# IMPLEMENTATION OF SMART RATION DISTRIBUTION AND CONTROLLING SYSTEM.

Rashi Pawar[1], Ankita Thanage[2], Rutuja Raorane[3], Nikita Dongre[4], Prof. Rupendra Meshram[5],

[1]*Miss. Rashi Pawar, Electronics and Telecommunication Engineering, Konkan Gyanpeeth College of Engg, Maharashtra, India*
[2]*Miss. Ankita Thanage, Electronics and Telecommunication Engineering, Konkan Gyanpeeth College of Engg, Maharashtra, India*
[3]*Miss. Rutuja Raorane, Electronics and Telecommunication Engineering, Konkan Gyanpeeth College of Engg, Maharashtra, India*
[4]*Miss. Nikita Dongre, Electronics and Telecommunication Engineering, Konkan Gyanpeeth College of Engg, Maharashtra, India*
[5]*Mr. Rupendra Meshram, Electronics and Telecommunication Engineering, Konkan Gyanpeeth College Engg, Maharashtra, India*

## ABSTRACT

*This paper is all about automation in the field of Ration Distribution in India. We proposed a transparent and highly scalable Ration Distribution System with a more efficient and accurate system using SMART CARD and GSM. The existing ration distribution system has high level of corruption like inaccurate measurement of goods, large waiting time, and material theft in ration shop and manual distribution is not easy to handle crowd. Main objective of the designed system is to replace manual work with the atomization of ration shop to have a transparency in PDS. The proposed Ration Distribution System replaces conventional paper based Ration Card by SMART CARD. In this system customer makes use of a SMART CARD. Customer needs to scan the SMART CARD which is interfaced with the Microcontroller kept at Ration Shop. A Database is maintained to mainly store the user's personal information like name of family members, their mobile number, aadhar card number, photo, etc. We insert the smart card into smart card reader. Then verification of customer is carried out. Once customer is verified, all related information appears on computer's screen. Then the system asked the customer to select the material and quantity of material. An automated dispensary system is used for proper dispenser of goods. Accordingly the required goods are issued to the intended customer. GSM interfaced with Microcontroller sends information to the customer in the form of SMS.*

**Keyword***: - Arduino uno, smart card, smart card reader, servo motor, GSM Module, VB Software, Arduino IDE Software, etc….*

## 1. INTRODUCTION

Indian PDS system established by the government of India under Ministry of Customer Affairs, Food and Public Distribution is to distribute subsidized food and non-food items to poor.

This scheme was first launched in February in 1944 during Second World War and was launched in current form in June 1947. Major commodities distributed include staple food grains such as wheat, rice, sugar and kerosene through a network of fair price shop (also known as ration shop) established in several states across the country. Food Corporation of India, a Government owned Corporation procures and maintain the PDS.

According to planning commission on PDS System in its 2005 repost of reflected many systematic challenges on PDS system today. "For every Rs 4spend on PDS, only Rs 1reaches the poor."57% of the PDS food grain does not reach the intended people. Also this PDS system suffers many drawbacks. Nowadays, malpractices are carried out in this system like inaccuracies in weight measurement, hoarding of goods etc. Also if the materials are not purchased

by the end of the month the shopkeeper will send to others without permission of government .To overcome this entire drawback we have introduced a more efficient system to replace conventional ration shop as digital shop.

## 1.1 Existing System

Most of the people having a ration card to buy the materials from the ration shops. To get required goods, first we need to submit the ration card and they will put sign on the ration card depending on materials and materials are issued to the customers in following manner. In existing system all the activities of this shop are done manually in paper works. They keep all the records in big paper file records. Due to the manual work in the book duplicate entry or wrong entry may occur in the existing system, resulting in wasting time and resources. This system has many drawbacks like Weights of the materials may be inaccurate due to human mistakes, If not buy the materials at the end of month, they will sale to others without any intimation to government and customers, etc.

*A.* Ration Card



**Fig -1** Ration Card

Ration card is made up of paper so paper handling is difficult for no. of years. Also malpractices are carried out in this system like there may be any false entry in the book without any intimation to government and customers.

*B.* Weight Machine



**Fig -2** Weight Machine

Weight machine is not digital. Hence it is inaccurate. There are handwritten records so it is difficult to preserve them and also there is violation of data. Also there are chances of black marketing because a correct database of records is not maintained.

## 1.2 Related Work

1) Yogesh Kumar Sharma, Dr. K B Shiva Kumar, Dr Manoj Kumar [1] have proposed "Multi-modality biometric assisted smart card based ration distribution system". This project uses technique of fingerprint scanning as well as face detection. The database stores the records of users purchase history. They use a centralized cloud system so that transparency is maintained and users can access their details of record at some other fair price shop.

2) Madagani Kalyani1,M.Saritha2,G.Ravindranath Kumar[2] have proposed "DESIGN OF ELECTRONIC RATION CARD SYSTEM USING RFID WITH SMS FACILITY". In this system, a RFID tag is used that includes the member of the family information and the consumer desires to show this tag to the RFID reader. The microcontroller related to the reader will tests for the user authentication. If the user is found real then the quantity of ration to take delivery of to the purchaser in keeping with the total quantity of own family members might be displayed on show device.

3) S.Valarmathy, R.Ramani, Fahim Akhtar[3] has introduced "Automatic Ration Material Distribution Based On GSM and RFID Technology." Automatic Ration Materials Distribution Based uses GSM and RFID. To avail the benefit of government user has to scan the code using the reader to fetch the details of items allocated to the user, and then the microcontroller of system checks user's details and quantity allocated to user. The amount details are shown after authentication. Then customer need to select the necessary materials by using user interface. After receiving order, controller sends the information to authorities and customer through GSM technology.

4) K.Balakarthik proposed the "Cloud-Based Ration Card System using RFID and GSM Technology" [4], presents an efficient method for the user to buy the products in the ration shop by just irregular the card at the RFID reader. The user authentication is done by sending a random password text to the user mobile which has to be entered in a keypad. The purchase is validated by the employee only after the details are entered in a windows application which stores the user's personal and purchase information. The current PDS involves corruption and illegal smuggling of goods because of manual work.

5) Dhanya .T implemented "AUTOMATIC RATION DISPENSARY. "In this system Customer's ID card is inserted inside the Card Holder the Menu driven software present in the Computer navigates throughout the process. The stored information such as ID Number, this Month's ration is taken or not, if taken how much [quantity] etc. is displayed on computer's screen. If this month's ration is not taken then system allows to take prescribed amount of ration deliberately. Operator has to enter the quantity of the item. Then the dispensary section comes into action and respective items are delivered by making use of a motor which remains ON for a prescribed amount of time depending on the quantity. Accordingly the respective message is displayed on LCD screen.

### 1.3 Proposed System

The main objective of the designed system is the automation of ration shop. The proposed system uses computerized model. It overcomes paper work and avoid duplicate entry and it reduce time. The proposed work based on Smart card technology that replaces conventional ration cards. Customer's database stored in centralized local or remote database which is provided by Government Authority. Card is inserted by customer into the reader and then system checks customer's details with stored to distribute material in ration shop. After successful verification, customer needs to enter type of material as well as quantity of material. After delivering proper material to customer, the system sends information to customer as well as PDS authorities.

1.    Using Smart Card:
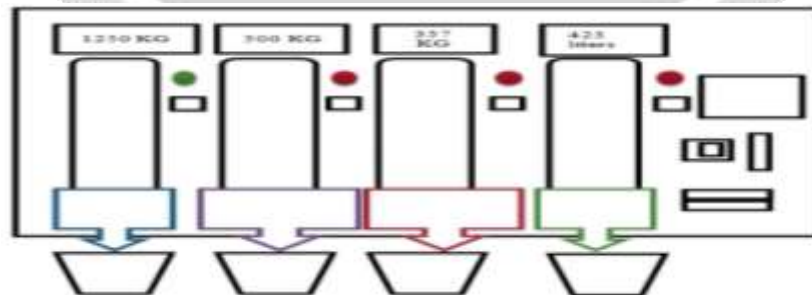


**Fig- 3** Smart Card

2.    Dispensary System:



**Fig -4** Dispensary System

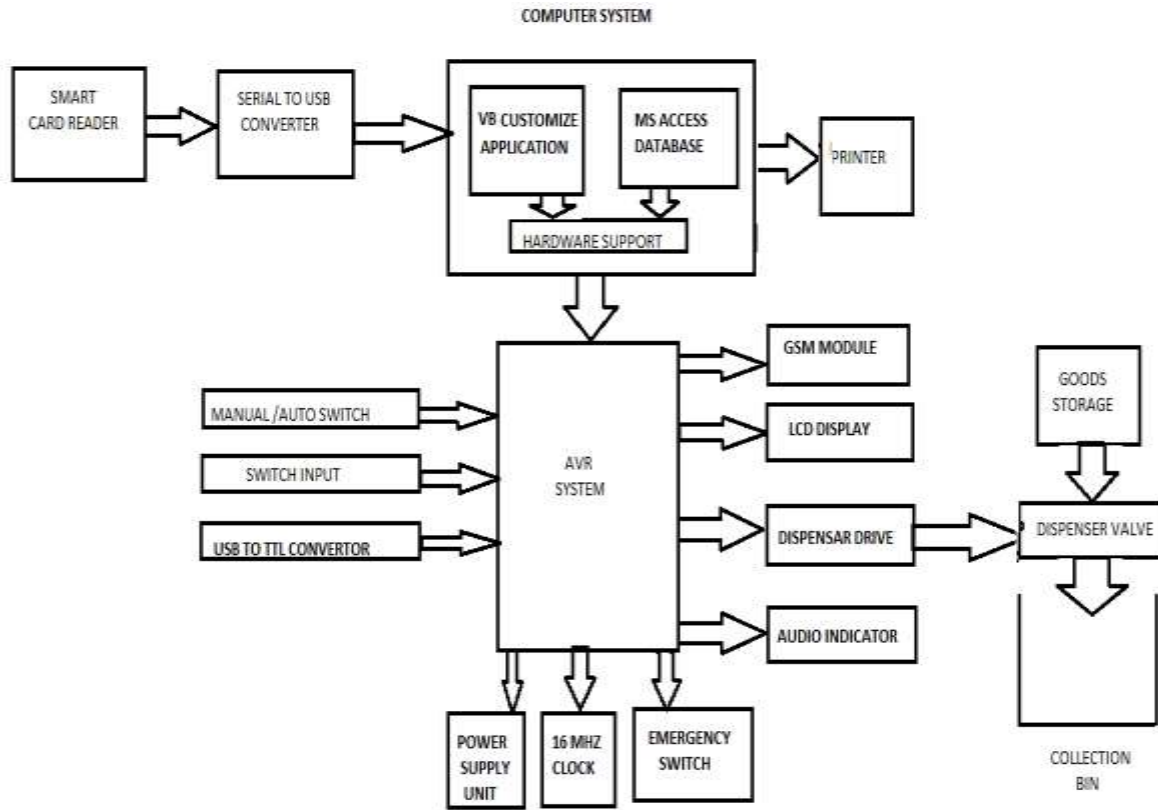## 2. Proposed System Description



**Fig -5** Block Diagram

In this project, we are going to make use of smart card and smart card reader, AVR microcontroller, GSM module and servo motor. Under software we are going to make use of visual basic software. The hardware and software work hand in hand with each other.

First the related code in visual basic software is run. A window indicating start of ration distribution appears on screen. Click on enter. First the login window appears. After the login into the system the next window appears. The next window consist of options like authenticate, get data , view data ,clear all etc. data like name aadhar card number, mobile number etc can be displayed on the window. Then enter the smart card into smart card reader. The smart card reader is connected to one of the COM ports of the personal computer. Click on authenticate. If card is valid and entered properly "card accepted" message appears on the screen. Also the AVR microcontroller will accept the input from the smart card reader and authenticate right user. Then click on get data and view data. The related data appears on window. Click on next. In this window we have to enter type and quantity of material. Any number and type of materials can be added. Also the stock details and total amount is displayed on the screen. After this process, click on next. The whole bill appears on the screen showing all the details. Then the signal is send from our computer to AVR microcontroller. AVR microcontroller gets data from the VB software and generates the output for dispensary system. Microcontroller is also connected to LCD which displays commands like press switch to dispense, press emergency switch etc. If we press the dispensary switch required goods are dispensed. The calibration time for different quantity of material is calculated. For that much time goods are dispensed. We are also going to make use of a GSM module connected to our personal computer. GSM module sends message to customer which contains quantity, type and amount of goods.
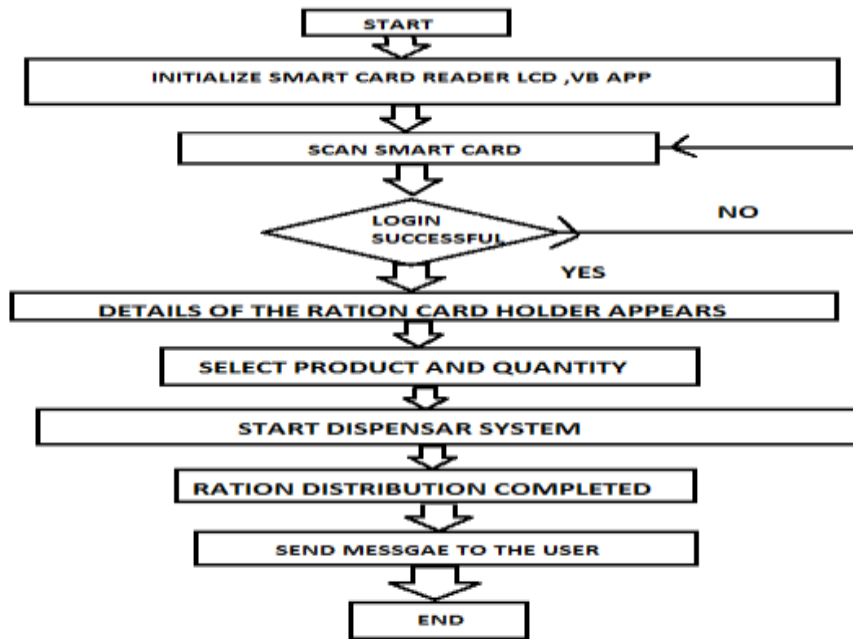
### 3. Flowchart



**Fig -6** Flowchart

### 3.1 Result



**Fig -7** Goods Dispense from Dispensary System

In this way, our project works. A Smart card read by smart card reader. If smart card is valid, customer related data appear on the computer screen. Then select type and quantity of goods. Price of material also display on the screen.

After this the total bill is shown on the computer screen. The signal is send to the microcontroller and accordingly the required goods are dispensed. The SMS is send to the customer through the GSM Module.
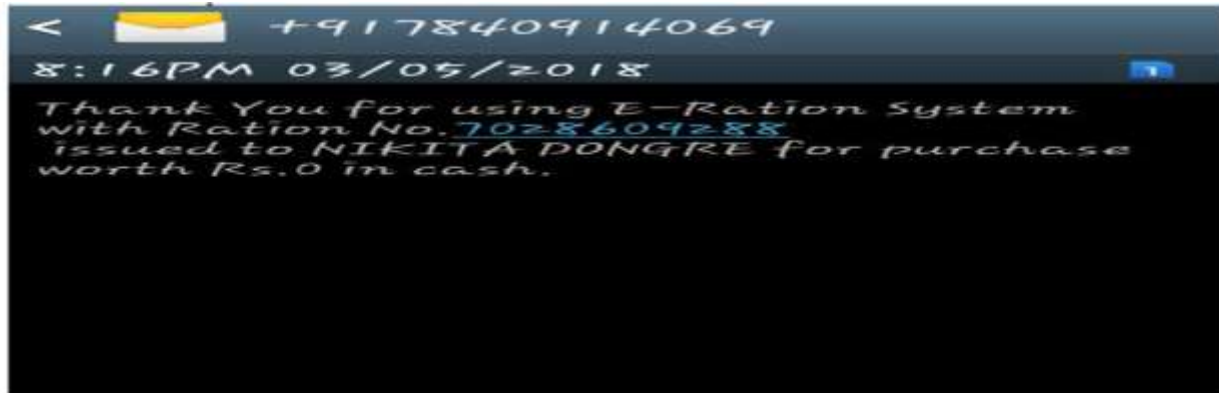


**Fig -8** SMS got on registered on mobile no.

GSM module sends SMS to the customer on its registered mobile no. it indicate that the ration is deliver to the customer. This provides security as message is send to the authorized customer.

## 4. CONCLUSIONS

The main purpose of the purposed system is to avoid corruption in ration distribution system like black marketing hording of goods etc. as there are no handwritten records stored in books or register instead all data is stored in database. So it become easy to cross check the data at any point .ration card is replaced by smart card and information is send to the customer using GSM module hence there is transparency in the system at each level, also system is free from malpractices. Thus we have developed regulatory system for advancement in the field of ration system. All the stock details can be maintained in database. So there are no chances of any malpractices in the stock details. This system also ensures maintaining stock details properly and updating details easily. They provide a secure, safe and efficient way of fair price shops. Thus, on the basis of literature survey and by analyzing the existing system, We have come to a conclusion that the our system will not only aid the government agencies but will also help to digitize the system and in turn help to deploy resources efficiently to the citizens.GSM module sends SMS to the customer on its registered mobile no. so authenticity of the system is maintained.

## 5. ACKNOWLEDGEMENT

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