SMS Based Approach to Overcome Corruption in Public Distribution System

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Abstract: Public distribution system (PDS) is an Indian food security system since June 1997. It is established by the Government of India under Ministry of Consumer Affairs\textsuperscript{3}. Public Distribution is managed jointly with state governments in India. The main aim of it to distribute subsidized food and non-food items to Indian people that are comes under BPL category. In this paper proposed the new approach i.e. a SMS based approaches to overcome corruption in public distribution system.

Introduction:

PDS scheme was launched in India on June 1997. Major commodities distributed include staple food grains, such as wheat, rice, sugar, and kerosene, through a network of fair price 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 PDS\textsuperscript{1,3}. The central and state governments shared the responsibility of regulating the PDS. A public distribution shop, also known as fair price shop (FPS), is a part of India's public distribution system established by Government of India which distributes rations at a subsidized price to the poor. Locally these are known as "ration shops" and chiefly sell wheat, rice, kerosene and sugar at a price lower than the market price at a price called Issue Price \textsuperscript{1}. The items from these shops are much cheaper but are of average quality. Ration shops are now present in most localities, village’s towns and cities. India has 478,000 shops constituting the largest distribution network in the world \textsuperscript{3}.

Existing Approach:

From several years, there was no authenticated system in public system distribution to ensure distribution of subsidized food and non-food items to India's poor people that are needy. To ensure the proper distribution of subsidized food to the poor people, the government looked after in the matter and lot of rectification processes have been initiated to improve the existing system. The resultant existing system is based on aadhaar card.

Problem in Existing Approach:

In aadhaar card based system, the salesperson or distributor of the ration shop will provide the items to that person having aadhaar card. With the help of such type of system, the government has controlled corruption almost completely.

Proposed Approach:

The population of India is about 1,295,291,543 out of which the numbers of mobile subscriber is 1,034,253,328 and rate of increasing is too high and certainly the day is not far when ratio of no. of mobile user and total population become 100% or more.

In this approach, a state or central government will broadcast a SMS, as depicted in figure a, that contain a strongest random code to the registered mobile number of beneficiaries or PDS customers before one or two day of distribution of subsidized food or other items. The following steps are involved to carry out the proper distribution to the authorized needy people (it is assuming that every customer has registered mobile no.):\textsuperscript{4}

1. The PDS customers will receive every month a unique SMS of suitable length will contain strongest random code on their registered mobile number.
2. Once received the SMS, The customer will go to ration shop next day itself.
3. Every salesperson of PDS will have an instrument or handheld machine (equipped with biometric facility to activate machine by salesperson thumb for validation) that may be connected to the server online (if connectivity is available) from which the messages were broadcast to every customer or different server for the sake of security. In case, if there is no internet connectivity, the data will be stored in permanent storage of instruments or machine and later this information will send online to the server for authentication.

4. Salesperson will enter the name and code carefully received in SMS by the customer. If the instruments are connected online to the server then at server side, a matching logic (as depicted in figure C) will be performed by the server (as depicted in figure b). if matching is successful then a message “OK” will be flashed on the salesperson instrument. In case of mismatching, the salesperson can attempt at most three times after that customer account will be blocked temporarily and a probe will be initiated.

5. After successful transaction, the customer will get a duly signed receipt by salesperson that will contain salesperson id, ration shop id, Name of customer, transaction id, and details of item, quantity and price. Another receipt with duly signed or thumbed of customer should be left to the salesperson for proof. SMS based receipt may be used instead of hard copy receipt.

6. The temporarily blocked customer can receive the ration of previous months and current months by the SMS of current month.
SMS from salesperson handheld machine for authentication.

<table>
<thead>
<tr>
<th>Customer registered Mobile No.</th>
<th>Unique code or SMS sent</th>
<th>Unique Code received from ration shop online/offline</th>
<th>Authentication for successful transaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>9827500001</td>
<td>Amu1244@</td>
<td>Amu1244@</td>
<td>YES</td>
</tr>
<tr>
<td>9827500002</td>
<td>sanj@123</td>
<td>sanj@121</td>
<td>No</td>
</tr>
<tr>
<td>9827500003</td>
<td>amit@@11</td>
<td>amit@@11</td>
<td>YES</td>
</tr>
<tr>
<td>9827500004</td>
<td>abC12345</td>
<td>abC12345</td>
<td>YES</td>
</tr>
<tr>
<td>9827500005</td>
<td>qwr@123</td>
<td>qwr@125</td>
<td>NO</td>
</tr>
<tr>
<td>9827500006</td>
<td>Poqt123@</td>
<td>Poqt123@</td>
<td>YES</td>
</tr>
<tr>
<td>9827500007</td>
<td>12@a5678</td>
<td>12@a5678</td>
<td>YES</td>
</tr>
</tbody>
</table>

(C) Authentication /Matching Table at server side.

**Strength of proposed system:**

1. In SMS based approach, the transaction will be fast between client and server and it will make the system scalable.
2. New facility may be providing to a customer like customer can purchase ration at any ration shop that is near to him. In this case customer will receive ration shop id, address along with the SMS.
3. Easy calculate the total distribution of ration by state or central government.
4. It support offline mode also.
5. Adding new customer is easy.

**Weakness of the proposed system:**

6. Every customer should have a mobile number.
7. Mobile network should be reliable.
8. Periodically need to check the live status of the customer.

**Further Scope:**

The new system may be improved by using the feature of both SMS based system and aadhaar based system that will eliminate all apprehension in respect of corruption.

**References:**

