Computerization of Paddy Procurement and Public Distribution System in Chhattisgarh

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ABSTRACT

This paper discusses strategy adapted in using ICT to control diversion and leakage in the delivery mechanism and its successful application in computerisation of food grain supply chain. In 2007-08, Government of Chhattisgarh computerised whole food grain supply chain from procurement of paddy at 1532 purchase centres to transportation of PDS commodities to 10416 FPS for further distribution 3.7 million ration card holders, covering 6 different organizations. As an outcome of the project, 0.78 Million farmers have received computer generated cheques without any delay. Citizen participation has been increased in monitoring PDS. Outcome of the project, Challenges faced are discussed.

Keywords: PDS, diversion, paddy, CMR, milling, Chhattisgarh

1. Introduction

In a country like India, Government's influence in the lives of citizens is considerable. After independence, the major cause for the improvement in the lives of citizens is Government's efforts. Union as well as state governments spend thousands of crores through different schemes to improve the lives of common man in the country. Even though there is an improvement in the lives of citizens after independence, the magnitude of improvement is not matching the funds spent, due to leakages in the funds because of corruption in the system. One can see real improvement only when corruption can be avoided or minimized in the delivery mechanism. Public Distribution System is a very important scheme for providing food security to the poor and needy. The success of this scheme like all other schemes however depends on proper targeting. Because of the huge subsidy involved and also because of the large number of fair price shops complaints of leakages and diversion are common. Monitoring of the scheme is difficult partly due to the insufficiency of staff and partly due to their complicity. Various innovative methods of reducing leakages and diversion have been tired in the country including bar-coded food coupons, food stamps, biometrically coded ration cards etc. None of these have been entirely successful. . In the State of Chhattisgarh an end to end solution based in information technology has been developed and implemented with very encouraging results. Strategy for use of ICT to check diversion in the delivery mechanism, as well as its implementation is discussed in the following sections.

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Two important schemes of Government of India - paddy procurement at Minimum Support Price (MSP) and Public Distribution System (PDS) - cover the whole food grain supply chain. The two schemes are described here.

1.1 Procurement of paddy at Minimum Support Price (MSP)

70% of population of India lives on agriculture. Majority of the farmers are medium and low income group and require selling their produce immediately after production because of mainly two reasons. These farmers do not have adequate storage facilities to store the produce and these farmers require money at the earliest as they have to repay the loans taken for purchasing seeds, fertilizers etc. Based on this weakness, market forces often try to exploit these farmers. At the time of arrival of agricultural produce, market does not come forward to purchase the same and thus rates of the produce come down due to surplus commodity. Farmers are forced to sell their produce at lower rates. As soon as the produce is transferred to the hands of middle-men from farmers, scarcity is created by storing the produce for later use and thus rates rise high. To check this type of practice and ensure farmers get proper price to their produce Government of India operates a scheme to purchase farmer's produce in the season at MSP.

In Chhattisgarh (one of the sates in India), main agricultural produce is paddy. 2.966 million Families live on farming in Chhattisgarh out of which 1.522 million families are small farmers (having less than 2 hectares of land) [1]. Government of Chhattisgarh procures paddy in Chhattisgarh on behalf of Government of India. This scheme benefits about 1 million farmer families by procuring about 3 million metric tones of paddy in the Kharif Marketing Season (KMS) of a year, spending about 24000 Million Indian Rupees. (600 Million US Dollars). The procurement takes place through about 1333 Primary Agricultural Societies in the whole state covering geographical area of 135000 Sq. KM [1]. The paddy procured is converted into rice by millers after entering into an agreement, Rice is then handed over to Chhattisgarh State Civil Supplies Corporation to use it in another important scheme for providing food security to the poor i.e. Targeted Public Distribution System.

1.2 Targeted Public Distribution System (TPDS)

TPDS is a Government of India's scheme to provide food security in the country. Under this scheme every Below Poverty Line (BPL) family gets 35 KG rice per month at a subsidized rate of Rs 6.25 per KG. According to this criterion there are about 2.4 Million BPL families in Chhattisgarh. Government of Chhattisgarh further augmented this scheme to give 35 KG rice at Rs 3 to about 3.7 million families. Thus GOI and Government of Chhattisgarh spends about 2500 million Indian Rupees every year as a subsidy to operate this scheme for the benefit of 3.7 Million BPL families.

2. Leakage and Diversion

PDS is widely criticized for diversion and leakages in the delivery. PDS is ranked third in corruption among the 5 basic services (Schooling, Water Supply, PDS, Electricity and Hospitals) according the India Corruption study 2005 done by centre for media studies. [2] It is estimated that 25% diversion takes place before the ration reaches to the beneficiaries [3]. The main objective of total food grain supply chain computerization in Chhattisgarh is to check this diversion. The diversion takes place in three main areas.

- Diversion in the procurement itself.
- Diversion in the movement of commodities between CGSCSC warehouses.
- Diversion while transporting to FPS from CGSCSC warehouses.
- Diversion at the FPS level.

The following sections discuss the strategy for use of ICT to check this diversion and its implementation.

3. Strategy for Use of ICT to Check Corruption

ICT should be used in the system so that corruption can be minimized. Then a question arises 'Can technology stop corruption?' The answer is obviously big NO. Technology can not directly stop corruption. But transparency can stop corruption. Technology helps increase transparency in the delivery system. Hence even though ICT alone can not stop corruption it can be used to reduce corruption. Thus, three step strategy has been adapted in using ICT to check diversion and leakage in the delivery mechanism of PDS as described below. Even though, independent survey has not been done, it is visible from the system, diversion and leakage has been reduced after computerization. The strategy can be adapted in many eGovernance applications where main objective is to check corruption. The strategy is as below.

Step 1 Create transparency in operations so that every citizen can very easily know what is happening and what is supposed to happen.

Transparency is the basic requirement to check corruption. Without providing adequate transparency no controls or inspections can reduce corruption. Rather excessive control shall increase corruption. Transparency has been created by computerizing all operations involved in PDS and providing all information on web and some vital information through SMS

Step 2 Provide most convenient way to give feedback or lodge complaint for a citizen so that one can lodge a complaint whenever some discrepancy is found.

When an ordinary citizen finds some corruption in the system due to adequate transparency there should also be a way out to make a complaint or give a suggestion to the authorities regarding the observed corruption. The system to lodge the complaint should be as easy as possible so that any one can use the system without much effort. Most of the people will not be ready to spend time or money to lodge complaint even they find some corruption in the public delivery system. So, the complaining mechanism should be as cheap and effort-less as possible.

Call Centre with a toll free number has been operational in Chhattisgarh to provide a convenient way to lodge a complaint. Citizen can lodge a complaint through web also.

Step 3 Build confidence in public that complains lodged through the system will be attended to.

If the complaints lodged through a system are unattended citizens slowly lose confidence in the system and stop using the same. Hence complaints lodged through the system (call centre) should be monitored so that they are timely acted upon. Complaint Monitoring System is being used to monitor complaint redresal mechanism so that confidence is built in public in the system

4. Computerisation of Total Food Grain Supply Chain

The case study is complete process computerization of food grain supply chain in Chhattisgarh from paddy procurement from farmers, its storage, milling and distribution of rice and other commodities to 3.7 million ration card holders through 10,416 Fair Price Shops (FPS). As a part of this project, 1532 Paddy procurement centres, 50 storage centres, all district offices concerned, 99 Civil Supplies Corporation distribution centres and 35 FCI rice receiving centres have been computerized covering six different organizations involved in food grain management viz. Department of food, Marketing Federation(MARKFED), CG State Civil Supplies Corporation (CGSCSC), Food Corporation of India (FCI), Central Cooperative Bank and Primary Agricultural Cooperative Societies(PACS). Purchase and issue at paddy procurement centres including generation of cheques has been computerized. Miller's registration, Agreement with millers and generation of Delivery Orders etc. are computerized. 3.7 Million

Ration card holders database has been prepared. Calculation of monthly allotment to FPS has been automated. Call centre with a toll free number 1800-233-3663 is operational from 8:00 AM to 10:00 PM to take complaints from citizens and give any desired information about paddy procurement and public distribution. Citizen interface web site is hosted to increase the citizen participation in controlling diversion of PDS commodities. The project can be described in four distinct areas which complete the process computerization of whole food grain supply chain and its monitoring.

4.1 Paddy Procurement and Milling

Paddy is procured from about 1 Million farmers of Chhattisgarh at MSP at 1532 procurement centres spread throughout the state. In 2007-08, paddy procurement at these centres is done through computers. Paddy Procurement Centres are mainly located at village panchayat level and connectivity is not available at most of these centres. Hence a form based stand alone module has been developed for online purchase of paddy and issue of paddy to millers, storage centres and FCI. Cheques for payment to farmers and delivery memos for movement of paddy to different places are printed on computer at real time. Special importance has been given to on-the-spot generation of cheques on computers as it reduces the delay in payment to about one million farmers. 1532 data entry operators, who are local to the society, were recruited and trained on the operation of PACS Module. An interesting innovation of data transmission through motorcycle riders has ensured near real time data transmission from purchase centres to the central server and vice versa. V-SAT based NICNET connectivity is available in Chhattisgarh at block headquarters in the offices of Janpad Panchayats. 250 Motorcycle riders have been hired to carry data everyday from procurement centre computers to block headquarters, where they upload the data on the central server through the internet. Similarly any new version of software and delivery order details are downloaded from the server at the block level by these motorcycle riders, and carried to the procurement centres.

All operations carried out by the district level offices such as collector office, DMO of MARKFED and DM of CGSCSC as well as head quarters are computerized through web based applications. At all the 50 storage centres of MARKFED, 2 computers each were installed with a form based module to receive and issue paddy. 70 Custom Milled Rice (CMR) receiving centres of CGSCSC (subset of 99 distribution centres) and 35 CMR receiving centres of FCI are using a web module to generate sample slip, analysis report and acknowledgement report

4.2 Unified Ration Card Database and issue of PDS commodities to FPS

Unified Ration Card database has been prepared. The ration cards are printed using the database. Only those ration cards having a unique number and a barcode printed through that database, are valid now in Chhattisgarh. Since the entire ration cards database has been computerized shop-wise allocations have now been automated. Per card allocations are fed into the computer at the State level. Shop-wise allocations are calculated by the software. All Fair Price Shops are required to give declaration of their stocks and sales in the previous month before issue of PDS commodities. These figures are entered in the web application at CGSCSC warehouses. Based on allocation, stock and sales figures of FPS, the actual amount of PDS commodities to be issued to the FPS is calculated by the software, and a delivery order is issued on the web application. After the issue of the delivery order a truck challan is issued indicating the truck number, driver's name, quantity dispatched etc. The truck challan is also generated using the web application. Thus information regarding allocations, stocks, issue and sales for each FPS is now available on the central server. At least 10% of this data is physically verified by the staff of the food department every month, and action is taken against any FPS giving false declarations.

4.3 Citizen Participation web-site

Citizen awareness and participation in the public delivery system is a major check against diversion and leakage. Hence a citizen interface website has been created. One can lodge complaints, give suggestions. This web-site also provides a method of citizen participation to check diversion of trucks carrying PDS

commodities to FPS from warehouse. Citizens can register their mobile numbers on this web-site by selecting one or more FPS of their interest, for participation in the monitoring of PDS. Whenever PDS commodities are dispatched to the FPS from the warehouse an SMS is automatically sent to the registered mobile numbers. This message has the truck number, the quantities of PDS commodities being sent by that truck, and the date and time of dispatch (Figure 1). Thus any one can know exact date and time of truck dispatch with quantities of commodities. Citizens participating in monitoring of PDS can then check whether that truck arrived at the FPS carried full quantities dispatched. They can even get PDS commodities unloaded and stored in the FPS in their presence. If commodities do not arrive at the FPS in full quantity within reasonable time, citizens can register their complaint at the website or through call centre.

Shop 442003100/Baktara Truck CG04/1439, Rice 87.91 Qtl, Wheat 1.25 Qtl, Sugar 0.0 Qtl, Salt 1.0 Qtl Date 27 Sep 08 11:00.

Figure 1: SMS Sample

4.4 Call centre and Complaint Monitoring System

A call centre with a toll free number 1-800-233-3663 is operational. The complaints received by call centre are immediately entered in the system and the complaint number is given to the complainer for further use. All the registered complaints either through call centre or through internet are seen in the inbox of officer concerned login. The officer is supposed to enter the details of enquiry report and action taken on complaints found correct. The status of the complaint is informed to the complainer on demand. Complaint redressal is monitored at directorate and secretariat level for speedy disposal of complaints.

5. Innovative Ideas adapted in the Project.

Paddy procurement and Public Distribution System are old schemes with complaints of large diversion and leakage. Monitoring of the scheme is difficult partly due to the insufficiency of staff and partly due to their complicity. Various innovative methods of reducing leakages and diversion have been tired in the country including bar-coded food coupons, food stamps, biometrically coded ration cards etc. None of these have been entirely successful. This project which is an end to end solution based on information technology, developed and implemented in Chhattisgarh is giving very encouraging results. There are examples of innovative use of ICT and ideas adapted in the project, which are described below.

5.1 Adopting Motor Cycle Riders for data transmission

PACS are generally in remote locations where internet connectivity is not available. An interesting innovation has ensured data transmission on a daily basis to the central server. V-Sat based internet connectivity is available in Chhattisgarh at block headquarters in the offices of Janpad Panchayats. Motorcycle riders have been hired to bring data everyday from procurement center computers to block headquarters, where they upload the data on the central server through the internet. Similarly any new version of software or other information is downloaded from the server at the block level by these motorcycle riders, and carried to the procurement centers. This innovation has resulted in having near real time data without having internet connectivity.

5.2 Truck Dispatch Information to Citizens through SMS

Citizen interface web-site provides a method of citizen participation in monitoring of PDS. Citizens can register their mobile numbers on this web-site for participation in the monitoring of PDS by selecting one or more FPS. Whenever PDS commodities are dispatched to an FPS from the warehouse, an SMS is sent to all the mobile numbers registered for that FPS. This message has the truck number, the quantities of PDS commodities being sent by that truck, and the date and time of dispatch. This improved transparency and citizen.

5.3 Rice Festival (Chaval Utsav)

On a fixed, pre announced day in a month, PDS commodities are distributed in a hat bazar of a village, in the presence of public and nominated government officials. Other benefits to BPL families like old age pension etc. are also distributed on this day along with PDS commodities. This concept increased transparency and citizen participation

5.4 Truck photograph to server with latitude and longitude of truck position

An application in J2ME has been developed and loaded in a GPS enabled mobile phone with camera to be used at warehouse. When a truck with rice and other commodities reaches the warehouse for delivery, the truck is photographed using the application and sent to the server. The truck and receiver's photograph along with latitude and longitude reaches the server. Server side program compares the latitude and longitude of truck with latitude and longitude of the warehouse to ensure that the truck is in the warehouse premises by the said date and time. This innovation is helping to check claims made by receiving centres without actually receiving the truck dispatched to a certain extent.

6. Outcomes / Changes resulting from the Project

Time gap in giving cheques as payment for the paddy procured from farmers is reduced to one day from 3 to 6 days delay in earlier years. During Kharif season 2007-08, cheques are generated through computers on cheque roles and the generation of cheques was instant. 0.78 Million farmers were benefited during the season by receiving computer generated cheques.

Centralized miller data base and uniform procedures: Computerised millers registration was introduced in this season to check execution of agreement with fake millers. Giving permission for milling, execution of agreement and generation delivery orders are done through web based application. In the manual methods it was very difficult to ensure that uniform procedures are followed in all the districts. Computerisation resulted in ensuring uniform procedures throughout the state. Web application led to micromanagement of inventory, resulting in quicker milling, less damage to rice and paddy, and substantial savings.

Automatic Calculation of monthly allotments eliminated irregularities and mal-practices in granting allotments to FPS. Now it is calculated automatically based on the number of cards in the shop. Computerised receipt and issue of PDS commodities at distribution centres resulted in effective monitoring of lifting and increased transparency. The SMS alert system, citizen interface web site is encouraging citizen participation in monitoring of PDS. Complaint monitoring system increased the speed of action on different complaints due to close monitoring. Call centre operating to accept complaints on department of food has many success stories in controlling diversion. Data available on web in the public domain for creating transparency.

- Ration Card database
  About 3.7 Million ration cards have been prepared through computers in 2007-08. The data is available in a database which is a base for the computerization of PDS. The data is made accessible to public on web. Public can access the following
  - Village-wise, ward-wise or FPS-wise details individual ration card holders along with his name, father’s name and type of ration card.
  - Village-wise, ward-wise number of beneficiaries.
- Fair price shop details
  10416 FPS details are available online
- FPS wise allotment details
  Allotment of commodities for PDS schemes are automatically calculated by the system. Allotment for other welfare schemes like Mid Day Meal, ICDS. Hostels etc. are entered by District Food

Controllers ever month. FPS wise no. of cards and allotment of different commodities for the selected month are available online for public view.

- Lifting details are available online.
  The quantity of commodities reached FPS from Distribution Centres is known as lifting. Delays in lifting are one of the big challenges that department faces. For day to day monitoring of lifting by different districts and distribution centers, lifting details are made available online.
- Sales details of individual FPS
  FPS owners are supposed to submit an affidavit ever month with the details of the sales actually made against the allotment for that month. The sales quantities are used to calculate entitlement of quantities that actually be issued to the shop, keeping into account the previous month's balance quantities available in the shop.
- Details of 'RICE FESIVAL'
  RICE FESTIVAL is an innovative step taken by the department to check diversion. It is nothing but distribution of PDS commodities to the beneficiaries in the presence of public and nominated government officials on pre-specified day in a month. The details of the ration card holders benefited in the rice festival are available on web.
- Details of paddy procurement
  Chhattisgarh procures more than 3 Lakh Metric Tons of Paddy on Minimum Support Price (MSP) every year from more than 7 Lakh farmers over a period of 3 months. Paddy procurement is done in 1532 procurement centers in remote areas of the State. The process of paddy procurement involves purchase of paddy, payment to farmers, storage of paddy and its conversion to rice by milling. All these operations are computerized in 2007-08. The following details are available online for increasing transparency.
  - Details 7.8 lakh farmers that sold paddy to different societies.
  - Procurement of paddy by different societies and its transport to FCI, Miller or Storage centre.
  - Details of stock at storage centres.
  - Payment details to farmers.
  - Mandi Purchase Details.

- Rice procurement-CMR and levy
  Details of CMR and levy rice received by CGSCSC centres
- Act and control orders of the department
- Details of registered mills, permission granted for milling and agreement executed.
- Complaint lodging and its status.
- SMS alerts whenever trucks are dispatched to FPS to registered users.

7. Challenges faced in execution the project

7.1 Lack of connectivity at paddy procurement centres.

Paddy procurement is done in 1532 procurement centres at remote places of the state. Connectivity is not available at these places and daily procurement details are required to be available at state level. An interesting innovation of data transmission through motorcycle riders has ensured near real time data transmission from purchase centres to the central server and vice versa. V-Sat based NICNET connectivity is available in Chhattisgarh at block headquarters in the offices of Janpad Panchayats. 250 Motorcycle riders have been hired to carry data everyday from procurement centre computers to block headquarters, where they upload the data on the central server through the internet. Similarly any new version of software or other information is downloaded from the server at the block level by these motorcycle riders, and carried to the procurement centres.

7.2 Unreliable Power Supply at procurement centres.

Anticipating bad power supply at procurement centres, generaters were made available at each centre. Proper earthing and UPS are provided for computers for voltage stabilization.

7.3 Massive data entry of beneficiary details in Ration card database

About 3.7 Million ration card holder's details are entered in the database for creating computerized ration cards. Since the data was enormous the only option was a decentralized data entry. A windows based form was developed for data entry. In the field Microsoft Access was used for data entry and transporting data to the State Headquarters for convenience. The windows data entry software had elaborate validation checks to minimize mistakes in data entry. In addition to that, a checking software was developed to check the data for mistakes when it was received at the State Headquarters. Once checked the data was imported into Microsoft SQL Server 2005 which was used to generate and print ration cards.

7.4 Font compatibility for Hindi data

The common problem in storing Hindi data is its compatibility as different people tend to store the data in different fonts which are mutually incompatible. From the very beginning, it was decided to use Unicode only for storing data in all modules. Thus compatibility is achieved.

- Lack of trained manpower
- More than 2500 man days of training and workshops were conducted to meet the challenge.
- Coordination between different departments
- Six different organizations are using different modules of the system which are inter-dependent. Coordination between these organizations is a major challenge. Secretary, Department of food took personal interest and coordinated with almost daily meetings and monitoring.

8. Concluding Remarks

Use of technology in delivery mechanism can definitely reduce corruption when used in a strategic way. The technology itself can not check corruption. The technology should be used to create transparency combined with a convenient system for a citizen to lodge complaints with confidence that the complaint will be attended to. Manual methods should be replaced by computerizing processes. Data should be captured as and when they are generated in stead of developing MIS applications for entry of data after manual processes are followed. Commitment of higher authorities, Capacity building in the operating personnel and connectivity are the 3 essential thing for success and sustainability of any eGovernance project.

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