ICT Enabled Public Distribution System for Developing Countries

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Abstract

Some Developing countries are facing severe problems now days which are hindering their speed of development and future prospects. Unrest in citizens or public institution due to corruption, less accountability and transparency government process. One of the burning problems is conventional Inefficient Public Distribution System and Ineffective Public Policy Implementation due to absence or ineffective feedback mechanism. Conventional PDS mechanism is viewed as linear transmission systems of benefits delivery. These PDS are top-down and hence struggle with quickly adapting to market dynamics and globalization. In this paper Prospect for social innovation with ICT emerges at the dynamic intersection of informal and conventional PDS and top down approach of services and goods delivery of the systems in the developing world. With the demographic changes developing countries are experiencing so it is time to utilize the ICT tools and mechanism to improve conventional PDS systems with model which is free from the severe loopholes like, leakage, unaccountability, transparency and feedback from bottom to top in timely manner and enhancing coverage of benefits in lower level of the population. New solutions needs to utilize Potential of ICT education in three ways: to increase ease of access and relevance of material through its integration into the PDS, leakage and introduce a feedback loop that enables players at all levels of the PDS and System itself to actively contribute to the design of the system. In this paper we are proposing ICT enabled Public distribution system model which can be implemented with the already existing PDS. Two Models on platform of ICT are proposed or developing countries ready having ICT enabled Identification of citizens and countries not having unique identification platform based on ICT. With the help of models, Paper is providing very effective way of benefit transfer and feedback mechanism to the problem of PDS in developing countries. This can be easily implemented if country is having exposure in ICT countries like India, Brazil, South Africa and Mexico.

1. Introduction

Public Distribution System (PDS) is a system which consists of government, beneficiary as citizen and lower layer machinery of government and representative of people working as mediator. This system is hierarchic system which is used to distribution of government benefits to citizens of the country. These benefits include food, grains, scholarships, energy facilities and subsidies and other benefits too. These benefits amount to be very large in volume as well as in cost to the government. For instance developing country like India is spending large amount of funds of Rs. 15,000 corer 18 percent of GDP which means distribution must be ensured accurate and efficient without loopholes [7]. Social welfare schemes are very much need in developing country environment other development would not be inclusive which further will divide society and may create social internal imbalance and also imbalance society [7]. Developing countries most of times have three tear of government system with central government, State government and then local government representative. For instance Government of India and managed jointly with state governments in India, it distributes subsidized food and non-food items to India's poor [6]. Major commodities distributed include staple food grains, such as wheat, rice, sugar, and kerosene, through a network of Public distribution shops, also known as Ration shops established in several states across the country. Food Corporation of India, a Government-owned corporation, procures and maintains the Public Distribution System [1]. The PDS has been criticized 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. For instance Today, India has the largest stock of grain in the world besides China, the government spends Rs. 750 billion ($13.6 billion) per year, almost 1 percent of GDP, yet 21% remain undernourished [1]. Central government is responsible for procurement, storage, transportation, and bulk allocation of food grains while state responsibility is for distributing the same to the consumers through the established network. State governments are also responsible for operational responsibilities including allocation and identification
that PDS is suffering from structural as well as procedural problems. In spite of having production more than required quantity, population is suffering only because of inefficiency in distribution and storage facilities of food grains [1]. Same problem is with different benefits due to not inclusive development of banking system in marginalized or tribal area which are severely affected and are in dire need of benefits from government [3]. Ghost beneficiary are large in number which can only be avoided with biometric public distribution system [1]. Total benefits do not reach to deserving population or reaches in very small quantity. Leakage and Diversion in PDS is to this extent that for every Rs. 4 spent on PDS, only Rs. 1 reaches the poor, 57% of the PDS food grain does not reach the intended people [9]. No feedback mechanism is there to ensure that total benefits with in time frame have reached to needy persons. Deployment of path breaking technologies would make the system more robust effective and sustainable [10]. Due to this ineffectiveness and loophole in the process and structure, government is losing more money large resources or wasting them. Model of existing system is here which can be improved with inclusion of structural changes and procedural alteration with the aid of ICT [8]. Door delivery and housing of FPS in public buildings though shall incur additional costs it is estimated to save around Rs. 4197 crore annually by plugging in the leakages (Performance evaluation organization). Other option is to give subsidy on km basis so that FPS owners themselves shall mobilize the resources for logistics efficiently with in ICT framework. Channeled through special Food Price Shops, the PDS will potentially be amplified to guarantee food and other benefits for two thirds of the population. However, there are several problems with this massive system, including the fact that it is riddled with corruption: shop owners are notorious for stealing and over-charging, the already malnourished beneficiaries of the system often receive poor quality food grains, ration cards are traded for money, and heavy bureaucratic procedures prevent many poor Indians from obtaining ration cards and more important is leakage and delay [6]. Despite having the capacity to export some of the produce, only 40 per cent of food grains reach Indian homes at the end of the supply chain [7].

Proposed model try to solve mentioned problem with the use of ICT in PDS. Convention mode implemented in various developing countries has been shown in figure 1 specific to India.

2. Discussion-Proposed Model

It is important to develop ICT model which can solve the bi problems in PDS which is back bone of benefit subsidies transfer from government side in developing countries.

2.1. Improved Convention PDS with ICT

Conventional PDS is suffering causing great pain to policy formulators as well as implementers due to problems off leakage, ghost beneficiary, linear unidirectional flow of information and no feedback mechanism [2]. Enhanced model has four ICT centres with modern facilities of connectivity and human resources for recoding feedback and responding to query working as call center. Call centers strength depends on the load off benefits being transfers or distributed. They are connected with executive functionary of central, state and local government and storage facilities for benefits. Here are we specially taking example of Indian public administration system of their tier government which can be customized according to the suitability of developing countries [5]. Information of beneficiary is stored in Databases with medium of centre government access is shared with state government and district authorities. State government and central government and district authorities ICT centers are connected to storage facility. Quantity and transfer units are decided by state government and information is directed to Storage facility through ICT state. ICT district and Block gets information of distribution charts and other information from ICT states which directly getting information from center and State executive machinery. District authority broadcast the plan of subsidies distribution for particular are using ICT block center so schedule is
known to beneficiary with quantity and other relevant details through massages as well call on the mobile platform of each person or one on village Pradhan. This makes timely availability of information. Exact quantity amount food or subsidies is transported from storage facility. Nutritional value and other checks are done on distribution sites. Helpline numbers are given by state government ICT center through District or block using broadcasting. This helps in making an inquiry or complains about the food, process or officials involved in the process.

Figure 2. ICT Enabled Public Distribution Systems Model

So now complains are directly available to higher authority and no intervention is there of middle executive and hence corrective measures are legitimate and truthful. Hence with this model now information is timely available with bidirectional flow of information. Leakage is not there as information is timely available at various places like ICT Central, ICT State and ICT District.

2.2. ICT PDS with Existing UID ICT Platform

Some of the developing countries have ICT enabled store of information of their citizens. We are calling that Unique Identification authority Platform. Some of the countries are trying to accomplish those systems. When population is large in those developing country it is little bit difficult. Indian is also trying it with AADHAR which is being implemented with the assistance of the planning commission of India. This model is with enhancement to that ICT functionality and integration with ICT Platform. Model is shown in Figure 3 where UID citizen information like address, mobile no, emails and below poverty live or other relevant information is being shared by State and central government. Subsidy information is shared by ICT platform of Storage facility with District, State and central in order to make arrangement of transfer and calculation of benefits to each district and block according to the order received by state government. Subsidies transported to block and district are now checked at each point on real time with the help of ICT centre of District, Block, State and Central and report of prepared. If some discrepancies are found then corrective measures are taken. District ICT authority broadcast information related to Subsidies distribution to the mobile or other contact information of beneficiary. Beneficiaries gather at designated place by district/ block authority for subsidies through ICT broadcast. Subsidies are distributed with in time bound manner. Information about quality of the food is also broadcasted which make sure that food or other benefits are according to the guidelines. Help line no for any query to beneficiary are also conveyed from state ICT center which deals with complaints of leakage, ghost beneficiary or low quality food distribution off any other problem. State government is informed by ICT center and due to timely availability of complained and information about the process, corrective steps of improvement or punishments are taken accordingly.
3. Observations

Model with modification upto district level was implemented within the constraints and results and outcome were collected. This was implemented in one village of one block with district authorities. Help of one NGO was also taken for workforce and other logistics [4]. We collected the information and feedback on two fronts which are being discuses point wise.

3.1. Removal of Leakage

Comparison with the conventional PDS systems has shown some bright results. Leakage is dramatically and sharply gone down as at each level of communication or joint in the system information was timely available and respective authorities were informed about the status of the subsidies and transfer o that to other entity.

<table>
<thead>
<tr>
<th>Subsidies</th>
<th>Quarter 1 in Kg 1000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grains</td>
<td>148</td>
</tr>
<tr>
<td>Rice</td>
<td>136</td>
</tr>
<tr>
<td>Fertilizers</td>
<td>128</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>412</strong></td>
</tr>
</tbody>
</table>

This has been shown in the table1 in which 1000 Kg of food grains was transposed and ICT enabled system was followed from district to village no upper authority was involved. From table it quiet visible the improvement in the system leakage. It is now less than 3.5 percent which was around 41.2 percent in conventional. Some off the leakage is due to transportation issues like bad roads and packaging which was also occurred in ICT enabled PDS but other manual leakage has been reduced to very low.

3.2. Feedback Mechanism

Conventional PDS is mainly linear and manual in getting feedback which is problematic and can be altered lower distribution authorities as per their convenience. ICT enabled systems has overcome problem is feedback mechanism. Due in integration of ICT center at each level and transfer of relevant information on ICT tools has improved the process time and response time. It has also one dimension to getting feedback directly beneficiary bout their problems/ suggestions directly to higher authority without tempering of information. These can helps the policy implementers and formulatores to design area specific polices or readressal of problems of beneficiary about quantity, nutritional or any other issues. Table is showing data obtained from beneficiary of the particular village and their problems. It is comparison of the conventional PDS feedback process which is actually separate task. But in ICT enabled it is incorporated inside the system and hence improved the response time as well as other issues.
4. Conclusion

Proposed models imply the broad applicability and potential for social innovation at the dynamic intersection of informal and conventional PDS with ICT platform and top down approach of services and goods delivery of the systems in the developing world. Model includes increasing the platform’s ease of access by introducing a mobile platform that makes the ICT PDS Information modules available with or without internet access. ICT enabled model is a solution in improving the storage system by having information timely available and it also improves the distribution system with zero or less leakage in the process and timely delivery of subsidies and other public services. Tracking of material is facilitated by GPS on the vehicle which is reducing and maintaining check of quality and quantity of the material being delivered. With the implementation of the prototype, it helps in expenditure and cost reduction as now leakage and waste of resources is less or zero. Credit benefits transfer is so smooth with the banking systems was stack holder and directly transfer mount to beneficiary. This feedback mechanism is helping in improvement in the distribution proves as well as in new policy introduction according to the requirement of real issue being faced by society in terms of scarcity of resources, nutrition, health and education. However Challenges that must be overcome before successful technical implementation include providing available and on-going technical support, reliable power supply, and hardware/software upgrades and maintenance at each step of ICT center established. This model has been tested on one vile, bock and district which proved successful. It can be scaled to states and countries depending to their requirements.

5. Future Directions

This mode we development can be enhanced according to country specific or local conditions specific needs. If persons have access to banks or any financial institution then they can bank can be made one component in this model by providing funds directly to the account of beneficiary and transmitting information with the help of developed prototype. Tracking of movement of food can also be incused in the model. GPS tracking of the PDS delivery trucks, which would reduce the diversion of PDS commodities, could be very helpful.

6. References


