

PDS Case Study

Introduction -

PDS (Public Distribution System) refers to the distribution of food grains and other essential commodities such as kerosene oil, sugar etc. to the people who are considered below poverty line with the help of special shops set up by government known as fair pair shops.

Present PDS suffers from a number of problems. Some of these problems are (Ref - Wikipedia)-

- a.) Inferior food quality (replaced with good food) is provided in the name of PDS. Good quality food grains are sold off in the market by the FPS owners.
- b.) Bogus ration cards result in food grains being sent to corrupt people.
- c.) Fair pair shop owners involve in black marketing of food grains and holding of grains.
- c.) Identification of families which are actually below poverty line is another major hurdle in PDS.
- d.) Current PDS requires that the stock assigned should be taken all at once which results in the deterioration of eatable products.
- e.) Ration cards issued for migrant workers is another major issue. Since, the migrant workers do not stay at one fixed place, frequent changes in place of living leads to ration card problems Which results in poor PDS implementation.

Model used in 3 States -

Ref - <https://poorvi.cse.iitd.ac.in/~suban/COP290/pds/reetika-pdsauth.pdf>

Chattisgarh and Jharkhand showed great improvement in food distribution after digitisation. Sales records was maintained in registers which was rarely verified allowing corrupt dealers to make fake entries of grain sales. To reduce the corruption and the entry of fake grains in record books, sales should be available publicly on internet for anyone to verify.

(Jharkhand Problems)

ABBA (Aadhar Based Biometric Authentication) - Entitled persons authenticate their fingerprint at time of purchase from FPS.

Survey showed poor results for ABBA due to -

- a.) Transaction failure which occurred since electricity, internet and fingerprint authentication, all three were required at the same time. Availability of all three things in rural areas is quite difficult leading to lot of failures.
- b.) It was also observed that the diversion of PDS grain was more or less same in ABBA and non - ABBA PDS implementation.

(Chattisgarh Problems)

Smart cards with embedded memory chip were used in Chattisgarh which showed a great reduction in the leakage of food grains. These cards were able to record transaction which means that food grains can be distributed even without internet connectivity at one point. Since these cards were able to record and save the transactions, it was known a priori as to how much food grain has already been delivered. As soon as the internet was available, the stored data was synced to the main servers online through POS. Apart from this, tablets were given to ration shops where the owners take photos at the time of purchase.

(Tamil Nadu Problems)

QR - coded smart cards were used which work in offline mode same as described above - transactions were uploaded when the internet was available. These cards were easy to use (took less than a min to operate). Aadhar was necessary to obtain these.

Design and Solution-

Keeping all the above problems in mind and the solutions put forward by different states, it seems that **smart cards** is the best way to tackle it.

1. Smart Card to Residents -

Each resident is provided with a smart card along with ration card. Anyone can buy from any shop that he/she desires.

2. Incentives and Food Grains to FPS -

Fair Price shop owners are provided with a fixed amount of food grains equally at the starting, say $t=0$ (when the system is implemented). Since all the smart cards are linked to central server, as soon as the grains in one of the shops reduces to some fixed value, say one third or half, new orders are placed for larger amount of grains for that shop. Fair price shop owners are given incentive as per the amount of grains/goods sold and the rating of shops by the customers.

3. Transfer from Warehouses to FPS -

Assuming that food grains sent from warehouses are of good quality, to prevent such grains from black marketing, these are sent in special trucks which are coloured. Also, an sms is sent to residents as soon as the truck leaves the warehouse and when the truck reaches FPS of a particular area. This prevents diversion of food grains or replacement of good quality food grains with bad ones. If someone plans to change the items in truck with that of inferior quality, it has to stand somewhere. An app can also be implemented to keep track of these trucks where the truck is being connected with GPS and monitored automatically. If the truck takes a halt for more than some specified amount of time, software flags it and sends notification to the nearest police station or concerned officer to look into it. Not only this, since the customers are also aware that this particular truck is related with PDS grains, they can enquire about it or take

necessary action. Assuming that the truck goes unnoticed, if the truck reaches the delivery point late, residents will be aware of this and they can take action. Residents already know an approximate time by which truck should have arrived.

4. Prevents Black Marketing -

This system prevents black marketing in the sense that since a person is free to buy food from the shop he/she desires, monopoly of one single shop owner is removed. Whichever shop owner provides better quality of grains, everyone will buy from that particular shop. Also, smart card ensures that food grains are not sold off in the market since these are directly linked with the smart card of the customers, it helps in keeping track of the amount of the grains sold by a particular shop.

5. Wastage of food grains and migrant workers -

Apart from this, no shop owner will have to directly take the food for one month which could lead to wastage of food due to its deteriorating quality. Migrant workers won't have to face problems since smart cards are portable and can be used anywhere. Not only this, there should be electronic weighing machines at each checkpoint of the transfer of food grains to ensure that amount of food grains doesn't decrease.

6. Feedback and flagging off corrupt FPS and warehouses -

To ensure the quality, customers will have to provide feedback after each purchase which is not visible to shop owner. A constant poor feedback can trigger the officials to flag a particular shop. If the food grains that reach to a group of shops from a warehouse are of poor quality, this would mean that the feedback by all the customers buying from these shops will be bad. This could flag the warehouse instead of fair price shop owners and officials can look into that particular warehouse.

This kind of system will ensure that food grains reach to the poor and needy along with maintaining quality of the grains.