

Smart Public Distribution Systems: A Technological Approach to Improve Service Delivery

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Leena Jadhav

Assistant Professor

*Vidyalankar School of Information Technology, Wadala
Mumbai, Maharashtra, India*

Hrishikesh Tendulkar

Assistant Professor

*Sasmira's Institute of Information Technology, Worli
Mumbai, Maharashtra, India*

Mithila Chavan

Associate Dean

*Vidyalankar Institute for International Education, Wadala
Mumbai, Maharashtra, India*

Abstract

In India, state governments issue ration cards, an official and significant document, to those who are qualified to purchase food grains and fuels from the public distribution center at a very low cost. The user's information and purchase history regarding their ration entitlement are manually recorded in the manual system. Updating a ration book by hand takes a lot of time, especially when there are numerous fraudulent entries. By failing to give the beneficiaries the appropriate amount of food grains, the ration/grocery vendors are engaging in forgery. Therefore, this paper discusses the future rationing system in which the ration card will be connected to Aadhar and the bank account information in a private way. The user's information will be kept in the government database, which will be connected to the Aadhar card. Every month, as soon as the government approves the ration for the public distribution center, the user receives an SMS with the date, time, and location of the ration's availability. The user is expected to utilize that service; if they fail to do so, the government database will automatically provide them with a new time and date.

Keywords: Public Distribution, Aadhar Card, Ration Card, Food Grains, Short Message Service

Introduction

In India, the ration card is distributed to those persons who are fit to receive operative food grains like wheat, rice along with pulses and fuels at a cheaper rate from the Public Distribution System Center as per the National Food Security Act. This initiative was started on June 1st, 1997. With the aim of ensuring that the poor and needy citizens of the nation have access to a large enough quantity of quality food at reasonable prices, the National Food Security Act was introduced. This act offers 5 kgs of food grains to each person every month at the cheaper rates the poor and needy [1]

Food grains were supplied at a subsidized rate to the state's poor and needy families who were classified as BPL ration card holders under the Indian government's minimum common need program. Families below the poverty line (BPL) who earn more than Rs. 15,000 but less than Rs. 1 lakh annually are eligible for a yellow ration card with 35 kg of food grains, while those above the poverty line (APL) are eligible for a saffron ration card with 15 kg of food grains. [2] Customers are identified by their ration cards, which are booklets with purchase histories. There are a lot of phony ration cards. Additionally, a lot of low-income families do not yet have ration cards. Government officials and owners of ration shops divert a significant amount of food grains and fuels into the black market without giving them to the beneficiaries and using the proceeds to make money. The vast number of ration cards are produced by fraud, forgery, or bogus people who are either non-existent or deceased. [3]

The acquisition, storage, transport, and bulk distribution of foodgrains from the warehouse to the State Governments have been made a responsibility of the central government through the Food Corporation of India (FCI). Allocating food to the state's distribution center, identifying eligible families, issuing ration cards, and implementing this program are all part of the responsibility.[4][5] But user's information and purchase history are manually entered into the current manual system regarding ration entitlement. Updating a ration book by hand is a laborious and fraudulent process. [6][7]

Literature Review

Raghbendra J. et.al [8] examined the effectiveness of the targeted public distribution system in Andhra Pradesh, Maharashtra and Rajasthan and found that the system fails to effectively target the poor and achieves only a limited real income transfers effect. It highlights the underlying critical elements of real income transfers, which include economic status of households, inequality of land, subsidies, cost of transaction, and scarcity of supply, and explains why universal food subsidies would increase leakage.

Pradhan M. et.al. [9] analyzed the access of food in Bihar's public distribution system by men and women and find the women's equal rights are undermined by local power structures. It finds that caste, class and political dynamics significantly influence gendered access to state provided food despite universal PDS coverage.

Gupta A. et. Al [10] examined that the current transformations have enhanced the public distribution system in Uttar Pradesh, increasing access and food security for poorer families who rely more on PDS for consumption and calories. Though, corruption, leakage and reduced powers for non-poor families continue to delay effectiveness.

Ajay B. et.al [11] review global and Indian literature on the Public Distribution System from a supply-chain perspective, identifying key stakeholders, system gaps, and operational deficiencies. It highlights proposed improvements and outlines a future research agenda to enhance the efficiency and effectiveness of PDS supply-chain management.

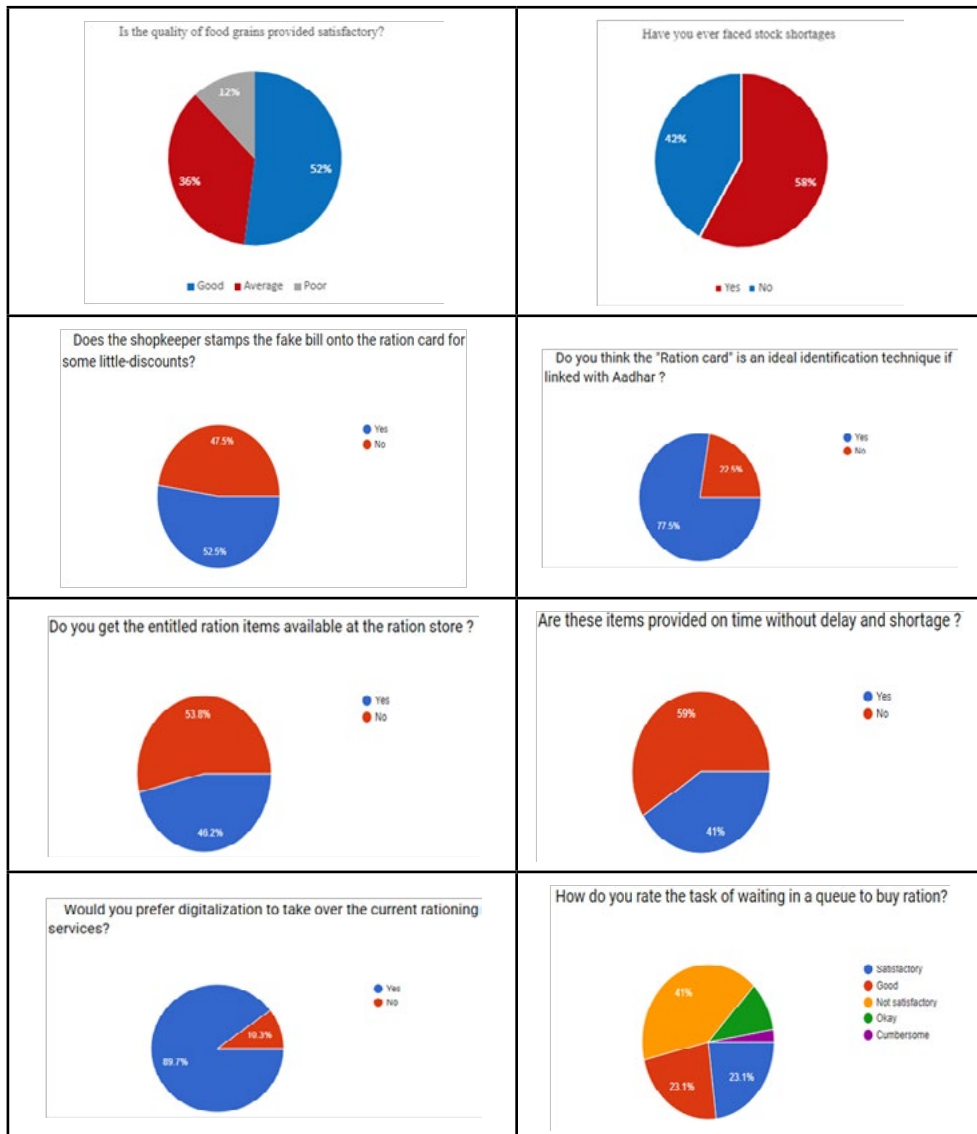
Khera R. [12] analyzed the less use of Rajasthan's public distribution system, finds that families often buy higher priced wheat, mainly due to supply side constraints such as diversion and shortages. It has been also seen that the PDS shifts cereal consumption patterns away from more nutritious coarse grains without radically increasing total cereal intake.

Gulati A. [13] shows that India's PDS suffers massive leakages—nearly 47% of grain in 2011–2012 especially in states with the highest concentration of poor households, making the system inefficient and inequitable. It argues that shifting from subsidized grain distribution to direct cash transfers via Jan Dhan and Aadhaar would reduce leakages, lower costs, and deliver better outcomes for vulnerable populations.

Menon S. et.al [14] implemented the ABBA in fair price shops in Ranchi district. It was successful for 52% families, but due to biometric failure and administrative gaps, it could not be made compulsory for all people.

Data Collection

Primary Data Collection: To study the effectiveness and accessibility of the Public Distribution System (PDS) in Maharashtra, the author collected data using a Survey of 100 beneficiaries. A questionnaire was prepared that includes questions on ration availability, service quality, beneficiary satisfaction, and transparency. The aim is to gather public feedback to help improve the efficiency of PDS operations. The following pie-chart summarizes respondent's answers, showing how opinions are distributed across different options. The largest segment indicate most common responses, while smaller slices represent less frequent choices.



Proposed System

To be eligible for the ration, each beneficiary must have an Aadhar card. Recipients must sign up for this system using valid documents, their identification number of ration card, and personal information. The government database then maintains all of the beneficiaries' information. The government will automatically

Conclusion

Since the proposed system incorporates transparency from the beneficiary right down to the government registry, this system will play a major role in the prevention of corruption within the rationing process. All the data about the beneficiary will be contained in a government registry, contrary to the initial process of entering data into registers or books. The higher authority can thus cross-reference the information any time they want. The main beneficiary of the implementation process of the system will be the needy, by giving them an opportunity to enroll in the program where an Aadhar card would be tied through the Aadhar-only registration process. Even for people with existing cards, this would also facilitate the process of streamlining procedures. Additionally, this system lessens shopkeeper corruption and manual labor.

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