



A Study On The Effectiveness Of E-Pds Through Smart Ration Cards With Reference To Coimbatore City

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ABSTRACT

The Public Distribution System (PDS) plays a vital role in ensuring food security in India by providing essential commodities at subsidized prices to vulnerable populations. Despite its extensive reach, the traditional PDS has been plagued by inefficiencies such as leakages, corruption, duplicate ration cards, and exclusion errors. To address these challenges, the Government of India introduced the Electronic Public Distribution System (e-PDS), supported by Smart Ration Cards integrated with Aadhaar authentication. This article examines the effectiveness of e-PDS through Smart Ration Cards with specific reference to Coimbatore City in Tamil Nadu using primary data collected from 120 respondents through a structured questionnaire. The study evaluates beneficiary awareness and the perceived efficiency associated with Smart Ration Cards. The findings reveal that while most beneficiaries are aware of Smart Ration Card features, full utilization remains limited. The quality of food grains and dealer's attitude emerged as major contributors to system effectiveness. A significant positive relationship was found between awareness levels and perceived effectiveness of e-PDS. The study concludes that Smart Ration Cards have improved transparency and efficiency in the PDS, but increased awareness and improved infrastructure are necessary to enhance their overall effectiveness.

Keywords: Public Distribution System, e-PDS, Smart Ration Cards, Food Security, Coimbatore and Digital Governance.

INTRODUCTION

Food security has always been a central concern of public policy in India due to widespread poverty, income inequality, and population pressure. The Public Distribution System (PDS), implemented under the Ministry of Consumer Affairs, Food and Public Distribution, is one of the largest social welfare programmes in the world. It aims to ensure the availability of essential food grains such as rice and wheat at affordable prices, particularly for economically vulnerable sections of society.

Over the years, India has maintained substantial food grain reserves. As of June 2024, government-held stocks stood at approximately 80.76 million tonnes, supported by a food subsidy allocation of around ₹2.05 lakh crore in the 2024–25 Union Budget. Despite this massive expenditure, the effectiveness of PDS has been questioned due to systemic problems such as hoarding, black marketing, ghost ration cards, diversion of food grains, and inaccurate beneficiary identification.

Recognizing these challenges, the Government of India and various state governments-initiated reforms aimed at digitizing the PDS. Tamil Nadu introduced Smart Ration Cards linked with Aadhaar in April 2017 as part of the Electronic Public Distribution System (e-PDS). This technology-driven initiative seeks to improve transparency, accountability, and efficiency in food grain distribution. Against this background, the present study evaluates the effectiveness of e-PDS through Smart Ration Cards in Coimbatore City.

SCOPE OF THE STUDY

The study is limited to evaluating the effectiveness of the Electronic Public Distribution System (e-PDS) through Smart Ration Cards in Coimbatore City. It examines beneficiary awareness and perceived effectiveness, focusing on factors such as quality of food grains, dealer's attitude, availability of items, infrastructural facilities, and service quality. The analysis is based on primary data collected from 120 Smart Ration Card holders within the selected study area.

OBJECTIVES OF THE STUDY

The main objectives of the study are:

1. To analyse the consumer awareness on the features of smart ration card.
2. To evaluate the effectiveness of Public Distribution System after implementing the smart card.

RESEARCH METHODOLOGY

Sample Size: The study is based on 120 respondents from Coimbatore City.

Sources of Data:

Primary Data: Collected through a structured questionnaire to study awareness, effectiveness, and challenges of Smart Ration Cards under e-PDS.

Secondary Data: Collected from books, journals, government reports, and official websites related to PDS and e-PDS.

Tools of Data Collection: Primary Data were collected using an structured online questionnaire.

Target Population:

The study covers Smart Ration Card holders in Coimbatore City belonging to different socio-economic backgrounds.

Tools for analysis

- Percentage analysis
- Weighted average score
- Correlation

REVIEW OF LITERATURE

Bonita Mohan Uday Raj, Korabandi Suhasini et al. (2024)¹⁸ in “Public Distribution System: An Exploration of Constraints in Rural and Urban Areas” studied PDS issues in Telangana using Garrett’s ranking. The study found poor grain quality and irregular supply of commodities as the major concerns for beneficiaries. Both rural and urban households expressed dissatisfaction with the reliability of fair price shops. The authors suggest stronger quality control, better supply chain management, and assured availability of commodities to improve efficiency.

R. Misra & A. Upadhyay (2024)¹⁹ in their study “Implementation of Technological Upgradation in Public Distribution System in India for Ensuring Availability, Accessibility and Affordability” review e-PDS reforms such as Aadhaar authentication, e-PoS, and ONORC. It highlights progress in digitisation but finds persistent issues like authentication failures, stock mismatches, and poor infrastructure in rural areas. The authors recommend robust monitoring and better connectivity to make the system more reliable.

Sameet Panda (2024)²⁰ in his study “Datafication of the Public Distribution System in India” uses Annavitaran portal data to evaluate digitisation outcomes. It finds high Aadhaar seeding and e-PdS coverage but notes exclusion risks when biometric authentication fails. The analysis shows that ration access is increasingly dependent on digital records, which may disadvantage those with limited digital literacy. The author concludes that while datafication improves transparency, safeguards are needed to protect vulnerable groups from being left out. Stronger grievance redressal and offline alternatives are recommended to ensure inclusivity.

ANALYSIS AND FINDINGS

Percentage analysis

Table 1

Awareness on the features of smart ration cards

S. No	Benefits	Respondents	
		Frequency	Percentage
a.	Yes, I know most features	40	33.33
b.	Yes, I know some features	50	41.7
c.	Aware, but never used the feature	20	16.7
d.	No, not aware	10	8.3
	Total	120	100

Findings

The above table shows that 41.7% of respondents are aware of some features of smart ration cards, followed by 33.33% of respondents who know most features and around 16.7% of respondents are aware of the features but have never used them, while 8.3% of respondents are not aware of the features at all.

Weighted average score

Table 2

Level of effectiveness of e-PDS

S.No & Factor		Respondents						Total	Weighted average score	Rank
		Level	1 ME	2 ME	3 N	4 LE	5 LE			
		Weights	5	4	3	2	1			
1	Service quality	Level	22	32	41	10	15	120	3.3	5
		Score	100	128	123	20	15	396		
2	Dealer’s attitude	Level	24	43	30	12	11	120	3.475	2
		Score	120	172	90	24	11	417		
3	Quality of food	Level	44	24	42	7	3	120	3.825	1

	grains	Score	220	96	126	14	3	459		
4	Infrastructural facilities	Level	23	36	36	15	10	120	3.391	4
		Score	115	14	108	30	10	407		
5	Availability of items	Level	24	42	24	23	7	120	3.441	3
		Score	120	168	72	46	7	413		

Findings

The above table shows that among the various factors considered; quality of food grains was ranked first with a weighted average score of 3.83 indicating it is the most important factor that contributed to the effectiveness of the E-PDS for the respondents. This was followed by dealer's attitude with a score of 3.48, securing the second rank. Timeliness of distribution stood third with a score of 3.44, while infrastructural facilities ranked fourth with a score of 3.39. Service quality was ranked lowest with a score of 3.30

Correlation

Table 3

Null Hypothesis (H₀)

There is no significant relationship between the awareness level of the smart ration card and the perceived effectiveness of the e-PDS system.

Alternative Hypothesis (H₁)

There is a significant relationship between the awareness level of the smart ration card and the perceived effectiveness of the e-PDS system.

Correlation between awareness level and effectiveness rating

		Awareness on the features of smart ration card	Effectiveness rating of e-PDS
Awareness on the features of smart ration card	Pearson Correlation	1	.275**
	Sig. (2-tailed)		.002
	N	120	120
Effectiveness rating of e-pds	Pearson Correlation	.275**	1
	Sig. (2-tailed)	.002	
	N	120	120

Findings

The Pearson Correlation value is .275. Since the number is positive, it indicates a positive linear relationship. As awareness on the features of the smart ration card increases, the effectiveness rating of e-pds also tends to increase. The p value is 0.002 which is less than 0.05. So, the null hypothesis is rejected. There is a significant relationship between the awareness level of the smart ration card and the perceived effectiveness of the e-PDS system.

CONCLUSION

The study concludes that the implementation of Smart Ration Cards under the Electronic Public Distribution System (e-PDS) has improved the transparency and effectiveness of the Public Distribution System in Coimbatore City. Most respondents are aware of the features of Smart Ration Cards, though complete utilization remains limited. The quality of food grains and dealer's attitude emerged as the most important factors influencing the effectiveness of e-PDS. The correlation analysis shows a significant positive relationship between awareness and perceived effectiveness, indicating that higher awareness leads to better system utilization. Overall, while Smart Ration Cards have strengthened PDS functioning, increased awareness, improved infrastructure, and continuous monitoring are necessary to enhance their effectiveness.

REFERENCES

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