SMART RATION CARD

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Abstract: This paper proposes the improvised technique of implementing smart ration card. The main objectives of smart ration card are providing food grains and other essential items to vulnerable sections of the society at reasonable (subsidized) prices and to eradicate inefficiency in the targeting of beneficiaries and the resulting leakage of subsidies which is the main disadvantage of the present PDS (Public Distribution System). These objectives can be achieved by creating a unique database of residents in India and will put together the best technologies and processes for this purpose. This will lead to a database without duplicate entries and ghost cards which will help to avoid illegal and bogus claims and fraud in distribution of ration.

INTRODUCTION

Public Distribution System (PDS) is an Indian food security system. It is established by the Government of India under Ministry of Consumer Affairs, Food, and Public Distribution and managed jointly with state governments in India. The traditional PDS is used to distribute grocery items to India's poor who are valid ration card holders. The validity and the allocation of the ration cards is monitored by the state governments. A ration card holder should be given 35 kg of food grain as per the norms of PDS. However, there are concerns about the efficiency of the distribution process. In order to make it efficient and improve the current system of PDS we are implementing SMART RATION CARD. Some states like gujarat and kerala had already implemented this, but it has a tedious process which is overcomed here. Here we are going to use a card similar to the swipe card or the credit card used for our shopping purpose. Using this card the card holder can get his/her grocery items from the Fair Price Shop's (FPS).The main reason for using this swipe card and making this process computerized is to remove the drawbacks of the present way of issuing products based on ration card. The main drawback in the current system is that the PDS has been criticised for its urban bias and its failure to serve the poorer sections of the population effectively.

The targeted PDS is costly and gives rise to much corruption in the process of extricating the poor from those who are less needy. Also many retail shopkeepers have large number of bogus cards to sell food grains in the open market. Many FPS dealers resort to malpractice since they acquire less salary. Most of the times Users do not get their rightful entitlement in terms of quantity. What's meant for them or the farm produce procured by the FPS's is diverted to the open market. So in order to avoid all these drawbacks we are going to use the Smart ration card which will help us to avoid the corruption in PDS if not eradicate it.

PROCEDURE

Smart Ration Cards:

The smart card is modified as smart ration card by coding the microprocessor chip present in it according to the requirements. Each smart ration card contains unique barcode. We need to collect the data from all the valid ration card holders and estimate the total number of smart ration cards to be created. After the complete data has been collected a database is created. It contains separate record for each family which includes details like no of membersinfamily, names of the members, head of the family, permanent address, present living address, phone number, CREDIT Setc. These credits are like units or points that are issued to each family every month by the respective state governments. Here we will be having two databases for two different categories i.e. one for the card holder information and the other one to store the details of the items(products) that are being distributed. Now, the smart ration cards are generated and distributed to the valid card holders.
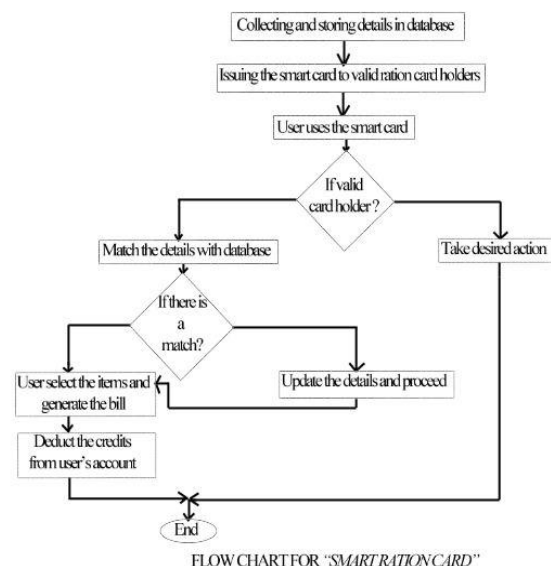

FLOW CHART FOR "SMART RATION CARD"

Figure: 1

FPS:

When the smart ration card holder visits the FPS where the ration is being distributed the smart ration card is taken from the card holder and verified if it is valid using the bar code on it. If it is valid then the details of the card holder are verified with that of the details in the database if they does not match then the database is updated and a list of the products (items) with their respective codes available at the FPS is shown to the customer to select which items he

wants. When the items are selected the bill will be generated. The important thing to note here is that,each and every item will be having an particular code and using that code and the quantity of the item purchased the amount for that particular item will be calculated.For example the code for rice is 002(which means 002= 5credits) and the quantity of rice purchased is 2kg then the amount related to rice will be 5*2=10 credits.Now,after the bill is generated for the purchased items using the above method the dealer puts the card in the swipe machine and then the pin will be entered and the number of credits in the bill will be deducted from the customer's smart ration card.Swiping process referredhere is almost similar to the swiping in the shopping malls etc but the main difference is that here instead of money the credits will be deducted.Therefore, the customer leaves the FPS with the bill and items he has purchased.

Proposed Biometric Based Bar-Coded Coupon System Steps:

STEP-1: Door to door visit by enumerators to help existing Ration card holders fill up prescribed FORM-1 for availing Bar Coded Ration card.

STEP-2: Digitization of Form -1 and matching of card holders' family details with EPIC from Electoral Roll

STEP-3: Capturing of Photo and bio-metric details followed by Printing of Bar Coded Ration Card.

STEP-4: Distribution of Bar Coded Ration Card to the Cardholder (in lieu of old ration card).

STEP-5: Card holder visits E-GRAM and E-GRAM Operator reads the card details with Bar Code reader device

STEP-6: E-GRAM Operator carries out ON LINE verification of Card Holder's FINGER PRINT using Biometric Device

STEP-7: E-GRAM Operator verifies the Bar-Coded Coupon with the Ration Card and takes the Print out of the Bar Coded Coupons

STEP- 8: Card Holder goes to the Fair Price Shop along with Ration Card and Bar Coded Coupon

STEP-9: Card Holder submits bar-coded coupon for wheat and makes payment to the Fair Price Shop Dealer as per Coupon details

STEP-10: FPS Dealer hands over wheat as per coupon details to the Card Holder

STEP-11: FPS dealer goes back to the E-GRAM/ Cyber Café and gets commodity coupons (as per the date of actual sale) read into his sale register maintained in the central system.

STEP-12: In due course, using bio-metric the FPS dealer can obtain Permits from E-GRAM/ Cyber Café. (Freedom from Block level bureaucratic layer)

DATABASE MAINTENANCE

As we have already stated that we will have two databases for two different categories i.e. one for the card holder information and the other one to store the details of the items (products) that are being distributed to the people below poverty line. So every time the distribution has been made there is a necessity of updating and maintaining the database to avoid the miscalculations.

Customer's Database:

For maintaining this database we have to collect all the related information and have to store it in the database. Every time if there is any change in the details provided by the customer It should be immediately updated in the respective database. When the distribution of the products (items) is made then the credits will be deducted from the customer's account so the dealer should make sure that it is updated in the following database and the credits are deducted from his/her account.

Figure: 2 Customer's Database Form

Product's Database:

This database is used to contain the details of the products available at the FPS. When the stock of products(items) arrives at the FPS then that particular amount of data is updated in the database. When the distribution is made to the people below the poverty line then the quantity of the products reduces in that particular FPS and hence it should be updated in the database. For example if 3kg of rice has been distributed to particular customer then that 3kg should be deducted from the total amount(quantity) of rice in the database. Maintaing the database and generating the bill becomes important because these are the two factors that will help the government to avoid the corruption in PDS.

Figure: 3 Product's database

FUNCTIONING OF SWIPING MACHINE

These are the following steps that provides the information on how the processing of customer's transaction takes place through the swiping machine:

a. Customer hands over the smart ration card to the dealer to pay for what they have selected.
b. The dealer puts the card in the swipe machine, passing it through a narrow slit.
c. The machine traps the vital information which is etched on the smart ration card, namely:
   a) The name on the card.
   b) The bar code number of the smart ration card.
   c) The expiry date of the credit card.

It also records the location of the dealer where the purchase is made (FPS location).

d. The information which is obtained is processed within seconds, meaning that the data captured by the machine is quickly transported to the customer database. This transference of data incorporates wired or wireless internet facilities. At the other end, the data gets authorized & the number of credits is then deducted from the customer's account.
e. The data mentioned in point 3 above can also be entered manually in the remote chance that the swiping of the card fails to register the data.

Figure. 4 Swiping machine

What is also involved as part of this processing is the signature of the person who holds the smart ration card. Look at the back of the card. The long, rectangular strip has customer's signature on it. When the customer submits the smart ration card to make a payment, the dealer will hand over a slip for the customer to sign. The dealer checks if the signature on the back of smart card matches the one on the slip. This slip is kept by the dealer as a physical record of the purchase made by the customer, known as the point of sales transaction.

a. Dangers to look out for when using a credit card swipe machine
a) The signature on the card and the transaction slip needs to be checked if matching. If there is even a slight doubt that the signature does not match, then it is important for the dealer to re-verify the details of the customer. This is where the smart card terminal's most important function comes into play – by providing some kind of safety shield against a falsified signature.

b) It is important to have a locking system for the smart ration-card swipe machine when not in use. This ensures that the machine is not misused in any way.
c) Training an employee to use the machine is crucial and understanding the features of the smart ration-card machine is equally essential. It is best to acquire one which has easy-to-use features and not some complicated equipment which nobody can understand.

ADVANTAGES

The main advantages of implementing the smart ration card are:

a. The ration items will be effectively delivered to the valid ration card holders who are below poverty line.
b. The main advantage here is that the customers get their rightful entitlement in terms of quantity. What's meant for them cannot be diverted to the open market because of maintaining the database correctly and generating bills properly.
c. Ration shops do not open every day. Nor do they keep regular hours. So to avoid discomfort to the customers a system generated message will be delivered to their mobile when the stock is available and the shop is opened so that it does not cause any trouble to the customer.
d. A common practice is adopted by most people that run ration shops i.e., they charge people more than the mandated rates, and they often under-weigh the commodities. But using this technique they cannot do so because each and every item will be having its own code and the price will be generated from that code and hence no overcharge can be done.
e. The government services are reached to poor people effectively and also the corruption in PDS and FPS can be reduced or avoided to a great extent.

CONCLUSION

This paper depicts the computerized version of the Public Distribution System (PDS) and its advantages over the present ration cards. Using this technique or method we can reduce the corruption level and can mostly eradicate it from the above mentioned system which will help the country's economy to reach new heights. The computerized PDS is simple to implement and requires much less hard work when compared to the other system. So implementing this will be really helpful to the people below poverty line.

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