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Department of Computer Science and Engineering **SYNOPSIS**

Controlling Food Adulteration in Public Food Grain Distribution

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Introduction

India is an agriculture-based country. Around two-third of its population depends on agriculture directly or indirectly. Approximately agriculture contributes around 17% of GDP. This has been in the decline since 1951 due to various factors such as deficient rains, lack of interest among youths etc. This leads in reduction of agricultural production there by giving importance of effectively storing and effectively managing the agricultural produce. There is huge need for preservation, protection, storage distribution and consumption at a later stage.

In India food grains are still stored in warehouse using traditional methods which leads to problems such as theft, rain, flood, variation in temperature and humidity, attacks of rodents and insects, adulteration.

Government of India distributes food grains to poor people at fair price through ration cards issued to Below poverty line (BPL) and Above poverty Line (APL). The existing food distribution system has various problems such as malpractices by FPS dealers such as diverting the food allocated for BPL people to open market at a higher price and distributing contaminated/adulterated ration to BPL card holders.

The intent of this project proposal is to address and try to minimize the food adulteration and contamination of the ration distributed to BPL card holders by deploying smart sensing devices with Internet of Things (IoT) to preserve the quality and quantity of food grains stored at warehouse and packaging with appropriate quantity and assigning barcode for each package and

commodity. The BPL card holders will be advised to open the sealed package after the ration card is validated.

Purpose of the project:

The purpose of this project is to address food adulteration in the ration being distributed through Fair Price Shops (FPS) to BPL card holders.

- Check the quality of the food grains before being packaged.
- Generate barcode once the quality check is passed.
- Scan the barcode before delivering to the BPL card holder.

How it works:

At present the ration supplied to BPL card holders through FPS is of very low quality. Usually the food grains are distributed loosely and this gives room to adulterate the food at various stages, be it at the warehouse, FPS shop and everywhere.

With this project, we are proposing to change the distribution system, by packaging the ration in a secured packing after checking the quality of the commodity and sealing with authentication by assigning a bar code. The barcode will be scanned and the type of commodity, its weight, location from where it was delivered and to whom it was delivered would be stored in cloud.

Process flow:

- The food stored in the warehouse is scanned for checking the quality. If the food grains contains any foreign bodies, it will be identified and discarded. Also the system checks the freshness of the food. If the quality check is passed, the food grains is packaged in secured packing.
- The packaged commodity is sealed and barcode generated and assigned. The barcode helps in identifying the source warehouse from where the package originated. This can be used later if any malpractice is identified so that action can be taken against authorities at that warehouse.
- The package is delivered to FPS for distributing to BPL card holders.
- The ration card of the BPL card holder is verified and the quantity of ration allocated is determined.
- The sealed package is handed over to the card holder after scanning the barcode. The type of commodity, its weight, location from which FPS was it delivered and to whom it was delivered will be recorded.

Modules:

Module 1:

Quality check of Food Grains:

The quality of the food grains stored at the warehouse is checked. Also the freshness of the grains is checked to see if the food is contaminated. For analyzing the quality of the grains Raspberry Pi, Sensors would be used. The sensors are placed in the container/filter and the grains are passed through the filter which/the grains are poured over the container and the sensors will scan for foreign bodies like stones, dust, mud, human/rodents waste etc.

If the quality of the grains are good, it will proceed for packaging. The package will be in increments of 5 Kilos, with maximum of 25 kilos.

Module 2:

Generating Barcode:

A unique bar code will be generated for each commodity and each warehouse. The bar code will be attached to the package at a place which is easily noticeable. The package would be sealed and sent to FPS dealers across the country.

Module 3:

Scanning the Barcode:

The FPS dealer verifies the ration card of the BPL card holder and if it is successfully verified, the dealer determines how much quantity of ration, the card holder is eligible. The package is handed over to the card holder after scanning the barcode.

Module 4:

Storing the information in Cloud:

The information of the package delivered to the card holder will be stored in cloud. The barcode will help in getting the quantity of ration handed over to the card holder, from which FPS the package was delivered and the type of commodity. This will help in identifying the source of the adulteration if any.