ABSTRACT

The Public Distribution System (PDS) plays a vital role in ensuring food security in India by distributing essential commodities like rice, wheat, and sugar to eligible citizens. However, traditional ration shops often face challenges such as inaccurate weight distribution, manual billing errors, and fraudulent claims. To address these issues, this project presents an IoT-Driven Ration Shop Management System aimed at modernizing the existing infrastructure with automation and real-time monitoring.

The proposed system integrates a load cell-based electronic weighing mechanism with Arduino Uno, Wi-Fi communication, and cloud-based data management using Firebase. It automates the weighing process and generates bills based on accurate measurements. User authentication is performed through AADHAR-based QR code scanning and fingerprint verification from the family ration card. Once a transaction is complete, an SMS notification is sent to the primary cardholder, including the name of the person who collected the ration, enhancing transparency and accountability.

Additionally, a web-based dashboard enables centralized monitoring by the Tamil Nadu Civil Supplies Corporation, featuring login options for both users and authorities, real-time stock visibility, and shop-level data access. This hybrid hardware-software solution ensures efficient distribution, reduces human errors, and reinforces trust in the public distribution system.