting, lack of transparency, tracking inefficiencies, and data manipulation** due to reliance on **centralized systems**. These issues lead to **fraud, delays, compliance risks, and even threats to patient safety**. To tackle these problems, this project introduces a **blockchain-based medical supply chain** that integrates **smart contracts** and **QR-based tracking** to enhance **security, transparency, and efficiency**. Blockchain's **decentralized and immutable** nature ensures that every transaction is securely recorded, providing real-time access to accurate and tamper-proof data. **Smart contracts** will automate key processes such as **order fulfillment, compliance verification, and payments**, eliminating intermediaries, reducing errors, and improving overall efficiency.

**QR-based tracking** will allow all stakeholders from manufacturers to hospitals to verify the **authenticity and movement of medical supplies** at every stage. This not only prevents counterfeit drugs from entering the system but also ensures compliance with regulatory standards. By harnessing the power of **blockchain's transparency, security, and automation**, this solution aims to build a **trustworthy, efficient, and fraud-resistant** medical supply chain. It will empower stakeholders with **real-time insights, reduce operational risks, and ultimately enhance patient safety** by ensuring the seamless delivery of genuine medical products.