Embedded Based Automation of Ration System Using ATmega 162

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Abstract –Public distribution system i.e. rationing distribution is one of the widely controversial issues that involves corruption and illegal smuggling of goods. All these happen because every job in the ration shop involves manual work and there are no specific high-tech technologies to automate the job. Because of intervention of manual work there are lots of illegal activity occurs. The illegal activities are like, wrong entry in register of shop about the amount of products that given to the people, sometimes there is chance of distribution of low quality products than actual product provided by government for poor people, people do not have idea about how much quantity of good provided by government to them etc. In this paper we propose the concept about to replace manual work in public distribution system (rationing distribution system) by automated system which will be installing at the ration shop .In this automated system we replace the convectional ration card by smart card in which all the details of user provided. This prompted us to interface smart card reader (RFID Based) to the ARM. Government should have control over all transaction happen at ration shop, to involve government in the process we can connect the system which is at ration shop to the government database via GSM module.

Index Terms – *ARM, GSM, RFID, PDS.*

1. INTRODUCTION

India's Public Distribution System (PDS) with a network of 4.78 Lakh Fair Price Shops (FPS) is perhaps the largest retail system of its type in the world. One of the main problems with this system is the inefficiency in the targeting of beneficiaries and the resulting leakage of subsidies. The TPDS system today supports over 40 CroreIndians below the poverty line with monthly supply of subsidized food grains. The system also provides gainful employment for 4.78lakh.

Fair Price Shops Owners, their employees and hired labour who work at the FCI and state warehousing go downs. One of the main problems with this system is the inefficiency in the targeting of beneficiaries and the resulting leakage of subsidies. The Planning Commission had the following to say on the PDS system in its 2005 report. many systemic challenges that plague the PDS system today "For every Rs 4 spent on the PDS, only Rs 1 reaches the poor" ."57% of the PDS food grain does not reach the intended people ".many systemic challenges that plague the PDS system today are PDS Leakages, Scale and Quality of Issue, System Transparency and Accountability, Grievance Redressed Mechanisms[9].These drawbacks are overcome by automation.

The word Automation means doing the particular task automatically in a sequence with faster operation rate. This requires the use of microprocessor together with communication network and some relevant software programming. "Automation in rationing system"means distribution of essential commodities to a large number of people through a network on a recurring basis in an automated way. The Concept is to automate the Public Distribution System (PDS), A Govt. Of India initiative Process in which a fixed amount of ration is provided monthly to the people by the PDS stores. Because of the increased corruption in the market sector can be prevented if system becomes automated, increased adulteration can be prevented as well, the hoarding done by the officials and labourers of Govt. Super Bazaars (PDS Stores) which in turn leads to price hike can be prevented using this system. The apparatus used for designing is cost effective and can prove helpful to Govt. of India's PDS System and to various other disciplines. In terms of feasibility it is a vast concept and an interesting task to perform and totally feasible in all aspects technical as well as other.

2. EXISTING RATIONING SYSTEM

1.1 Waste, Leakages and Diversion

All The Planning Commission (2008) has estimated how much of the TPDS (Targeted Public Distribution System) rice and wheat are leaked. Hence, more than half (54%) of the grain taken off for the TPDS disappeared before it reached buyers in the FPS. Moreover, the leakages have increased compared to 1993-94 and 1999- 2000, and are estimated at 28%. That about half the TPDS grains is leaked before reaching consumers reflects inefficiency, corruption and theft on a gigantic scale [1]. Ministry of Consumer Affairs, Food and Public Distribution Department of Food and Public Distribution Annual Plan 2011-12 is as follow:

	1993-1994	1999-2000	2004-2005	2007-2008
1]TPDS Consumption	10.64	12.290	13.53	18.93
2] TPDS offtake	14.7	17.11	29.65	33.12
3]={[2][1]}/[2] Leakage(%)	28	28	54	43

Table 1 Estimated consumption of tpds rice & wheat as a percentage of tpds off-take, rural & urban areas

Main Plan Scheme is:

1. Construction of Go downs by FCI/State Govts. Integrated Information System for Food grains (IISFM)

2. Computerization of PDS Operations

3. Strengthening of PDS & Capacity Building

4. NSI, Kanpur 6. Consultancies, Training &Research

5. Village Grain Bank

6. Warehousing Development and Regulatory Authority

Total Plan Outlay for the 11th Five year Plan for the Department was Rs. 694 crores. The Total Expenditure during the first 4 years of the 11th Five year Plan is 231.93 crores.Expenditure in 2007-08- Rs.52.04 Cr. 2008-09- Rs.46.08Cr. 2009-10- Rs. 69.07 Cr. 2010-11- Rs. 64.74 Cr. The Department submitted the Annual Plan proposal 2011-12 to the Planning Commission for making BE provision of Rs.342.61crores. Which, included Rs.225 crores for construction of go downs as an additional amount. Planning Commission made an allocation of Rs. 120 crores to the Department for the Annual Plan 2011-12. Expenditure up to August 2011 is Rs. 75,000 only

1.2 Web Enabled Ration Distribution System

To overcome one of the corruption problem involve in ration distribution system through Hooper valve to control openings of ration outlet etc. no involvement of any person directly with distribution system, also whether kerosene disposition is also sensed at web site using proximity sensor through web giving a clear idea about delivery of it.

1.3 Bar Coded Ration Card

Issue of new barcoded ration cards having 2D barcode on it. BARCODE contains some crucial information of Ration card. The BIOMETRIC data of at least 1 member/card is captured as per ISO standard. Establishing the identity of a person through convergence of Ration Card data with EPIC, BPL, GAS, Electricity, Job Cards and Khedutkhatedar. Food coupons to the beneficiaries to avail the commodity covered in Public Distribution System. The food coupons can be printed from e-gram/cyber café on biometric verification of beneficiaries.

3. MAIN PROBLEMS IN THE CONVENTIONAL PDS SYSTEM

i) Illegal Usage

ii) Cannot able to get the accurate quantity of supplies

iii) Over crowd

iv) Cannot able to get the material at any time
v) Processing speed is slow

vi) Selection of households – Targeting

vii) Bogus cards
viii) Hijacking of ration cards

ix) Poor quality of supplies
x) More than the prescribed rates are charged

To overcome those problems, we are going for the Automation of ration shop.

4. PROPOSED SYSTEM

Benefits of proposed systems are

1. Increased corruption in the Govt. As well as market sector can be prevented if system becomes automated

2. Increased adulteration in consumables can be prevented

3. The problem of hoarding at Govt. Super Bazaars (PDS Stores) that gives rise to price hike can be prevented
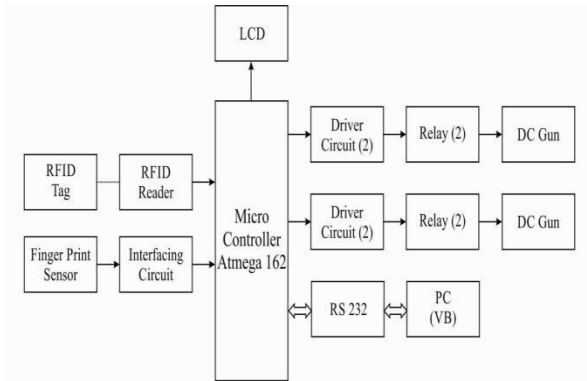
4. Cost effective approach

Figure 1 Block diagram of Ration System

5. RESULT

This system is based on Radio Frequency Identification of customer. Here each customer is provided with RFID cards. In traditional ration card system, customer can take his quota by showing ration card at shop at once, but in this system, by using RFID and password. First user is authenticated, Then system shows the balance of person. User will enter the amount of Kg he want to withdraw. System checks his account. If the user will have sufficient balance to withdraw the current amount, system will open the valve. Through valve grain will come and it will be put on weight sensor. Once the count will reach to the entered amount controller automatically shutdown the valve and update the account of the customer. We can send this update account information to customer's mobile using GSM module. In this system we made the data base of customers with their account details, password etc.
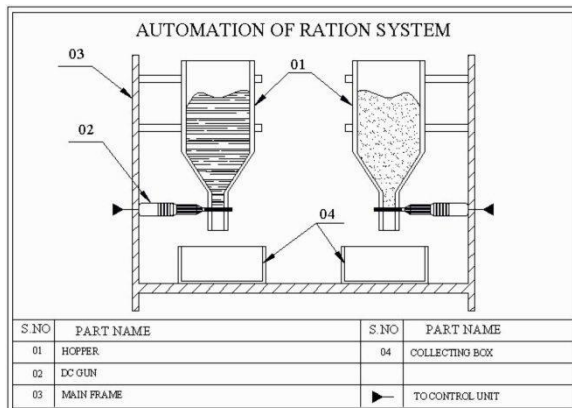

Figure 2 Automation of Ration System

6. CONCLUSION

As this system is a propose system we can see that by using such a system we can avoid corruption in ration/public distribution system to a large extend. This system has greater scope in future. As there is no manual data stored and all information is stored in database, the higher authority can check the details as and when it's necessary through the use of servers

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