TITLE:

1 TRANSFORMING AGRICULTURE SUPPLY CHAINS: *DECENTRALIZED TRACEABILITY AND DIRECT SELLING OF AGRICULTURE*

1.1 ABSTRACT:

The agriculture sector faces a significant challenge of middlemen fraudulence, where multiple agents add costs and vulnerabilities to the system, leading to minimal income for farmers and potential quality issues for users. To address this, an IoT-based web portal is proposed for transparent buying and selling of agricultural products. The portal eliminates middlemen, ensures product detail integrity, and enhances security through its decentralized structure, reducing fraudulence.

The system offers a direct selling system where farmers can sell their produce directly to the government. The system is equipped with a microcontroller, an RFID reader, and a weight sensor. Each food grain bag is tagged with an RFID tag. When a farmer arrives at the selling place with their products, government officers use the RFID reader to access the farmer's details. Additionally, the farmer's information is automatically updated on an IoT webpage. The weight sensor is used to accurately measure the weight of the food grains. With unique RFID tags assigned to each farmer, identification becomes simple, and intermediaries are eliminated, promoting transparency and efficiency in the selling process.

1.2 A BRIEF DESCRIPTION:

Agriculture food supply chain traceability is vital for food safety, customer satisfaction, and peer-to-peer productivity. Centralized data storage poses challenges in assuring product quality, rates, and origins. To address this, a decentralized system is needed to ensure transparency from producers to consumers. Blockchain technology offers traceability and transparency in the supply chain, benefiting stakeholders and farmers. The blockchain's properties, such as increased capacity, security, immutability, faster settlement, and traceability, enhance the community between all parties. This paper introduces a fully decentralized blockchain-based traceability system that integrates with IoT devices from providers to consumers. The "Provider-Consumer Network" is a theoretical end-to-end food traceability application that aims to create a distributed ledger accessible to all network users, promoting transparency.

The research presents a Blockchain-based smart model for transforming the traditional food supply chain. It ensures equal opportunities for all stakeholders without relying on a third-party service provider. The proposed model is compared with our own non-blockchain scheme, highlighting the advantages of blockchain in enhancing security, transparency, and efficiency in the food supply chain without the need for a central authority.