Radio frequency identification system based automated public distribution system

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Abstract— This paper is designed at an aim of improving public distribution system by the process of minimizing manual work. In our nation, Ration card is important for every family for the purpose of identification and getting goods from the government. Today, public distribution system (PDS) having corruption and there is no transparency between government and users. This paper focuses on distribution of goods in PDS system automatically and creates a transparency between the customers and government.

Keywords— Radio Frequency (RF), Radio Frequency Identification (RFID), Public Distribution System (PDS)

1. INTRODUCTION

Nowadays ration cards have become a major aspect for every household and its major purpose is for obtaining the details of members belonging to the family by acting as an address proof and it is also essential for getting gas connection. In order to buy things like kerosene, dal, flour, oil and getting other benefits this card is essential. Two major disadvantages are being identified in this system. The foremost is inaccuracy in materials, second is smuggling of materials. This project proposes an efficient method to overcome the difficulties of old system. As payment bills are computerized it avoids collaboration and malfunctions. Transparency can be maintained through this system. Performance speed is high, more congestion can be avoided by using public distribution system. Time delay can be avoided.

2. EXISTING SYSTEM DESCRIPTION

The main objective of a government is to control the distribution of goods and services to the common people. This aspect is even more essential when there is an outweighing of the demand items with respect to supply availability. When there is a war or when economies slide the process of rationing will be done by governments. The government will be in a need of controlling goods supply when there is an occurrence of black market. This is very much essential for enhancement of security network. Besides this, the poor people are suffering to meet their needs of consumption by getting their supply only by ration shops. For this purpose there are state-level ministries under the department of food and civil supply for the purpose of regulating ration shops that are present under their jurisdictions, and it is this ministry that is providing license for private traders. The process of issuing these ration cards is done by state governments in a proper manner and the allocation of goods are also done by them.

This will vary from one commodity to another and the authority for determining the prices lies with the state government. Public distribution system (i.e.) ration distribution is an area where there is a high possibility for illegal smuggling. The citizens of the country posses ration cards for buying the goods from the ration shops. While getting materials through the rations, first there is a necessity to give the ration card and a signature will be put by the official in the card on the basis of the materials that are to be allotted for that particular person. Through this process the materials are allocated to the
stipulated person by using the assistance of humans. Because of using this system, the customer will get inaccurate materials. This type of public distribution as a whole entirely will not be able to satisfy all the needs of the common people because of excess population of the country. In addition to this, there is also a possibility for the materials to be robbed by entering mismatched or wrong entries into the official register which may also happen without bringing this news to the knowledge of the ration card holder.

3. OVERVIEW OF PROPOSED SYSTEM

In this system, RFID (Radio Frequency Identification) system is proposed in place of manual entry in the record books. The customer needs to place the RFID card to the RF (Radio Frequency) reader and it reads the signal. This information is send to the Microcontroller. The controller checks the customer codes and then microcontroller is interfaced with a computer and GSM module. These blocks are used for displaying the quantities and the messages are being sent to the user.

Figure 1: Flow Chart for PDS System
4. BLOCK DIAGRAM OF PUBLIC DISTRIBUTION SYSTEM

![Block Diagram of Public Distribution System](image)

Figure 2: Overall Block Diagram of Automatic Public Distribution System

5. BLOCK DIAGRAM OF RFID SECTION

![Block Diagram of RFID Section](image)

Figure 3: Block diagram of RFID Section

RFID is an advanced technology which has special characteristics such as wireless card. This card will have an inbuilt embedded chip and in addition to this it also has a loop antenna. A twelve digit number which is denoting the card number will be represented by this inbuilt chip. In this representation, for the purpose of library card we are using a more advanced RFID card. With the help of this technology, each and every individual will have an unique RFID card. For the transfer of data from the RFID reader, it is being interfaced with a suitable microcontroller. For this purpose we need a reprogrammable controller. Hence a flash type reprogrammable microcontroller is used. The card number is to be pre-programmed into the microcontroller.

Whenever the RFID card is placed in front of the reader by the person, the reader starts its operation by reading the number present in the card. After this the data is being sent to microcontroller. Then the person will be in need to press the PIN number i.e., personal identification number which is given as an input through keypad. All these data that are transferred reaches the microcontroller. Data like the card number and PIN number that is being entered by the person in the keypad will be compared with the number that is being already stored in the network. If all these data are found to be valid then the database of the concerned person will open. The database network will possess all the details like quantity of material to be issued, amount that is being already bought and allocated details. In contrast, there will be a display of message called “Authentication Fail” if any of the things becomes as invalid like PIN number. This will be displayed on the LCD screen. There will
also be an additional indication like alarm sound which will be activated by the driver circuit. Hence if there is an alarm sound it can easily be concluded that there is authentication failure.

6. DESCRIPTION OF MECHANICAL SECTION

After RFID section process, the user can enter variety and quantity of the product based on product availability of particular customer. By the use of driver circuit and relay, the entered quantity can be delivered. The entered product is a solid material it can get from DC Gun, if it is a liquid material it can get from pump of the mechanical section.

In mechanical section, RS232 cable is used for interfacing GSM module with the microcontroller. VB tool is used for interfacing PC with the microcontroller.
7. Conclusion

In the previous technology, the ration is not properly distributed to the consumers. This drawback is overcome by using smart cards. We can avoid malfunctioning and corruption under going in ration shops. In the old ration system all the data’s are entered manually. In modern public system based on smart card reader we overcome the above problems. This provides simple and accurate information about PDS to the public. In future, the PDS can be interfaced with pc and GSM for updating the details of the Customer.

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