

A SURVEY ON RATION DISBURSEMENT SYSTEMS

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Abstract: Traditional ration card system has evolved as a system of management of scarcity of food grains through the distribution of food grains at affordable prices. Over the years ration distribution has become an important inseparable unit of the government's policy to ensure that sufficient food grains have been supplied. However, Traditional units have undergone significant turnovers in terms of fraud, theft, and interference from middlemen. To overcome the above scenarios, we have initiated the development of our project that will contribute to digitizing the entire distribution unit such that there will be no room for fraud. The operation facility includes allocation within the state, identification of eligible families, issue of ration cards according to the database, and supervision of the functioning of fair price shops. Presently under the distribution system commodities namely wheat, sugar, oil, and kerosene are being allocated to the states for distribution.

Keywords: RFID, solenoid valves, IoT, E-Ration, GSM

I. INTRODUCTION

The government provides food, oil, and fuel to economically challenged people at subsidized rates, distributed to the public through ration shops. They also fix an upper limit on the consumption per head. For this, they get a form filled out that looks something like the figure. Also, a sample form has been attached to this document, which must be filled to get the ration card issued. Here the personal details of the family are noted and then they are issued a ration card which also acts as nationality and address proof for the citizens of India. The modus operandi for these ration shops is that the material is bought from the farmers and then sold at subsidized rates. Every month fresh stock arrives. these shops and that needs to be disbursed to the public. Typically, the ration shop owners play foul and the right amount is not disbursed or disbursed to unauthorized people or sold out at higher rates. To counter these fouls government is taking some measures like introducing smart cards. However, this can also be circumvented by the wrongdoers and use the same card for issuing to unauthorized people as the card owner need not be present at the time of the ration disbursement.

New Ration Card Application Form

Head of the Household Details

Card Type*: APL BPL AAY AAP

EID*: _____ UID*: _____

Name of Head of the Family*: _____

Name of Head of the Family (In local language)*: _____

Mother's Name*: _____

Mother's Name (In local language)*: _____

Father's Name*: _____

Father's Name (In local language)*: _____

Gender*: Male Female

Spouse's Name*: _____

DOB*: _____ Age*: _____

Professional Details

Occupation*: _____

Annual Income*: _____

Gas Connection Details

Gas Connection Status*: Deepam Double Single No Cylinder

Gas Company Name*: _____ Gas Agency Name*: _____

Consumer No*: _____

Residence Address

Door No*: _____ Locality / Land Mark*: _____

State*: _____ District*: _____

Mandal*: _____ Village / Ward*: _____ Pin Code: _____

FP Shop No*: _____

Permanent Address

Door No*: _____ Locality / Land Mark*: _____

State*: _____ District*: _____

Fig 1.1 New ration card application



वस्तु का नाम	रा. म. की.	कुल मूल्य
अमोनी	2.00	20.00
"	2.00	24.00
"	4.00	28.00
"	4.00	24.00
"	10.00	20.00
"	5.00	15.00
"	20.00	2.00
अमोनी 2.00	32.00	100.00
पाना	20.00	2.00
कुल	154.00	2.00

Fig 1.2 Undated chart with prices in a ration shop

In India, every Indian family is issued a Ration card by the Government of India and the families are to receive concision in food grains as per card. Quantities of food grains are ensured that they will be fixed in terms of monthly requirement based on the income and expenditure of a particular family depending on the number of people residing in the family.



Fig 1.3 Manual distribution of ration in a ration unit

The present units involve the typical use of ration cards or fingerprint scanner units to facilitate the distribution of the food grains to the respective allotted user.

II. LITERATURE SURVEY

The present day is a year filled with many immoral activities that are the key reason for the fraud happening in the ration shops, which are meant to segregate and distribute all the goods and commodities to the people who are majorly below the poverty line. The process of distribution has been manually operated and the effect of which has made it consume a lot of time and waste energy resources. To overcome this situation government has initiated the traditional ration distribution unit to an RFID-based unit that facilitates the distribution of food grains effectively.

A typical ration card system has RFID tags that incorporate the database of the buyer including the family details of which the grains have been distributed effectively.[1] Nowadays, corruption has been found in the grounds of every society right from politics to society. The root cause behind this corruption is the manual work that is the paperwork, recordings of databases, information, and records of photocopy that in turn has risen to irregularities of audits and maintenance of the existing database. The work that has been proposed has made use of the GSM-incorporated RFID cards to gather and provide access to all the information.[2] Ration Distribution in India is not an easy task.

The important problems of this system are the eligible are unable to ration distribution system resulting in leakage of subsidies. Automated smart rationing distribution will be in the country needs and necessity of the fashion world and also human beings. The ration goods distribution is not an easy way for every family to buy the products provided by the government authority monthly by using smart cards.[11] The Public Distribution System in India is the largest retail system in the world. The major problem in this system is the inefficiency in the targeting of beneficiaries, improving weighing machines used, and illegal selling of goods. The automated public ration distribution system aims to replace the manual work in Public Distribution System thereby reducing corruption and illegal selling of stock. This paper gives a review of the E- Ration card system to distribute grains automatically. The proposed system is used the conventional

ration card which is replaced by a smart card using an RFID card.[3] The Ration Card is mostly utilized as a part of recognizable proof for acquiring financed foodstuff and fuel. It is used as proof for acquiring a passport, Aadhar card, and other documents as an address confirmation for residents of India.

The Ration distribution system has numerous disadvantages, for example, mistaken amounts of merchandise, manual work, low preparation speed, expansive holding up time, and repetitive data.[9] Automation provides optimized solutions to all problems in the distribution of water systems. [4] with a small number of constraints. The public Distribution System (PDS) is an Indian food security system. Established by the government of India under the Ministry of Consumer Affairs, Food, and Public Distribution and managed jointly with state governments in India, it distributes subsidized food and non-food items to India's poor.

Major commodities distributed include staple food grains, such as wheat, rice, sugar, and kerosene, through a network of public distribution shops, also known as Ration shops established in several states across the country. Food Corporation of India, a government-owned corporation, procures and maintains the Public Distribution System.[5]

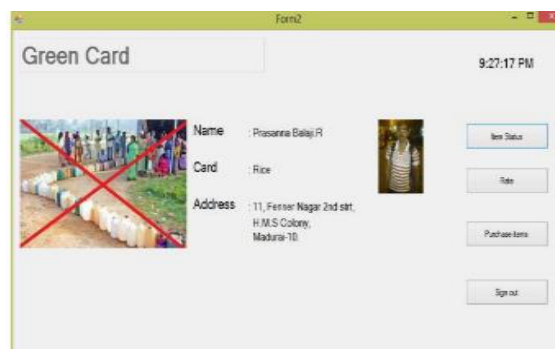


Fig 2.1 Green card system

A ration card is one of the authenticated documents that has been issued and implemented by the government of India to every single family. This card acts as identity proof for a particular individual user for monthly reservation of food grains from a particular ration distribution system. This ration card system identifies every member concerning gender, identity, and photographs.[6]



Fig 2.2 Ration card

Another typical upgradation utilizes the aspects of a power electronics-based smart transformer is becoming a reality that can be used to upgrade the distribution network to make it very active probably allowing a bidirectional transfer of power flows that is capable of accounting for the storage of food grains making it an intelligent distribution network.[7] The resources in the world are finite and the desire for resources is infinite. One of the largest retail systems in the world is India's public distribution system. The manual work involved and the lack of automation make this system inefficient. The conventional ration card system is replaced by an automatic rationing system.

This system uses authenticated fingerprint detector to provide products to the users. When suitable input has been provided, the products are obtained from an automated ration shop. This system provides products with accurate weight and unnecessary selling of goods can be avoided. The ration shop is connected to the government via GSM to prevent irregularities in ration distribution.[8]



Fig 2.3 fingerprint ration distribution

A typical fingerprint scanning unit includes finding a match between the human fingers to refer to a particular identification unit that typically involves enrollment and subsequent searching.[9] Growing technology has provided its major contribution to meeting the fundamental needs through the subsidy provided by the government of India based on domestic conditions. These circumstances have always involved ration shops incorporating intense labor dependency. However, there has been significant identification of fraud and malpractices due to human interference in updates and transactions. This can be in form of overcharging or black theft marketing.

The IoT-based smart unit was proposed to automate the dispensing based on the existing database and thus verify the card holders.[10] Public distributions have corruption and smuggling through the given products of the government. The system is based on the GSM and RFID.

RFID is used as a smart card and the consumer database is enrolled in the microcontroller. Consumers need to read the RFID card and microcontroller and compare them with the government website. After completing, the verification consumer needs a particular product and quantity of goods provided by the government.[11] a Fingerprint module is used in IoT-based Ration card Systems.

It is used for enrolment and verification purposes. It is used to get an image of the finger using an optical scanning process. This has been facilitated to process the obtained fingerprint minutiae algorithm [12]

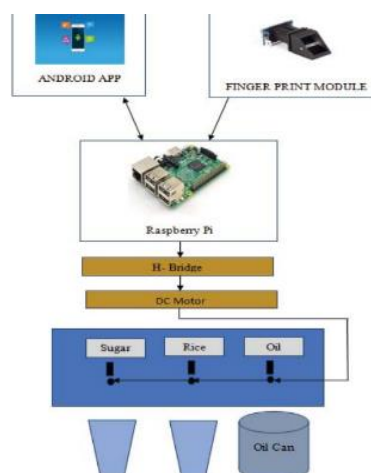


Fig 2.4 IoT ration distribution

As we can recall that current trend of ration distribution has been suffering a lot of significant changes and prominent issues like smuggling and black theft that involve manual irregularities in the measurement of the equipment scenarios.

An automated ration system is incorporated to make all the distribution right from the vendor to the customer automatized by maintaining complete transparency in the system and thereby making it more efficient. Arduino ide can be utilized to write the program to store the database of people based on all the details provided by them concerning their adhaar card.[13]

Stock details are maintained in the PC after distributing the materials an intimation is sent to the government head office with the help of a GSM. Add to cart facility is also provided using which a consumer can directly order their items from home. This method helps avoid crowds, and long waiting periods, and also maintain proper customer and stock details. In case there is theft in the stocks then there are anti-theft alarms that will be triggered and even if there is any sort of leakage of grains anti-spill alert will be message will be sent to the civil supply shop.[14]

In this paper, the working system is divided into three modules- Admin, Shopkeeper, and Card Holder/Member. The admin has to add schemes like APL, BPL, etc., Later ration shops of different areas are provided with user names and passwords for the shop keepers. To distribute ration the ration admin will add the details of the cardholder and give them a unique password. Next, distribute the Ration, admin allocates slots for the customers of all the areas by sending an SMS that contains the date and time to collect their ration. If some of the customers could not collect their rations then re-slot allocation to collect the ration.[15]

The consumer who needs the goods through the public distribution system the procedure to enter the valid serial number on the government website where all the details of the consumer are displayed based on the serial number entered as already the information is enrolled in the government ration website which then communicates with the microcontroller that is incorporated in the embedded system. The option to choose the language, products, Quantity, and cost of it is displayed. If there is an efficient balance then the amount gets deducted and the goods are dispensed else the system displays insufficient balance and the process is terminated immediately.[16]

The E- ration Distribution system uses Face Recognition and fingerprint verification. This system successfully eliminates the errors due to manual monitoring of ration data as all the data is automatically updated in the database. Also, this system will enable the government to keep track of consumers and their transactions.[17] To provide a solution to the various problems faced, this paper proposes an IoT-based Smart Ration Dispensing System based on Loadcell Feedback. It has a series of containers with feeder inlets to fill the container with ration goods. Each container has an outlet whose opening or closing is controlled by a servo motor wirelessly.

A database is created with the customer details along with the phone number. We are using the phone number to verify the customer because all the government-issued ID cards are linked to the phone number along with their image. This eliminates the need to physically carry the smart card which is required in the present system. Using load cells provides high-weight accuracy.[18] When the customer comes, firstly for identification he/she is asked for his fingerprint (if the aadhar card is linked with a ration card), if the aadhar card is not linked with the ration card for identification ration card is scanned, and till the process completes and entry is done in ration card is used. After identification, the details of the consumer are displayed on the screen Next, in the process of distribution, where the customer gets a Graphical, easily understandable pictorial interface in which a commodities chart is placed and prices are shown.

The consumer can click on these commodities and pay the amount required and get these commodities.[19] This machine works by showing the RFID tag provided to the consumer by the government, when an RFID reader recognizes the RFID tag, the consumer is allowed to continue the next authentication process. Once the authentication is completed, the consumer is allowed to select the type and quantity of the ration, then the selected product of the required quantity will be delivered to the consumer through the product outlet. The database of government is updated with the purchased information and the message of Purchases of products is sent to the consumer's mobile through SMS.[20]

III. CONCLUSION

Based on the survey conducted, it was identified that the existing systems employed voice recognition and fingerprint mechanisms, which can be altered and misused very easily. Another approach was the use of RFID cards which were found to be unreliable and faced security concerns when used at a wider extent.

These cards could be misplaced or duplicated easily. The typical IoT-based ration disbursement played an important role in fraud and threat identification however was not realistic when employed in remote areas due to lack of internet connectivity. It was found that the Manual dispensing of materials by the distributor can be tampered easily ,Thus the end user maybe at a loss .

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