Blockchain in Indian Public

Distribution System: a conceptual

framework to prevent leakage

of the supplies and its enablers

and disablers

1. Introduction:

- Public Distribution System (PDS) in India is a major safety net program for food distribution.

- Challenges include corruption, leakage, inclusion/exclusion errors, and high costs of food subsidy.

2. Proposal for Blockchain in PDS:

- Purpose of the paper is to propose a conceptual framework for applying blockchain in PDS.

- Aims to prevent diversions and leakages of food grains at warehouse and Fair Price Shop (FPS) levels.

3. Design/Methodology/Findings:

- Literature review on PDS and blockchain-enabled supply chains.

- Proposed framework is cost-effective, prevents corruption, and ensures transparency.

- Enablers and disablers identified in the context of the framework.

4. Research Limitations/Implications:

- Implications for the Ministry of Food and PDS, Food Corporation of India, and State Governments.

- Focus on efficient and effective management of grain supply.

5. Originality/Value:

- Addresses the implementation of blockchain from warehouse to FPSs and consumers.

- Aims to ensure transparency and accountability in the PDS.

6. PDS Problems and Challenges:

- PDS history, challenges include bogus ration cards, APL quota scam, Aadhar-based authentication issues, leakage estimates, and high food subsidy costs.

7. Blockchain Overview:

- Blockchain is a decentralized ledger with applications in various industries.

- Applied in finance, healthcare, retail, and manufacturing, with increasing adoption in India.

8. Blockchain in Food Supply Chain:

- IBM, agri start-ups, and Walmart using blockchain for traceability, safety, and transparency.

- Blockchain potential in addressing corruption in PDS highlighted.

9. Proposed Framework and Implementation:

- Framework addresses warehouse to FPS and consumer levels using blockchain.

- Aims to combat diversions and leakages of grains.

10. Literature Review:

- Extensive review on blockchain, PDS, and blockchain in agricultural and food supply chains.

- Emphasizes the need for robust infrastructure before large-scale blockchain implementation.

11. Research Gap:

- Existing frameworks focus on earlier stages of supply chain; proposed framework targets later stages.

- Combines blockchain and RFID for minimum leakages, accountability, transparency, and reduced corruption.

12. Research Methodology:

- Identification of PDS problems, analysis, and thorough literature review.

- Framework development connecting stakeholders on the blockchain network.

- Enablers and disablers discussed for implementation.

13. Conclusion:

- Proposal provides a managerial and administrational perspective to address corruption and leakages in PDS.

- Emphasizes the role of blockchain in improving transparency and efficiency in food grain distribution.