ABSTRACT

In this paper, we are presented a ration distribution system using near field Radio Frequency Identification method to identify user and thus user can collect his/her ration from our distribution system. Indian government is supposed to supply essential commodities like Wheat, Sugar, Rice, Kerosene etc., to targeted underprivileged families of Indian population. To accomplish this Indian government provided some ration shops in each city where the needy peoples can collect their ration at subsidies price, but the main problem is that the person in need not always collect the monthly ration due to either he/she not aware of availability of ration or any other reason. Then this subsidies ration is being sold out by the shop owner as to earn more profit. These problems can be overcome by either empowering the digitalization of ration distribution system or by making more tuff rules against corruption and smuggling of goods. Our system is all set to fight for this major area of corruption in India by the means of digitalizing the entire ration distribution system.

Keywords—A Public Distribution System (PDS), Radio Frequency Identification (RFID) Cards, GSM, Graphical User Interface (GUI), One Time Password (OTP).

I. INTRODUCTION

The PDS in India is governed and maintained by Consumer Affairs, Food and Public Distribution Ministry. PDS is responsible to distribute subsidized commodities to poor underprivileged families of India. The PDS in a country like India where a large number of underprivileged families purchase commodities like Wheat, Sugar, Rice, Kerosene etc., from government operated ration shops is not that easy to control and distribute ration. India’s Public Distribution System with a capacity of 4.8 Lakh Fair Price Shops is the largest distribution system of its type in the world. Even after having a large chain of FPS in India to distribute ration PDS is failed to distribute ration to needy people. After all these failure PDS India is also facing corruption in distribution system. Corruption involved in PDS makes it more complex to maintain by Indian Government.

Digitalization of PDS is one solution to make control and distribution of ration easy for Government. The system we have proposed here is atomization of PDS system by making it digital. The system will provide an RFID based Ration Card to each user of PDS system which will be used to identify user and 4 digits Password to authenticate the user. Ration distribution automation is done by an embedded system specially designed to perform dedicated tasks for PDS system which will read Ration Card data send it to Computer for further communication and actuate solenoid valves to open and close doors of container of grains and oil. To hold the user information and ration related information a database is designed which is wired with a GUI to provide ease of access of PDS machine. GSM is used to inform the user about the arrival of ration, user current session OTP and confirmation about ration dispatch.

II. PRIOR APPROACH

The traditional public distribution system is the most complex system where all records are maintained in stock register, daily sails/purchase registers. The chance of error is high since all entries are done by human and hence monitoring and governance is difficult over all FPS’s in Indian PDS system. Since all entries are manually done corruption can take place in PDS system. These problems are prior researched by some researchers. All uses the same RFID based authentication system.

Mohit Agrawal, Manish Sharm, Bhupendra Singh and Shantanu [1] jointly work on Ration distribution system and carried out a proposed solution for distribution...
of ration. The Identification and authentication is done by RFID card and password respectively. Once the ration is approved and delivery has been done, the information about ration is sent to user’s registered mobile number. This solution is built around 8-Bit RISC Harvard Architecture microcontroller, ATmega8. This solution is perhaps one of the most basic type of distribution system but yet a solution with full scope of enhancement. And thus more of such kind of research is being carried out by some other researchers which are as follows:

Prasanna Balaji. R and Manikandan.T [2] of P.S.N.A. College of Engineering, Chennai proposed a solution for ration distribution system. Similar to the research work carried out by Mohit Agrawal and his team, they also focused on RFID based identification and password based authentication system. They made an enhancement in the user interface for ease of use. The previous system was a standalone device that is not connected to any computer all work is done by the microcontroller itself. This system does not have any kind of processor unit they directly connected RFID reader module to PC and receive the card ID either by using COM port of USB port. There is lack of atomize the distribution as there is no controller connected with PC and also they don’t have any kind of feedback (like GSM/GPRS etc.) options in the system.

Another research on Ration Distribution System is carried out by Aruna Madur [3] of G.H.Raisoni College of Engineering & Management, Chas, Ahmednagar. In this system they have proposed fully atomized system for ration distribution with GSM feedback and weighting machine for precise quantity of ration for a particular card holder. This system is build around ARM microcontroller.

Rahul J. Jadhav and Dr. Pralhad K. Mudalkar [4] also showed interest in development of Ration Distribution System. They also proposed the so called RFID based identification and Password based authentication system but they used a fully functional web solution without any hardware to access and grant for ration. They provided a large database storage with a dedicated web based application form. They provided e-mail and SMS feedback, various levels of user logins to access the entire database like Admin Login, State Level login, District level etc. Instead of an embedded system they just developed a web based solution.

**III. OUR APPROACH**

After analysis of research articles on ration distribution system some problems found. The proposed solution for these problems, are as follow.

1. Storage of large number of consumer details using SQL server on Computer, which can hold large database of users as compared with microcontroller internal memory.
2. To add additional security, a 4 digit one time password is send to the user to finally authenticate user and deliver the ration to user.
3. Run time ration card registration is possible with proposed user interface solution.
4. Inform user about ration arrival using GSM messaging technique.
5. The solution proposed here is fully hardware and software integrated and performing dedicated task of ration distribution.
6. To make our application more users friendly we use voice announcement and feedback in our system.
7. Admin login is also available in our system. Here FPS operator will update ration details, send ration arrival messages to user, alter and delete any information about user.
8. Admin can also send customize messages if needed to specific user.

**IV. FLOW CHART AND WORKING**

First we scan User card, as we scan user RFID card data is transmitted to PC and checked into the database if card is present in database software show user details and else card registration form is open. If card is present in database then user can collect ration by clicking Get Ration on GUI. An OTP is generated and sent through SMS and for collection of ration user have to enter OTP. If OTP is same then ration is delivered if not error message display. User can also view his previous record in database. Second if scan card is Admin card then admin control form open here admin can alter and delete user details and update ration status. Here admin can send
customise messages if needed. Application flow diagram is shown in fig 2

![Flow Chart](image)

V. CONCLUSION

FPS network in India is very big hence it has some major problems in distribution of ration like ration hijack, less quantity delivery, wrong goods etc. Thus to help this we proposed a system with RFID based user identification and password based authentication system with a 4-digit OTP system to add additional security in ration distribution. We also presented admin control panel where admin can alter and delete information in database. First this kind of system does not have such kind of OTP based security in ration distribution. We also introduce voice announcement feature in our system. GSM is used for sending information like ration arrival, OTP etc. to the user. We can further enhance the entire system by including biometric identification like voice, fingerprint and face identification to add more security and also we can make a web based solution to give a high level of accessibility. But these additional features may increase the overall cost of distribution system but yet a powerful approach to make high level FPS network maintainable.

REFERENCES


