

## A STUDY OF QUALITY OF SERVICES OF AADHAR ENABLED PUBLIC DISTRIBUTION SYSTEM IN KERALA

Aswathinath T<sup>1</sup> and Dr. P Kannan<sup>2</sup>

<sup>1</sup>Research Scholar, Commerce, Sree Narayana Guru College, K.G.Chavadi, Coimbatore

<sup>2</sup>Associate Professor & Head, Department of Commerce, Sree Narayana Guru College, K.G.Chavadi, Coimbatore

### ABSTRACT

*Public Distribution System ensures food security of any country. In Kerala the system of PDS is modernised with Aadhar enabled PDS validated by biometric authentication. The system came with an objective of bringing more transparency and efficiency. But the question arises if it could provide the services with the standard quality set as it has a lot of technical problems termed as authentication failure. This study evaluates the quality of transactions through Fair Price Shops and its proportionate defects occurred due to authentication failures.*

*Keywords: Public Distribution System, AEPDS, Fair Price Shops.*

### INTRODUCTION

Food security and sustainable development are interrelated. Kerala being state aiming sustainable growth realises the importance of food security and introduced a full fledged Public Distribution System (PDS). Public Distribution system came in to existence in the state from 1965 onwards. Kerala equates the people with fair distribution of food grains to both rural and urban area. In Kerala the Food and Civil Supplies Department of Government deals with the Public Distribution System and the relating Consumer Affairs. Public Distribution through Fair Price Shops with subsidies is introduced as a part of the central government's policy for social security and poverty alleviation. Rice, Wheat is the major food crops distributed via this system. Apart from this vegetable oil, sugar, kerosene is also being distributed.

Public Distribution System aims at equitable distribution of food grains at fair prices to the weaker sections of the population. Although we had a structured rationing system, issues like transparency, parallel economy, corruption etc...were the discrepancies of it faced. Hence, as a part of modernisation and ensuring transparency Government of Kerala introduced Aadhar Enabled Public Distribution System in Ration Shops of Kerala. The NFSA (National Food Security Act) expects to bring more transparency in the rationing system of Kerala by enabling POS machines and biometric authentication for the system from January 7 2018 onwards.

Aadhar Enabled Public Distribution System (AEPDS) enables the distribution of ration goods to the beneficiaries after the biometric validation. The earlier system was dematerialised to bring more ease and convenience for the beneficiaries. There are total 14227 total FPS( Fair Price Shops) in Kerala with a variety of four type of cards named as Antyodaya Anna Yojana- AAY(YELLOW), NON PRIORITY(WHITE),PRIORITY(PINK) and NON PRIORITY STATE SUBSIDY(BLUE) . AAY seems to be the most economically backward section of the society with an eligibility of 35 kg of food grains completely free of cost. The PRIORITY CARD or the below poverty line gets the benefit of 5 kg of food grains completely free for each member of the family. The NON PRIORITY holders would get the food grains at a fair price of 8.90Rs for rice 6.70Rs for wheat and SUBSIDY cards are likely to get 2kg rice at Rs2 per kg per person.

### OBJECTIVES OF THE STUDY

- 1) To understand the scheme of Aadhar Enabled Public Distribution system in Kerala.
- 2) To analyze the authentication failure of the AEPDS transactions in Kerala
- 3) To evaluate the relationship of quality of services based on authentication failures of AEPDS in Kerala

### SCOPE OF THE STUDY

The study meant for understanding the aspects of new biometric validated Public Distribution System. The system introduced for transparency and efficiency seems to have some quality issues due to authentication failures. Hence it is necessary to check the quality of the transactions if do effected with these technical issues and if it is controllable or not. The study is confined to the Kerala state only.

### RESEARCH METHODOLOGY

#### Research Design

This study is largely designed to be an analytical Study. It analyses the performance of AEPDS and its authentication failures through control charts.

#### Data collection

Adequate data required for the study is collected from secondary sources like official site of government's PDS and other cited publications and journals.

#### Tools for data analysis

Tables, graphs and control chart is used for the analysis.

### LIMITATIONS OF THE STUDY

No study can be free from limitations. Some limitations likewise, the limitation of time areas, economic, efforts, scope as well as the method of the study. Some of the limitations for this research are as given below-

1. As the study takes relevant data from the annual reports of government's PDS website , their magazine "bhadradha" and related websites, the quality of research depends upon the reliability and accuracy of such data.
2. The analysis of control chart is done with a data of recent 15 months since some monthly data were not completely available.

### REVIEW OF LITERATURE

SAMUEL and PRAKASH (2001) in their study found that caste system is one of the major reasons that led mis -allocation of public distribution system. The regional imbalance also affected the system very badly. As a result they found that only 0.4% of GDP was allowed as food subsidy. Government downsized the public distribution system by excusing about their financial burden.

SWAPNA SHAJI and ANNIE JOHN (2018) in the paper "Impact of EPOS machines in ration shops "studied the level of satisfaction of the beneficiaries regarding the performance of ration shops before and after the introduction of EPOS machine and found out that the majority is dissatisfied with the system as it could not eliminate the standing queue and non display of stock details in the ration shops.

VANGURU.NAGA SATYANARAYANA and DR. RAJASHEKHARA BABU,M. (2019) in an article titled "impact of ICT reforms on public distribution system in AndhraPradesh- a review" examined the transparency and efficiency of the system after digitalisation and found that the system is costlier as well as needed technical expertise to deal with . the study suggested less disruptive methods other than Aadhar like food coupons , smartcards etc...

REETIKA KHERA (2011) published an article "India's Public Distribution System: Utilisation and Impact" revealed that many households in Rajasthan exhausts the PDS quotas and purchase wheat from the market for a higher price. This is due to the constraints of supply and the transaction cost constraints that the system faces. Among those households who purchased through PDS the average purchase was only 12.6kg where the monthly entitlement was 35 kg.

### ANALYSIS AND INTERPRETATION

MONTH AND YEAR	TOTAL NO OF CARDS	TOTAL TRANSACTIONS	AUTHENTICATION FAILURES	FRACTION DEFECTIVE (P)
Oct-18	8092721	7708832	18339	0.002379
Nov-18	8111102	7393101	17187	0.002325
Dec-18	8133132	7813908	18732	0.002397
Jan-19	8682960	6169868	22746	0.003687

Feb-19	8351248	7690368	28102	0.003654
Mar-19	8412615	8476737	21949	0.002589
Apr-19	8504302	7856720	19958	0.002540
May-19	8539387	7484799	20712	0.002767
Jun-19	8563102	7862032	15973	0.002032
Jul-19	8579608	8244820	21932	0.002660
Aug-19	8598066	8225994	16164	0.001965
Sep-19	8614380	8410288	20221	0.002404
Oct-19	8626401	8716700	16692	0.001915
Nov-19	8643619	8219002	18265	0.002222
Dec-19	8665180	8421299	19462	0.002311

Source: <https://epos.kerala.gov.in>

Table 1: Table showing the transactions and failures details of AePDS in Kerala.

The above table summarises the number of ration cards issued in the state of Kerala from October 2018 to December 2019 and the transactions carried out by these cardholders during the same period. It also shows the absolute number of authentication failures during the period on monthly wise. The fraction defective represents the proportion of authentication failures to the total number of transaction of the respective months. On an average there are 7,912,964 numbers of transactions per month and the average number of authentication failure is 19,762 per month.

Calculated Control Chart Limits

<b>Central Limit (P-Bar)</b>	<b>Upper Control Limit (UCL)</b>	<b>Lower Control Limit (LCL)</b>	<b>Revised Lower Control Limit (Revised LCL)</b>
0.002963	0.003021	0.002906	Zero

The control chart limits calculated above explains different levels of numbers of authentication errors that lies within the acceptable range for the authentication process. The Central Limit (CL) shows that on average the expected number of authentication failure is 0.002963 i.e. 2963 authentication failures per 1 lakh transactions. The Upper Control Limit (UCL) is the maximum limit above which the authentication failures become out of control which is 0.003021 in our estimation. This means the maximum number of authentication failures allowed is 3021 failures per 1 lakh transactions. The Lower Control Limit (LCL) is computed as 0.002906 i.e. 2906 failures per 1 lakh transactions. However, it is well understood and accepted that the minimum the failures better is the performance and the process is under best control if the number of failure is consistently zero/nil. So, we revised our LCL and fixed it to "Zero". So lesser the number of failures up to zero, the process is under control and a negative value for defects is not a concern as it cannot happen.

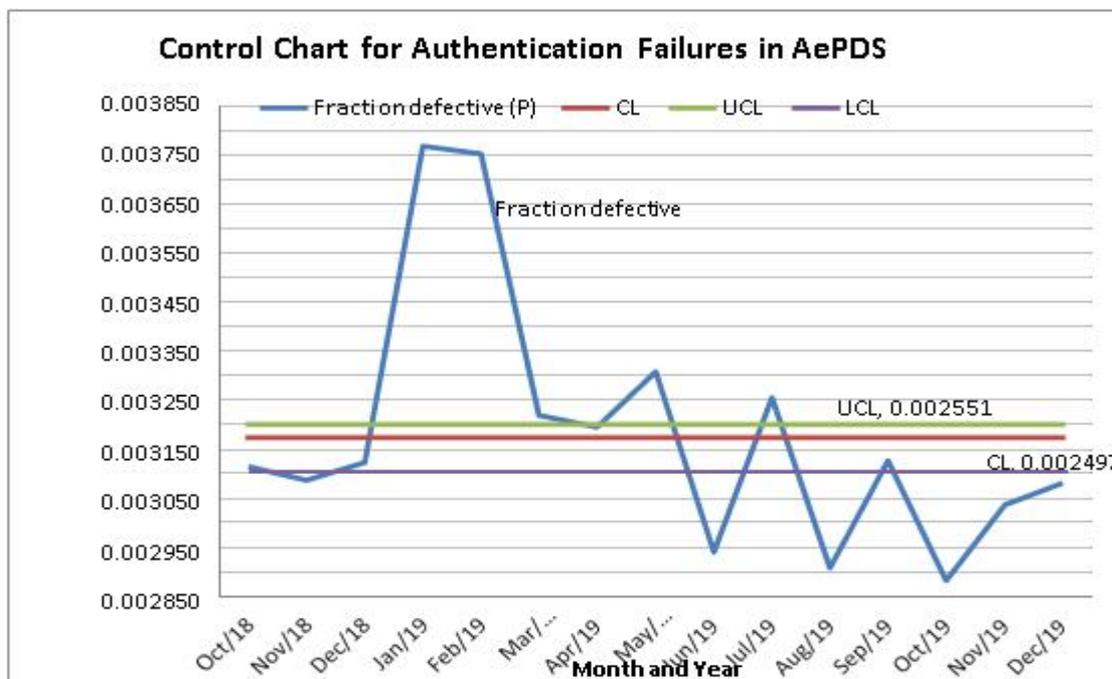


Chart 1 : Control chart of authentication failure of AePDS in Kerala.

The above chart shows the proportion of failed transactions to the total number of transactions on AePDS. Data for a period of 15 months beginning from October 2018 to December 2019 is plotted on a control chart with Central Limit 0.002497, Upper Control Limit 0.002551 and Lower Control Limit being Zero. All the measurements of fraction defective below the UCL can be considered as the process is with in control. But any points above the UCL is to be looked seriously as these are evidences for the process going out of control. We have 10 points below the UCL and 5 points above UCL. This can be interpreted as the process has gone out of control in 5 instances during the 15 instances considered and the process remained under control during the 10 instances out of the 15 instances taken for the study. So, it is evident from the analysis that the authentication failure is going out of the control occasionally and can cause dissatisfaction among the customers. The reason for bio-metric authentication failures can be the many like, defects of the authentication device, failure to connect to the server due to connectivity issues, server breakdowns/maintenances, lack of knowledge of proper usage of authentication device, customer ignorance, etc. So, it is recommended that this issue should be further investigated in detail and necessary actions should be taken to reduce the number of authentication failures.

### SUGGESTIONS AND CONCLUSION

On analysing the number of transactions made under different cards of AEPDS it was found that on an average the authentication failure is 19762 per month. The control chart showed out of the 15 instances considered, in 5 instances the defects are out of control which makes hurdles to the consumers with less acceptance. Hence, the biometric authentication failures need more effective control and care.

The systems although allows transparency and access to PDS from anywhere in Kerala by any one member of the family the technical aspects need to be more advanced. It would be more suitable if the AEPDS can ensure the customers with the information about available quota, balance to be subscribed with a smart card system rather than the ration card system. References

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