

Automatic Public Distribution System for Digital India

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Abstract – This paper proposes an automatic ration distribution system using smart card to lower corruption in india. It is also an important constituent of the strategy for poverty eradication and is intended to serve as a safety net for the poor people whose number is more than 33 Crores and are nutritionally at risk. The current Public Distribution System has several well documented problems such as lack of transparency, accountability, poor governance and poor service delivery mechanisms. A large number of poor and needy members of society are left out and a lot of bogus cards are also issued. This leads to increase in corruption. The proposed automatic ration shop for public distribution system is based on Smart card that replaces conventional ration card which consist of all the details about the card holder such as family details, card type and its validity etc. Customer’s database in stored in microcontroller which is provided by government authority. Customer needs to scan smart card reader, and the then microcontroller checks customer’s details with stored to distribute material in ration shop. After successful verification, customers need to enter type of material as well as quantity of material using keypad the material get automatically dispatched without manual interpretation. After delivery of a material microcontroller sends information to customer through GSM. Also data get uploaded on IOT server with total amount and excel sheet get generated.

decided to introduce smart cards for the consumers [8]. Our system aids to control malpractices which are present in ration shop by replacing manual work with atomization based on SMART CARD. Every consumer i.e. family head provided SMART CARD card which acts as ration card. The SMART CARD card has unique identification number. The consumer scans the card on SMART CARD reader which is interfaced with microcontroller kept at ration shop. Once customer get validated by password, the system asks the consumer to select appropriate material and quantity of material through keypad. Following fig shows current ration cards in Maharashtra.



Fig. current ration cards

Key Words: PDS, FPS, GSM, AVR.

INTRODUCTION:

India’s Public Distribution System (PDS) is the largest retail system in the world. It provides a ration card issued under an authority of the State Government for the purchase of essential consumer materials like rice, wheat, kerosene and oil. State Government issues ration cards like yellow, saffron and white ration card depending on family annual income [8]. The material get supplied to ration card holders in the first week of every month by ration shopkeeper. many challenges that plague the PDS system are PDS Leakages, Scale and Issue of quality, Transparency and Accountability, Grievance Redressed Mechanisms[10]. Keeping in mind the above mentioned factors, it is necessary to strengthen the PDS to ensure Adequate supplies, reasonable subsidies and efficient delivery of subsidized food to the deserving people of India. So to have the public distribution system (PDS) in India to be more efficient, various state government has

Comparison between existing and proposed system:

Sr no.	Existing system	Proposed system
1	Ration sheets are mainly used	Smart cards acts as Ration Card
2	Manual entry in database	Automatic entry in database
3	Database not updated	Database is updated
4	Slow process	Fast process
5	Data not uploaded on server.	In our system data get uploaded on iot server.
6	Not a Real Time	Our system is based on Real Time.
7	Goods get distributed manually.	Goods get dispatched Automatically
8	SMS intimation to user not sent.	SMS sent to user for purchased quantity with total amount.

Table. Comparison between existing and proposed system

LITERATURE SURVEY:

Chaitali Chandankhede, Debajyoti Mukhopadhyay, have proposed” A Proposed Architecture for Automating Public Distribution System”, introduces the automated version of the Public Distribution System by giving unique QR-code to each customer. This will help to keep track of their respective accounts. Customers will also receive SMS notification of their successful registration and stock allotted to them [1].

Dr.M. Pallikonda Rajesekaran, D.Balaji, P.Daniel, proposed an”Automatic Smart Ration Distribution System for Prevention of Civil Supplies Hoarding in India”. Here the system uses smart measuring automated electronic device. With help of Arduino microcontroller which measures the goods accurately and updates data base periodically about the availability of goods and information regarding the transactions will be done in a digitalized manner [2].

Mrs.Padmavathi.R,, P. Venkatesh has introduced,” Digitalized Aadhar Enabled Ration Distribution Using Smart Card”, an automated system which replace the conventional ration card by smart card (RFID based),it contains unique Aadhar identification number of all the family members, card holder type APL or BPL which is used for user authentication to buy their ration. OTP and SMS will be sent to the cardholder and after each transaction the government data base get updated. An alarm is used to alert and notify the government authority during theft. After customer purchases amounts get deducted from the registered bank account [3].

Anshu Prasad, Aparna Ghenge, Prof. Sashikala Mishra, Prof. Prashant Gadakh, have proposed “Smart Ration Card Using RFID, Biometrics and SMS Gateway”. This system proposes, RFID tag which carries family member details here the customer needs to show this tag at the ration shop to the shopkeeper. The user have to provide thumb impression on the biometric machine. If the user is found authentic then the quantity is given to customer according to the total number of family members the information about delivered ration will be sent to the government and also to the customer through SMS gateway [4].

Mohit Agarwal, Manish Sharma, Bhupendra Singh, Shantanu, has implemented “smart ration card using RFID and GSM”S. In this system, they used RFID tag that carries the family member details and the customer needs to show this tag to the RFID reader. The microcontroller connected to the reader will checks user authentication. If the user is found authentic then the quantity of ration will be given to the customer according to the total number of family [5].

ALGORITHM:

1. Initialize smart card reader, LCD and VB app.
2. Display on LCD and login.

3. If valid username and password then display message login successful otherwise go to step 2.
4. If invalid user display message login unsuccessful and go to step 2.
5. Then insert smart card and authenticate it.
6. Get details from card.
7. Select proper amount of product and quantity from keyboard.
8. Calculate total amount and make bill print.
9. Display total amount on Lcd.
10. After above step Logout from the system.
11. Stop.

BLOCK DIAGRAM:

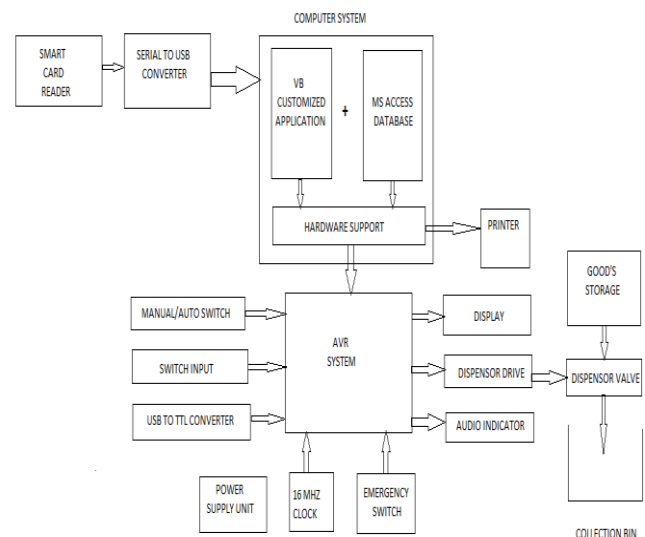


Fig. Block diagram of proposed system

WORKING:

In e-rationing system we have used three smart cards, in which consumer information with aadhar no is feed. Card reader is used to read all the given information about the customer. This card is secure access card with integrated memory & password protection. Reader information will get send to the PC for further processing of data. On PC we have installed VB software and database of user is saved.MS access is used to store data.

Here AVR microcontroller will accept input from PC. After authentication of the right user, customer has to enter the amount of quantity with the help of VB software which is installed on PC. Once customer enters quantity it will check availability of goods and according to it, it creates total bill amount which is ready to print. At the same time once bill

get generated this data will get send to the AVR controller for dispatching process of goods. The AVR controller will processes the data coming from VB Software with hardware support and generates the output for dispensing the entered quantity through dispenser and solenoid valve arrangement. At the same time same data get uploaded on IOT server, so that anyone can get access of it. Also SMS get sent to user for purchased goods with total amount.

SIMULATION DETAILS:-

Proteus:

We used Proteus simulation software circuit designing and simulating result. Proteus is simulation and design software tool designed by Lab center for Electrical and Electronics Circuit Design. This tool contains schematic, simulation and PCB designing.

- ISIS software is used to draw schematics and simulate the circuits in real time. The simulation human access during its run time, providing real time simulation.
- ARES is used for PCB designing. Proteus having a additional feature of viewing output in 3D view of the designed PCB along with its components. Also we can develop 2D drawings for the product.

COMPLETE HARDWARE SETUP:

The following fig shows complete hardware setup.



Comment: Hardware unit.



Comment: Dispenser unit for dispensing goods. First dispenser is used to dispense solid and second is used to dispense liquid.

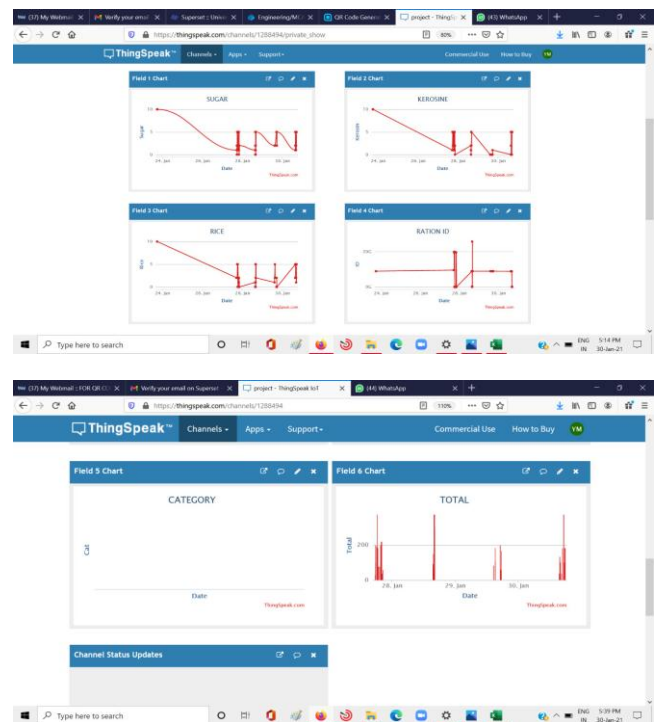


Comment: dispensing first quantity of goods.

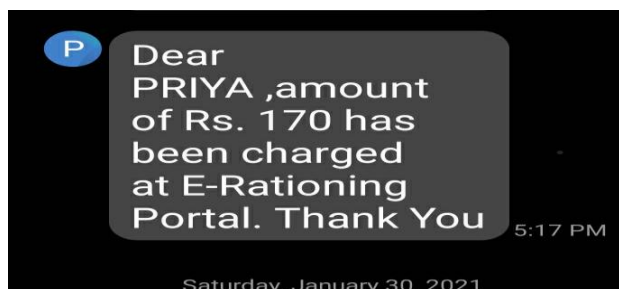


Comment: displays the dispenser number and quantity being dispensed through dispenser.

Comment: Message get sent to user after purchasing goods with total amount.



Comment: Data get uploaded on IOT server after dispatching goods. Also we can download excel sheet of data.



SYSTEM CIRCUIT DESIGN:-

For circuit designing and simulation we used Proteus simulation and design software tool.

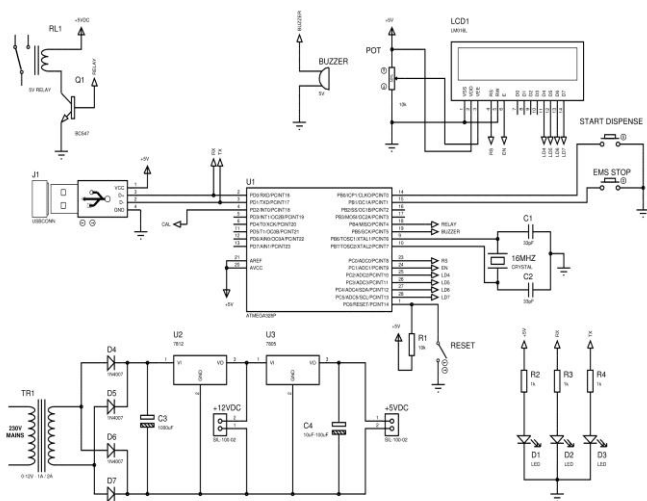


Figure 4.1 system circuit diagram

CONCLUSION AND FUTURE WORK:-

The proposed developed system is able to combat corruption in public distribution system. The system shows Efficient management of the ration distribution system. The System administrator can have check on the availability of The ration to the beneficiary on one side and the customers Are able to see transactions at their end. Thus the system Achieves transparency among top level to leaf level i.e. customers. As it is transparent, FPS dealer cannot maintain Fake ration cards at their end. As all data get uploaded onto IOT server with total amount too, which decreases chances of corruption to zero. Thus development of automated public distribution system helps customers, retailers and administrators to maintain transparency and Achieves reliable accountability.

As part of future work, we can connect customers’ bank accounts to their PDS accounts and make payment online.

This will reduce human interference in transaction process To a great extent. Also we can work on GPS tracking of the PDS delivery trucks, which would reduce the diversion of PDS commodities, could be very helpful. We can open an Online quotation for farmers, providing them with direct

Contact to government authorities. We can further enhance the entire system by including biometric identification like voice & face identification to add more security

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