

# **IoT Based Ration Distribution System for Transparency and Automation**

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**Abstract:** *The Public Distribution System (PDS) plays a vital role in ensuring the equitable distribution of essential commodities such as rice, wheat, and sugar. However, challenges such as improper weighment, manual errors in billing, and lack of transparency continue to hinder its efficiency. To address these challenges, this project proposes a system that integrates existing POS machines with an automated dispensing mechanism to improve accuracy, accountability, and ease of operation in ration shops. The system combines hardware components with IoT-enabled monitoring to create a seamless, user-friendly experience. Beneficiaries authenticate their identity using biometric systems (e.g., fingerprints) linked to existing POS machines. Once authenticated, users can select the required commodity using a keypad integrated into the system. The selected item is dispensed through an automated system controlled by a solenoid valve, ensuring precise weighment using a load cell (up to 10kg). The transaction details, including product, weight, and price, are displayed on the LCD screen and logged in the POS system for real-time monitoring by the Tamil Nadu Civil Supplies Corporation. The proposed solution leverages existing POS infrastructure, reducing implementation costs while enhancing operational efficiency and transparency. This project scopes with sustainable Development Goals comes under SDG-16 (Peace, Justice and Strong Institutions)..*

**Keywords:** Public Distribution System (PDS), Point of Sale (POS), Automated Dispensing System, Biometric Authentication, Solenoid Valve, Load Cell Weighment, Transparency and Accountability, Tamil Nadu Civil Supplies Corporation (TNCSC)

