

# “ Smart Ration Vending Machine Using RFID ”

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## I. INTRODUCTION (HEADING 1)

A ration card is one of the most important documents for each and every citizen of India. It is used to purchase various commodities like rice, sugar, oil, wheat etc. at a cheaper price from the ration shops, issued by the government of India This card serves as both a confirmation of identity and an address. The present ration card distribution system has many disadvantages such as imprecise quantity of goods, physical work, low processing rate, large waiting time, and unnecessary data. Because India is the world's second most populous country, distribution of ration is not an easy task. One of india's key public sectors is the ration distribution system. It oversees and distributes the essential goods to all the citizens of India mainly people below the penury line and a few reserved categories such as military and police as well. Based on their ration card type such as above poverty Line or Below Poverty Line or Antyodaya Anna Yojana, food products will be given. Our proposed system eliminates the disadvantages of existing systems by using RFID and GSM modules. RFID uses an EM field to detect and identify objects. Authentication is done by pin or password. All the details of the beneficiary and his family will be uploaded into the RFID tag. This card will be given to every registered consumer which can be used as a Smart ration card. Each ration distribution shop will have an RFID reader which can read 12- bit hex code generated by an RFID tag. Any user who needs ration will have to flash their card through the scanner. Whenever any beneficiary flashes the card it will check in the database whether the beneficiary is valid or not. When a valid beneficiary will flash his card through the RFID scanner, the quantity of ration taken by him/her will be displayed on LCD display and also the deducted system. The customer's registered cellphone number will get transaction data through SMS.

The traditional public distribution system (PDS) the government give free or at minimum price ration to the public of the that country. This ration distributed to public by the ration shops which are present in every locality. The government give ration like sugar, rice, oil, kerosene, and many more at cheap price chosen by administration of that country. The prices and thing also depend on the colour of the card, as government has set the colour of the card according to income of that family like there are white card is given to family whose income is above the poverty line and the blue or orange card is given to the family which below the poverty line. But in this system when some person didn't clam there ration this ration shop owner sell this without letting know to the government and making their own profit. Sometimes this ration card owners don't sell the items which were given to them or sometimes they use the faulty weighing scale to make their profit. Due to all this 55% of ration does not reach to people. At the time of covid 19 pandemic there were long line for this ration as people were not able to go out for work and earn. So, this ration food was very important to them and at time also this ration shop owner was doing the business of scamming the people.

The main problem in this is

- 1) no database on stock availability
- 2) many malpractices And corruption.

**Key words:** smart, ration, vending machine, RFID, automatic

## OBJECTIVE

Smart ration vending machines using RFID have several objectives, including:

- To Dispense Ration materials using modern technology
- Digitally maintaining the stocks and avoiding human intervention in updating transactions and maintaining records.
- Avoiding irregularities in opening Ration shops.
- Restricting unauthorized card holders.
- Decreasing time wastage of waiting in queues for Ration materials.
- Cutting down the chain of malpractices.
- Avoiding human intervention in updating transactions and maintaining records.

## LITERATURE SURVEY

Amarsinh ajit desai

In recent years, the automatic ration vending machine using RFID has become increasingly popular in many countries. The machine uses RFID to automatically identify and vend ration to the user. This paper presents the creation and execution of an automatic ration vending machine using RFID. The machine is designed to work with any type of ration and can be used in a variety of settings such as schools, hospitals, and office buildings. The machine is easy to use and can be operated by anyone. The machine is also very reliable and has a high degree of accuracy. The consumer must first hit the number of his or her own card before tagging the card. He may withdraw a certain amount of ration if the number that was pressed and the card information match. The consumer cannot withdraw the ration if he is still an illegal user on that card if the pressed number and the card data do not match. Thus, avoiding the illegal withdrawal of the ration from an unauthorized person. This study examines automated ration dispensing devices. The main goal of the automated ration vending machine is to prevent the massive financial waste that occurs with traditional ration distribution systems. In this approach, an RFID tag is utilized as an electronic ration in place of a card traditional ration card. To purchase ration from the dealer, the consumer must use his unique card in place of the regular ration card.

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Our aim is to design an automated ration vending machine to help people overcome the demerits of TPDS. The Traditional Public Distribution System (TPDS) was established in 1997 to assist the underprivileged while maintaining the government's desired level of control over the budgetary food subsidies. The TPDS programme aims to eradicate poverty by providing the bare minimum of food grains at significantly discounted rates. These ration stores' supplies will be purchased directly from the farmers and then resold at reduced prices. The Traditional Public Distribution System (TPDS) has drawbacks which involve lot of corruption such as black marketing of these food grains and many families claim the quota of other families. Even when the material is not bought at the end of the month, the shopkeeper would send them to others without permission of the Government. There is no transparency between the Government and the customer.

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Indian government is distributing grains to the poor people at affordable price. The ration distribution system is also referred as public distribution system. The existing system works on manual distribution system, which makes inaccurate measurement in quantity of materials. In this system involves a human errors, corruption and illegal smuggling in commodities. To avoid this problem we are using MASTER KEY method and finger print authentication process. The finger print authentication process involves user One Time Password valid for few minutes. In this paper MASTER KEY method is introduced, the MASTER KEY is mainly to initiate the process.

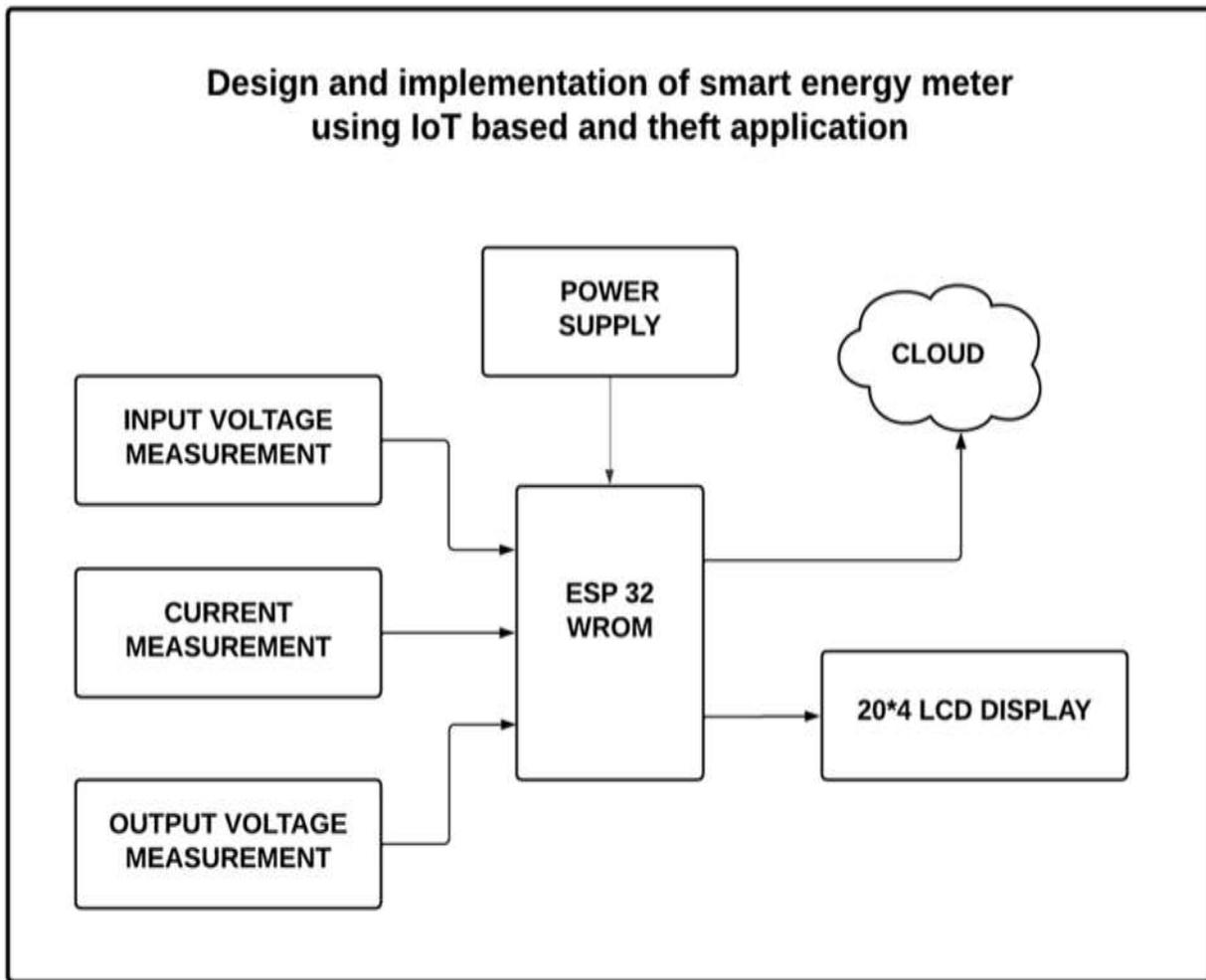
## II. SMART RATION VENDING MACHINE USING RFID

The vending machine are used for dispensing ration products comprising of plurality of the store the groceries plurality of material flow control and a user control unit characterized in that, said product vending machine comprises at least a weighing. Weighing machines are mounted on a platform below each delivery valves control unit comprises of a biometric identification, RFID reader, Display unit, Data Input device and a microcontroller. Each of the container are provided with load Sensing. And load Sensing are connected with the microcontroller. Weighing is connected with microcontroller. The data from the microcontroller is transferred to the cloud sever through wireless transmission. Method of working of the delivery quantity cross checking mechanism comprising the steps of: Power supply -12 V dc input is given , INPUT-Ration card number card ,RFID Reader -The RFID Reader will read the RFID ration card number ,Microcontroller -It is the heart of our project where it is the main processor.

## III. PROPOSED SYSTEM

Below is the architecture of Smart Ration Vending Machine. This is the architecture and simplified diagram of our project . This is used to learn the diagram easily. In this architecture there are following blocks are used as follows:

- MG995 servo motor
- Arduino nano
- 20\*4 lcd display
- I2c module
- 7805 regulator
- RFID reader
- RFID cards



Schematic diagram

#### IV. OUTPUT



## V. RESULT

When the RFID tag and identification number match, it will display the person's assigned ration and allow him to consume it, including items like rice, wheat, dals, sugar, etc. Since there is no fraud in this system, it is more trustworthy than the standard PDS method.

## VI. ADVANTAGES

- RFID technology automates data collection and vastly reduces human effort and error
- RFID supports tag reading with no line-of-sight or item-by-item scans required
- RFID readers can read multiple RFID tags simultaneously, offering increases in efficiency
- All RFID tags within range can be detected instantly and matched with information in your database
- Assets can be cross-referenced against assigned locations and recorded as present, missing, or relocated
- RFID can be integrate with active scanning and fixed readers for a totally automated tracking solution
- Assets and employees can be tracked and located automatically for everything from supply chain and asset management to facility security and emergency planning
- Available scanners support both RFID and barcoding so you can upgrade at your own pace

## VII. CONCLUSION

In the current public distribution system, there are many drawbacks. First, automated ration distribution ensures that everyone in the household receives an equal share of the ration. This is not always possible with manual distribution, which can lead to conflict within the household. Second, automated ration distribution eliminates the need for people to queue up for their ration. This can save a lot of time, particularly in communities where queues are often very long. Third, automated ration distribution reduces the chances of ration being stolen or lost. This is because the ration is dispensed directly into the person's ration card, which they then take home with them. Fourth, automated ration distribution is more hygienic than manual distribution, as it reduces the chances of contamination. Fifth, there will be no selling of the products in the black market as it is more common with manual distribution system. And finally, automated ration distribution is more cost-effective than manual distribution, as it eliminates the need for manpower to distribute the ration. By preventing corruption, this study project will significantly alter the public distribution system and benefit the government. We can control the distribution of rations better with the help of this contemporary system.

## VIII. FUTURE SCOPE

- Online payments may be made using a pre-charged card or an automated withdrawal from the customer's bank account.
- Delivering goods to the fair shops can be done while
- Tracking a material using GPS technology.
- The automated system is expanded to include other components of public distribution systems.
- Before visiting a ration shop, rations can be reserved online, and each customer will receive a time slot and OTP.
- Consumers have access to information regarding rationing supplies.
- The dispensing of materials and all related data can be pushed to the cloud, and all records can be kept.

## IX. REFERENCES

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