OPEN ACCESS

Manuscript ID:
ECO-2026-140411179

Volume: 14

Issue: 4

Month: September

Year: 2026

P-ISSN: 2319-961X

E-ISSN: 2582-0192

Received: 07.07.2026

Accepted: 13.08.2026

Published Online: 01.09.2026

Citation:
Muthukumaran, S. "Beneficiary Satisfaction with the Thayumanavar Scheme under Tamil Nadu's Universal Public Distribution System: Evidence from Pudukkottai District." *Shhanlax International Journal of Economics*, vol. 14, no. 4, 2026, pp. 1–16.

DOI:
https://doi.org/10.34293/economics.v14i4.11179

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Beneficiary Satisfaction with the Thayumanavar Scheme under Tamil Nadu's Universal Public Distribution System: Evidence from Pudukkottai District

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Abstract
The Thayumanavar Scheme, introduced under Tamil Nadu's Universal Public Distribution System (UPDS), is a recent welfare initiative that provides doorstep delivery of essential commodities to eligible senior citizens and differently abled persons who face mobility constraints in accessing Fair Price Shops. Although the scheme has been implemented across the state, empirical evidence of its effectiveness remains limited, particularly during the early phase of implementation. To date, no district-level study has comprehensively examined beneficiaries' awareness, utilization, accessibility, and satisfaction with the scheme. To address this gap, this study provides the first empirical assessment of the Thayumanavar Scheme in the Pudukkottai District. This study adopted a descriptive and analytical research design, and primary data were collected from 170 beneficiaries through a structured interview schedule using a stratified random sampling technique. Descriptive statistics and chi-square tests were used for data analysis. The Chi-square test ($\chi^2 = 4.82$) indicated no statistically significant association between the beneficiary category and the frequency of benefit utilization. The findings revealed that all respondents were aware of the scheme and had received essential commodities through door-step delivery. Beneficiaries expressed a high level of satisfaction with the quality and quantity of commodities, transparency in distribution, punctuality of delivery, clarity of communication, and behaviour of delivery personnel. The results indicate that the scheme has substantially reduced the accessibility challenges previously experienced by senior citizens and differently abled persons in obtaining their monthly ration entitlements. This study provides valuable district-level evidence on the effectiveness of doorstep delivery under the UPDS and offers practical insights for policymakers to strengthen implementation and assess the potential expansion of similar beneficiary-centered delivery mechanisms within welfare programs. Future research should examine the long-term impact of the scheme on food security, nutritional outcomes, quality of life, and financial sustainability of doorstep delivery across different districts and states.

Keywords: Thayumanavar Scheme, Universal Public Distribution System (UPDS), Doorstep Delivery, Beneficiary Satisfaction, Food Security, Social Protection

Introduction

Food as a Fundamental Right

Access to adequate food is not merely a basic human necessity but also a fundamental right that upholds human dignity, health, and social justice. At the global level, Sustainable Development Goal 2 (Zero Hunger) emphasizes the elimination of hunger and the achievement of food security for all. Long before the adoption of this global agenda, celebrated Tamil philosopher-poet Thiruvalluvar articulated the same ethical principle in Thirukkural (Kural 226): "Atraar azhipasitheerthal ahdhoruvan petraan porulvaip puzhi," meaning that relieving the hunger of the poor is the most enduring safeguard of one's

Wealth. This timeless philosophy underscores the moral responsibility of governments and societies to ensure equitable access to food for all individuals.

Food Security in India: Progress and Challenges

Food security has been a central objective of India's development policy for several decades. Although India achieved self-sufficiency in food grain production during the Green Revolution and continues to maintain substantial food reserves, the benefits of increased production have not been shared equally across all sections of society. Persistent poverty, income inequality, and disparities in access to resources continue to limit the purchasing power of economically vulnerable households. Consequently, ensuring equitable access to food remains a major public policy challenge, despite the availability of adequate food stocks at the national level.

Evolution of the Public Distribution System

To address food insecurity and improve access to essential commodities, the Government of India established the Public Distribution System (PDS) as a major food security intervention. The PDS distributes subsidized commodities such as rice, wheat, sugar, and kerosene to eligible households through an extensive network of Fair Price Shops (FPS). Over the years, the system has evolved into one of the largest food distribution programs in the world and has played a significant role in strengthening food security and reducing poverty across the country.

Tamil Nadu's Role in PDS Reforms

Tamil Nadu has consistently been recognised as a pioneer in strengthening the Public Distribution System through a series of progressive policy reforms. The state's initiatives began with the Village Shop Programme in 1964, which sought to improve access to essential commodities in rural areas of the state. The program subsequently expanded into a comprehensive Public Distribution System serving both rural and urban populations. In 1992, the Revamped Public Distribution System (RPDS) was introduced in drought-prone and economically disadvantaged regions to improve the distribution of subsidized commodities. Following the Chief Ministers' Conference held in July 1996, the Government of India implemented the Targeted Public Distribution System (TPDS) in 1997, under which households were categorized as Above Poverty Line (APL) and Below Poverty Line (BPL) beneficiaries with different levels of subsidy. The introduction of the Antyodaya Anna Yojana (AAY) in 2000 further strengthened the system by extending additional support to the poorest and most vulnerable households.

Emergence of Universal PDS in Tamil Nadu

Despite these reforms, the Targeted Public Distribution System faced several operational challenges, particularly exclusion and inclusion errors in identifying eligible beneficiaries. These limitations raise concerns regarding equity and the effective delivery of food security benefits. In response, Tamil Nadu adopted the Universal Public Distribution System (UPDS), extending access to essential commodities to all eligible households irrespective of income classification. By eliminating beneficiary categorization, the UPDS reduced the risk of exclusion, while reinforcing the principles of universal welfare and social justice. This policy reflects the state's long-standing commitment to ensuring the availability, affordability, and accessibility of essential commodities. The introduction of free rice distribution in 2011 further strengthened Tamil Nadu's commitment to achieving food security for all.

The Thayumanavar Scheme: A Beneficiary-Centred Welfare Initiative

Within the framework of the Universal Public Distribution System, the Thayumanavar Scheme, launched in 2025, represents an important innovation in welfare service delivery in Tamil Nadu. The scheme provides doorstep delivery of essential commodities to eligible senior citizens aged 65 years and above living in spouse-only households without dependent family members, as well as differently abled persons holding valid ration cards who experience difficulty in visiting Fair Price Shops.

Under the scheme, essential commodities, including rice, sugar, wheat, tur dhal, and palm oil, are delivered directly to beneficiaries' residences by designated personnel. This delivery

mechanism reduces travel requirements, addresses mobility-related constraints, and minimizes dependence on family members or neighbours for the collection of ration commodities. As a result, the scheme strengthens food security while promoting dignity, independence, and social inclusion among vulnerable population groups in India.

The Thayumanavar Scheme represents a significant step towards improving the accessibility, inclusiveness, and responsiveness of Tamil Nadu's welfare delivery system. It also demonstrates how beneficiary-centered service delivery can strengthen the effectiveness of public welfare programs by bridging the gap between entitlement and actual access.

Research Gap and Need for the Study

Although the Thayumanavar Scheme has considerable policy significance, empirical evidence regarding its implementation and effectiveness is limited. In particular, no district-level study has comprehensively examined beneficiaries' awareness, utilization patterns, accessibility outcomes, and satisfaction during the early phase of implementation. This study addresses this research gap by providing the first empirical evaluation of the Thayumanavar Scheme in the Pudukkottai District from the perspective of its beneficiaries. The findings are expected to contribute to evidence-based policymaking and support further strengthening of doorstep delivery mechanisms under the Universal Public Distribution System.

A Structured Profile of the Thayumanavar Scheme

This table presents an overview of the Thayumanavar Scheme, summarizing its objectives, eligibility criteria, delivery mechanism, administrative framework, and key operational features of Tamil Nadu's Universal Public Distribution System.

Aspect	Details
Scheme Name	Thayumanavar Scheme
Implemented Under	Universal Public Distribution System (UPDS)
Launched On	12 August 2025
Launching Authority	Government of Tamil Nadu
Target Beneficiaries/ Eligibility Criteria	Senior citizens (aged 65 years and above) belonging to spouse-only households without other dependent members, and differently-abled persons holding valid ration cards.
Objective	To ensure doorstep delivery of essential commodities to those unable to collect rations from Fair Price Shops.
Essential Commodities Supplied	Rice, Sugar, Wheat, Tur dhal, and Palm Oil
Mode of Delivery	Direct doorstep delivery by designated personnel
Frequency of Supply	First week of each month
Coverage Area	All districts in Tamil Nadu (including Pudukkottai District for this study)
Monitoring Authority	Cooperation, Food, Consumer Protection Department, and Tamil Nadu Civil Supply Corporation (TNCSC)
Distribution Infrastructure	Mini-vans equipped with PoS (Point of Sale) machines and weighing scales with Aadhaar-based authentication.
Special Features	Prioritises universal inclusiveness, social justice, and ethical governance by removing physical and social barriers for vulnerable populations

Objectives, Scope and Limitations of the Study

Objectives of the Study

The primary objective of this study is to evaluate the effectiveness of the Thayumanavar Scheme implemented under the Universal Public Distribution System (UPDS) in Pudukkottai District. Specifically, the study seeks to:

- assess beneficiaries' awareness and utilisation of the scheme;
- measure beneficiaries' satisfaction with the doorstep delivery of essential commodities;
- examine whether a significant association exists between beneficiary category and the frequency of benefit utilisation; and
- propose policy recommendations for strengthening the implementation and long-term effectiveness of the scheme.

Scope of the Study

The present study evaluates the effectiveness of the Thayumanavar Scheme in Pudukkottai District with particular emphasis on beneficiaries' experiences of accessibility, utilisation, and satisfaction. The scope of the study includes:

- assessment of beneficiaries' awareness, accessibility, utilisation, and satisfaction based on primary survey data;
- coverage of 170 beneficiaries selected from six taluks of Pudukkottai District under the Universal Public Distribution System (UPDS);
- application of descriptive and inferential statistical techniques, including the mean, standard deviation, and Chi-square test; and
- generation of evidence-based policy recommendations that may support improvements in similar welfare programmes.

Limitations of the Study

Like all empirical investigations, the present study is subject to certain limitations that should be considered while interpreting its findings.

- The study is confined to 170 beneficiaries selected from six taluks of Pudukkottai District. Consequently, the findings cannot be generalised to the entire district or state without further investigation.
- Although stratified random sampling ensured representation across the selected taluks, certain socio-economic groups may not be fully captured.
- The study relied on structured questionnaires and personal interviews. Consequently, some respondents may have been reluctant to express dissatisfaction with a government welfare programme, giving rise to social desirability bias.
- As the study reflects conditions prevailing during the survey period, the findings may not fully represent future implementation outcomes.
- Beneficiary satisfaction was measured through self-reported responses, which may not completely capture latent or unexpressed dissatisfaction.

Literature Review

This literature review critically examines previous studies on the Public Distribution System (PDS), Targeted Public Distribution System (TPDS), Tamil Nadu's Universal Public Distribution System (UPDS), beneficiary satisfaction with welfare programmes, and the recently introduced Thayumanavar Scheme. By synthesizing the existing literature, it identifies the major research findings and highlights the gaps that justify the need for this study.

Public Distribution System and Food Security

The Public Distribution System (PDS) is one of India's most significant food security interventions, designed to improve access to essential food commodities for economically disadvantaged households through the distribution of subsidized food grains. Over the years, the PDS has played a crucial role in strengthening food security and alleviating poverty, although its implementation has been accompanied by several operational challenges. George (2019) observed that the PDS has contributed substantially to reducing food insecurity; however, issues such as corruption, leakages, and administrative inefficiencies continue to affect its overall effectiveness in India. Similarly, Khera (2011) emphasized that the PDS remains an important instrument for poverty reduction and food security, while also drawing attention to persistent problems, including leakages, corruption, and targeting errors.

Recent studies have examined these implementation challenges. Sasi et al. (2024) provided a comprehensive analysis of operational issues, such as leakages, pilferage, and delays in service delivery. The authors suggest that digital

technologies, improved monitoring mechanisms, and data-driven governance can enhance transparency, accountability, and efficient utilization of public resources. Likewise, Panda et al. (2020) argued that expanding the range of commodities distributed through the PDS and improving their nutritional value would strengthen the system's contribution to addressing malnutrition and enhancing household food security.

To improve food distribution efficiency, the Government of India introduced the Targeted Public Distribution System (TPDS), which primarily focused on households living Below the Poverty Line (BPL). Nevertheless, Dhanaraj and Gade (2016) reported that the TPDS is affected by both exclusion and inclusion errors. Exclusion errors prevented eligible households from receiving benefits, whereas inclusion errors resulted in benefits being extended to ineligible households. These shortcomings raise concerns regarding the equity, transparency, and accuracy of beneficiary identification under the targeted approach.

Tamil Nadu adopted a different approach through the Universal Public Distribution System (UPDS), which extends subsidized essential commodities to all eligible ration card holders without categorizing households according to poverty status. Swaminathan (2008) highlighted that the universal model has substantially contributed to reducing hunger and malnutrition within the state. Similarly, Drèze and Khera (2017) recognized Tamil Nadu's UPDS as a successful model because of its inclusiveness, administrative efficiency, and effective delivery of essential commodities. Their findings suggest that the state's experience offers valuable lessons for strengthening food security programs in other parts of India.

Beneficiary Satisfaction in Welfare Schemes

The effectiveness of welfare programmes should be assessed not only in terms of their coverage but also in terms of the quality, accessibility, timeliness, transparency, and overall satisfaction experienced by beneficiaries. Measuring beneficiary satisfaction provides valuable evidence regarding service quality and the effectiveness of program implementation.

Dahiya and Jain (2025) examined beneficiaries' experiences under the Ayushman Bharat Yojana and found that inadequate awareness, enrolment difficulties, and access-related barriers affected the effective utilization of scheme benefits. Similarly, Velmurugan and Lavanya (2017) reported that beneficiary satisfaction is influenced by several factors, including accessibility of services, quality of service delivery, timeliness, and fairness in the distribution of benefits.

In the context of food security programmes, Lagad and Charkha (2023) reported that transparency and accessibility in service delivery are important determinants of beneficiary satisfaction in food security programmes. Similarly, Meena and Sowmiya (2023) used statistical analysis to demonstrate that beneficiary satisfaction is an important indicator for evaluating both program performance and service effectiveness. Collectively, these studies emphasize the importance of systematically assessing beneficiaries' experiences to improve the quality and effectiveness of welfare programs.

Beyond food security programs, Vetrivelan (2025) evaluated the impact of the Health Equity, Accessibility, and Leadership (HEAL) framework on service delivery under Ayushman Bharat Pradhan Mantri Jan ArogyaYojana (AB PM-JAY). The study concluded that improvements in management practices, equity, and accessibility significantly enhanced both beneficiary satisfaction and service delivery efficiency.

Accessibility has increasingly become an important indicator for evaluating the effectiveness of welfare programs. Recognizing the mobility constraints experienced by senior citizens and differently abled persons, the Government of Tamil Nadu introduced the Thayumanavar Scheme in 2025 under the Universal Public Distribution System (UPDS). The scheme provides doorstep delivery of essential commodities to eligible beneficiaries, thereby reducing the physical barriers to accessing Fair Price Shops. This initiative represents an important policy innovation aimed at strengthening inclusiveness, accessibility, and beneficiary-centered service delivery within the Public Distribution System.

Gaps in Literature and Research Justification

The review of existing literature indicates that considerable research has been undertaken on the Public Distribution System (PDS), Targeted Public Distribution System (TPDS), and beneficiary satisfaction with various welfare programmes. Previous studies have primarily focused on food security, operational efficiency, service delivery, targeting mechanisms, transparency, and beneficiaries' perceptions of welfare interventions. These studies provide valuable insights into the strengths and limitations of food security programs in India.

However, a significant research gap remains regarding doorstep delivery initiatives implemented under the Universal Public Distribution System (UPDS), particularly the recently introduced Thayumanavar Scheme in Tamil Nadu. As the scheme was launched only in 2025, empirical evidence on its implementation, accessibility, utilization, and beneficiary satisfaction is still limited. To the best of the researcher's knowledge, no district-level empirical study has comprehensively examined the effectiveness of the scheme from the beneficiaries' perspective.

This study addresses this gap by evaluating the implementation of the Thayumanavar Scheme in the Pudukkottai District. It examines the awareness, accessibility, utilization, and overall satisfaction of beneficiaries with the doorstep delivery of essential commodities. The findings are expected to contribute to the limited body of literature on beneficiary-centered welfare delivery and provide evidence-based recommendations for strengthening the implementation of the scheme and supporting future policy decisions.

Statement of the Problem

Tamil Nadu's Universal Public Distribution System (UPDS) has long been recognised as one of the most comprehensive food security programmes in India, ensuring equitable access to essential commodities for eligible households. Building upon this foundation, the Government of Tamil Nadu introduced the Thayumanavar Scheme in 2025 to provide doorstep delivery of essential commodities to eligible senior citizens and differently abled persons who face mobility constraints in accessing Fair Price Shops.

Although the scheme represents an important policy innovation aimed at improving accessibility and inclusiveness, empirical evidence regarding its implementation and effectiveness is limited. In particular, there is insufficient information on beneficiaries' awareness of the scheme, their utilization of doorstep delivery services, the quality and timeliness of service delivery, and their overall level of satisfaction. Furthermore, no district-level empirical study has comprehensively evaluated the effectiveness of the Thayumanavar Scheme from the perspective of its beneficiaries during its initial phase of implementation.

Evaluating beneficiary satisfaction is essential because it provides direct evidence of service quality, accessibility, transparency, and the extent to which the scheme meets the needs of vulnerable population groups. Such evidence is crucial for identifying implementation strengths, addressing operational challenges and informing future policy improvements.

Against this background, the present study examines the effectiveness of the Thayumanavar Scheme in the Pudukkottai District by assessing the beneficiaries' awareness, utilization, accessibility, and satisfaction. The findings are expected to contribute to evidence-based policymaking and provide practical recommendations for strengthening doorstep delivery mechanisms in the Universal Public Distribution System.

Research Methodology

This section outlines the methodology adopted in this study. This section describes the research design, study area, administrative status of the Thayumanavar Scheme, sampling design, sources of data, data collection tools, and statistical techniques employed to achieve the objectives of the study.

Research Design

This study adopted a descriptive and analytical research design to evaluate beneficiaries' awareness, utilization patterns, accessibility outcomes, and satisfaction with the Thayumanavar Scheme under

the Universal Public Distribution System (UPDS) in Pudukkottai District.

The descriptive component of the study was used to examine beneficiaries' awareness of the scheme, utilization patterns, accessibility to doorstep delivery, and their level of satisfaction.

The analytical component examined the association between beneficiary categories and the frequency of benefit utilization, using appropriate statistical techniques. Accordingly, this study sought to assess the awareness, utilization, accessibility, and satisfaction of beneficiaries of the Thayumanavar Scheme.

Area of Study

The study was conducted in Pudukkottai District of Tamil Nadu. Six taluks representing diverse socio-economic and geographical characteristics were selected for the study:

- Pudukkottai-Urban and administrative center.
- Aranthangi-Semi-urban area with a mixed economy.
- Alangudi-Rural area with predominant agriculture activity.
- Viralimalai-Semi-urban area with a rural - industrial mix.
- Avudayarkoil-Remote rural and coastal area.
- Kulathur-Hilly terrain and forest fringe areas.

Administrative Status of the Thayumanavar Scheme in Pudukkottai District

Particulars	Number	Percentage
Eligible beneficiaries for doorstep delivery	34,155	100%
Beneficiaries who received doorstep delivery	16,736	49%
Beneficiaries who collected commodities from Fair Price Shops (FPS)	2,214	6%
Total beneficiaries who received monthly entitlements	18,950	55%
Eligible beneficiaries who did not receive their monthly entitlements	15,205	45%

Source: District Supply and Consumer Protection Office (DSO), Pudukkottai District, Administrative Records.

This table provides an overview of the administrative status of the Thayumanavar Scheme in the Pudukkottai District based on the official records of the District Supply and Consumer Protection Office (DSO). The information is presented to provide an operational context for the implementation of the scheme and was not included in the statistical analysis or interpretation of the study findings.

According to administrative records, 34,155 beneficiaries were identified as eligible under the scheme. Of these, 16,736 beneficiaries (49%) received essential commodities through doorstep delivery, whereas 2,214 beneficiaries (6%) collected their commodities directly from Fair Price Shops (FPS). Consequently, 18,950 beneficiaries (55%) received their monthly entitlements, whereas 15,205 beneficiaries (45%) did not receive their monthly entitlements.

Based on field observations and interactions with Fair Price Shop personnel, the non-receipt of monthly entitlements by some eligible beneficiaries may be attributed to factors such as beneficiary unavailability, temporarily inactive ration cards, biometric authentication failure, migration, death of beneficiaries, and voluntary non-collection of commodities by the beneficiaries. These observations are presented solely to provide operational insights into the implementation of the scheme and do not form a part of the statistical analysis.

Sampling Design

- The study population comprised 34,155 beneficiaries eligible for doorstep delivery under the Thayumanavar Scheme in the Pudukkottai District. The population included senior citizens aged 65 years and above living in spouse-only households without dependent family members and differently abled persons eligible for the scheme.
- A sample of 170 beneficiaries was selected for this study. Stratified random sampling was adopted to ensure adequate representation of beneficiaries across the six selected taluks and different socioeconomic backgrounds.

Data Collection

The study utilized both primary and secondary data.

- Primary data were collected through structured questionnaires and personal interviews with the beneficiaries of the Thayumanavar Scheme.
- Secondary data were obtained from official government reports, administrative records of the District Supply and Consumer Protection Office (DSO), and published literature relating to the Public Distribution System (PDS) and the Universal Public Distribution System (UPDS).

Data Collection Tool

A structured questionnaire was used as the primary data collection instrument. The questionnaire consisted of closed- and open-ended questions.

- Closed-ended questions, including Likert-type rating scales, were used to collect quantitative data on the beneficiaries' awareness, utilization, accessibility, and satisfaction.
- Open-ended questions enabled the respondents to express their views and experiences regarding the implementation of the scheme.
- The questionnaire was developed based on the study objectives and relevant literature on welfare scheme evaluation and beneficiary satisfaction. The content validity of the instrument was ensured through expert review and consultation with officials associated with the Public Distribution System. Based on their suggestions, necessary modifications were made before the final survey.

Statistical Tools

- Descriptive statistics, namely the mean and standard deviation, were used to summarize the beneficiaries' responses relating to awareness, utilization, accessibility, and satisfaction.
- To examine the association between beneficiary categories and the frequency of utilization of benefits under the Thayumanavar Scheme, the Chi-square test was employed as an inferential statistical tool.
- This study was conducted during the initial phase of the implementation of the Thayumanavar Scheme in the Pudukkottai District to understand the beneficiaries' early experiences, utilization, accessibility, and satisfaction with the scheme.

Statistical Analysis and Interpretation

This section presents the statistical analysis of the primary data collected from 170 beneficiaries of the Thayumanavar Scheme across six taluks of Pudukkottai District. The analysis focuses on beneficiaries' awareness, utilization, accessibility, and satisfaction with the scheme, as well as the relationship between beneficiary category and the frequency of benefit utilisation. The findings are interpreted to assess the effectiveness of the scheme in improving access to essential commodities among vulnerable population groups.

Descriptive Statistics

Descriptive statistics were employed to assess the level and consistency of beneficiaries' satisfaction across seven service dimensions of the Thayumanavar Scheme. Beneficiaries' responses were measured using a five-point Likert scale ranging from 1 (Very Dissatisfied) to 5 (Very Satisfied). The mean and standard deviation were calculated to evaluate the overall level of satisfaction and the degree of variation in respondents' perceptions.

A. Mean

Formula

$$\overline{X} = \frac{\sum X}{N}$$

Since all 170 respondents marked "Very Satisfied" (Score=5) for each dimension:

$$\sum X = 170 \times 5 = 850$$

$$\overline{X} = \frac{850}{170} = 5.00$$

Since all 170 respondents selected "Very Satisfied"(Score = 5) for each service dimension, the mean score for every dimension was 5.00.

B. Standard Deviation

Formula: $\sigma = \sqrt{\frac{\sum (X - \overline{X})^2}{N}}$,

Since $X = 5,\ \overline{X} = 5$

$$(X - \overline{X}) = 0$$

$$\sum (X - \overline{X})^2 = 0$$

$$\sigma = 0$$

As all respondents assigned the same score, the standard deviation for each service dimension was 0.00, indicating complete uniformity in the responses.

Observation

The findings reveal that all 170 beneficiaries expressed "Very Satisfied" responses across each of the seven service dimensions of the Thayumanavar Scheme. Consequently, every dimension recorded a mean score of 5.00 with a standard deviation of 0.00, indicating complete agreement among the respondents.

Several factors may explain this exceptionally high level of satisfaction. First, the study was conducted during the early phase of the scheme's implementation, when beneficiaries were experiencing the advantages of doorstep delivery for the first time. Second, the scheme specifically targets senior citizens and differently abled persons who previously encountered mobility-related challenges in accessing Fair Price Shops. For these beneficiaries, doorstep delivery significantly improved accessibility, convenience, and continuity in receiving essential commodities. Field interactions further indicated that beneficiaries viewed the scheme as a valuable welfare initiative that positively influenced their daily lives.

Nevertheless, the complete absence of variation in responses should be interpreted with appropriate caution. While the findings may genuinely reflect a high level of beneficiary satisfaction, they may also have been influenced by social desirability bias, whereby some respondents may have been reluctant to express negative opinions regarding a government welfare program. Therefore, although the results indicate consistently high levels of beneficiary satisfaction, future studies involving larger samples, longitudinal designs, and mixed-method approaches could provide a more comprehensive understanding of beneficiaries' perceptions over time.

Dimension-Wise Summary

S. No.	Dimension	N	Mean	Standard Deviation	Interpretation
1.	Quality of Commodities	170	5.00	0.00	Maximum satisfaction
2.	Quantity Adequacy	170	5.00	0.00	Full entitlement met
3.	Transparency in Weight	170	5.00	0.00	Perfect transparency
4.	Delivery and Staff Behaviour	170	5.00	0.00	Excellent service
5.	Information Clarity	170	5.00	0.00	Very clear communication
6.	Timing Convenience	170	5.00	0.00	Highly convenient
7.	Global (Overall) Satisfaction	170	5.00	0.00	Total beneficiary approval

Overall Interpretation

The findings demonstrate consistently high levels of beneficiary satisfaction across all seven service dimensions of the Thayumanavar Scheme. Beneficiaries expressed maximum satisfaction with the quality and quantity of commodities supplied, transparency in weighing, delivery services, staff behaviour, communication regarding the scheme, and convenience of doorstep delivery. Collectively, these findings suggest that the scheme has substantially improved access to essential commodities, particularly for senior citizens and differently-abled persons, thereby enhancing the effectiveness and inclusiveness of the Universal Public Distribution System (UPDS).

Inferential Statistics

To examine whether the frequency of benefit utilisation differed across beneficiary categories, the Chi-square test of independence was employed. The test was used to determine whether a statistically significant association existed between the beneficiary category (senior citizens and differently abled persons) and the frequency of utilization of benefits under the Thayumanavar Scheme.

Hypothesis Testing

Null Hypothesis (H_0)

There is no significant association between beneficiary category and the frequency of benefit utilization under the Thayumanavar Scheme.

Alternative Hypothesis (H_1)

There is a significant association between beneficiary category and the frequency of benefit utilisation under the Thayumanavar Scheme.

Observed Frequency Table (O)

Beneficiary Category	Once	Twice	Thrice	More than Thrice	Row Total
Senior Citizens	18	46	52	34	150
Differently-Abled Persons	6	5	5	4	20
Column Total	24	51	57	38	170

Expected Frequency Table (E)

Formula:

$$E_{ij} = \frac{(Row\ Total) \times (Column\ Total)}{Grand\ Total}$$

Beneficiary Category	Once	Twice	Thrice	More than Thrice
Senior Citizens (SC)	21.18	45.00	50.29	33.53
Differently-Abled Persons (DP)	2.82	6.00	6.71	4.47

Chi-square Formula

$$\chi^2 = \sum \frac{(O-E)^2}{E}$$

Chi-square Calculations

Cell	O	E	$\frac{(O-E)^2}{E}$
SC-Once	18	21.18	0.48
SC-Twice	46	45.00	0.02
SC-Thrice	52	50.29	0.06
SC-More than Thrice	34	33.53	0.01
DA-Once	6	2.82	3.59
DA -Twice	5	6.00	0.17
DA -Thrice	5	6.71	0.44
DA- More than Thrice	4	4.47	0.05
Total			4.82

Calculated Chi-square Value

$$\chi^2 = 4.82$$

Degrees of Freedom & Critical Value

- df = (r-1)(c-1) = (2-1)(4-1) =3
- Table value at 5% significance level (df = 3) = 7.815.

Decision Rule

The calculated Chi-square (χ^2) value was 4.82, whereas the critical table value at the 5 per cent level of significance with 3 degrees of freedom was7.815. Since the calculated value was less than the critical value (4.82 < 7.815), the null hypothesis (H_0) was accepted.

Result & Interpretation

The Chi-square test indicated that there was no statistically significant association between beneficiary category and the frequency of benefit utilization under the Thayumanavar Scheme at the 5 per cent level of significance. This finding suggests that the utilisation pattern was broadly similar

among both senior citizens and differently-abled beneficiaries.

Although senior citizens constituted a larger proportion of the study sample, the observed differences in utilisation frequency between the two beneficiary categories were not statistically significant. The findings suggest that the scheme has been implemented equitably across the eligible beneficiary groups included in the study.

However, the comparatively smaller representation of differently abled beneficiaries highlights the need to strengthen awareness initiatives and improve accessibility measures to ensure wider participation among all eligible beneficiaries of the scheme. Overall, the findings indicate that the Thayumanavar Scheme has been successful providing inclusive and consistent delivery of essential commodities.

Awareness and Access Matrix

Parameter	Percentage	Interpretation
Aware of Scheme	100%	All beneficiaries are aware of the scheme.
Source: Fair Price Shop staff	85%	Fair PriceShop staff is the primary source of information.
Source: Media	40%	Media plays a supportive role in awareness creation.
Source: Family / Friends	13%	Informal social networks contribute minimally.
Receiving Delivery	100%	All beneficiaries receive doorstep delivery.

This table presents the level of beneficiaries' awareness of the Thayumanavar Scheme, the primary sources of information, and access to doorstep delivery services. The findings indicate that all respondents (100%) were aware of the scheme and reported receiving essential commodities through doorstep delivery, reflecting universal coverage among the surveyed beneficiaries.

Fair Price Shop (FPS) staff emerged as the principal source of information, with 85 per cent of respondents reporting that they first learned about the scheme through FPS personnel. The media also played a supportive role in disseminating information, as reported by 40 per cent of respondents. In contrast, only 13 per cent of beneficiaries indicated that family members or friends were their source of information.

Since multiple responses were permitted, the percentages exceeded 100 percent.

Overall Interpretation

The findings demonstrate a high level of awareness and accessibility among the surveyed beneficiaries. The prominent role of Fair Price Shop staff in creating awareness highlights the effectiveness of frontline service personnel in disseminating information about welfare programs. The media contributed to these efforts, while informal social networks played a relatively limited role.

The universal receipt of doorstep delivery, together with the high level of awareness observed among beneficiaries, suggests that the scheme has been effectively implemented within the study area. These findings are consistent with the high levels of beneficiary satisfaction reported in the study and indicate that the Thayumanavar Scheme has substantially improved access to essential commodities for senior citizens and differently-abled persons under the Universal Public Distribution System (UPDS).

Findings of the Study

The major findings of the study, based on the statistical analysis of primary data collected from 170 beneficiaries of the Thayumanavar Scheme in Pudukkottai District, are summarised as follows:

High Awareness and Universal Utilization of the Scheme

All respondents were aware of and had utilized the Thayumanavar Scheme, indicating the absence of exclusion errors among the surveyed beneficiaries. However, although beneficiaries were familiar with the doorstep delivery service, many were unaware of the official name of the scheme and commonly referred to it as "Illam Thedi Ration Porul". This finding suggests that beneficiaries were more familiar with the service provided than with the scheme's formal identity, highlighting the need to strengthen awareness of the scheme's official name and objectives.

Fair Price Shop Staff as the Primary Source of Information

Fair Price Shop (FPS) staff emerged as the principal source of information, with 85 per cent of beneficiaries reporting that they became aware of the scheme through FPS personnel. This finding underscores the important role of frontline staff in disseminating information, building beneficiaries' confidence, and ensuring effective last-mile service delivery.

Effective Doorstep Delivery of Essential Commodities

All respondents reported receiving essential commodities through door-step delivery. This finding indicates that the scheme was implemented effectively in the six selected taluks and substantially improved beneficiaries' access to essential commodities, particularly for those facing mobility-related challenges.

Consistently High Beneficiary Satisfaction

The beneficiaries expressed a consistently high level of satisfaction across all seven service dimensions, including the quality and quantity of commodities supplied, transparency in weighing, staff behavior, clarity of information, convenience of delivery timing, and overall service delivery. The mean satisfaction score of 5.00 across all dimensions reflects the scheme's positive impact in addressing both physical and economic barriers to accessing essential commodities among vulnerable population groups.

Reliable and Consistent Service Delivery

The standard deviation of 0.00 across all satisfaction dimensions indicates complete consistency in the beneficiaries' responses. This finding suggests that the quality of service delivery remained uniform across the surveyed beneficiaries and reflects the reliability of the doorstep delivery mechanism during the initial phase of implementation.

Equitable Access across Beneficiary Categories

Chi-square analysis revealed no statistically significant association between the beneficiary category (senior citizens and differently abled persons) and the frequency of benefit utilization. This finding indicates that the scheme provided equitable access to eligible beneficiaries, irrespective of category. Nevertheless, the relatively smaller proportion of differently abled beneficiaries highlights the need for targeted awareness and facilitation measures to encourage greater participation in this group.

Strengthening Transparency and Social Inclusion

The use of point-of-sale (PoS) devices and Aadhaar-based authentication enhances transparency and accountability in the distribution process. Furthermore, doorstep delivery reduced beneficiaries' dependence on others for collecting essential commodities, minimized mobility-related challenges, and promoted greater social inclusion among senior citizens and differently able persons.

Overall, the findings indicate that the Thayumanavar Scheme has been implemented effectively and has significantly improved the accessibility, convenience, transparency, and beneficiary satisfaction associated with distributing essential commodities. The complete convergence of satisfaction responses may reasonably be attributed to the scheme's initial phase of implementation, its focus on vulnerable population groups, and the substantial improvement in service accessibility experienced by the beneficiaries.

SWOT Analysis of the Thayumanavar Scheme

The findings of the study were synthesised using a SWOT (Strengths, Weaknesses, Opportunities, and Threats) framework to identify the key internal and external factors influencing the implementation and future development of the Thayumanavar Scheme

Strengths	Weaknesses
Universal awareness and utilization among the surveyed beneficiaries	Limited awareness of grievance redressal mechanisms
Consistently high beneficiary satisfaction	Limited range of commodities supplied
Transparent and accessible doorstep delivery system	Logistical challenges in remote and geographically dispersed areas

Opportunities	Threats
Expansion of the scheme to other vulnerable population groups	Financial constraints associated with large-scale expansion
Integration with health, nutrition, and other social welfare programmes	Operational challenges in remote and difficult-to-reach areas

Suggestions for Improvement

Based on the findings of the study, the following recommendations are proposed to enhance the effectiveness, inclusiveness, and long-term sustainability of the Thayumanavar Scheme.

Short-Term Recommendations

- Strengthen targeted awareness programmes for differently-abled beneficiaries by adopting accessible communication methods and inclusive outreach strategies.
- Enhance the grievance redressal mechanism to ensure timely registration and resolution of beneficiaries' complaints.
- Conduct periodic beneficiary feedback surveys to monitor service quality and identify emerging implementation challenges.
- Increase public awareness through local television, radio, print, and digital media to improve the visibility and recognition of the scheme.

Long-Term Recommendations

- Expand the scheme to include other vulnerable population groups experiencing difficulty in accessing Fair Price Shops.
- Integrate doorstep delivery services with relevant health, nutrition, and social welfare programmes to promote comprehensive support for vulnerable households.
- Develop district-level monitoring dashboards to facilitate continuous monitoring and performance evaluation of the scheme.
- Undertake periodic financial sustainability assessments before expanding the scheme to additional beneficiary groups to ensure its long-term viability.

Policy Implications

The findings of the present study have important implications for food security policy and welfare administration at both the state and national levels.

For the Government of Tamil Nadu

- Establish a systematic beneficiary feedback and monitoring mechanism to ensure continuous improvement in service quality, transparency, and accountability.
- Strengthen awareness and outreach initiatives to improve the participation of differently-abled persons and other vulnerable population groups.
- Ensure adequate financial and administrative support to sustain and strengthen the doorstep delivery system across the State.

For the Government of India

- Consider the Thayumanavar Scheme as a potential model for strengthening last-mile delivery under food security programmes.
- Encourage state governments to adopt suitable doorstep delivery mechanisms for vulnerable beneficiaries who face difficulties in accessing Fair Price Shops.
- Promote the wider use of digital technologies and innovative service delivery models to improve the accessibility, transparency, and efficiency of welfare programmes based on beneficiaries' needs.

Scope for Future Research

The present study provides preliminary empirical evidence on the effectiveness of the Thayumanavar Scheme in Pudukkottai District. Further research is required to evaluate the long-term sustainability, operational feasibility, and applicability of the scheme across different districts and states.

Future studies should undertake comparative analyses across districts and states to examine variations in implementation efficiency,

administrative practices, and the scalability of the doorstep delivery model under different socioeconomic and geographical conditions.

Longitudinal studies are also recommended to assess the long-term impact of the scheme on food security, nutritional outcomes, health status, and the overall quality of life of beneficiaries as the scheme progresses from its initial stage to wider implementation.

In addition, cost-effectiveness and financial sustainability analyses would provide valuable evidence on the economic viability of doorstep delivery in comparison with the conventional Public Distribution System, thereby supporting informed policy decisions on future expansion.

Future research may also explore gender dimensions, intra-household access to benefits, and beneficiaries' perceptions of social inclusion, dignity, and welfare governance to develop a more comprehensive understanding of the broader social impact of doorstep delivery initiatives.

Conclusion

This study examines the implementation and effectiveness of the Thayumanavar Scheme in the Pudukkottai District under the Universal Public Distribution System (UPDS). The findings demonstrate that the scheme has been effective in delivering essential commodities directly to eligible senior citizens and differently abled persons through a door-step delivery mechanism. All surveyed beneficiaries reported receiving their monthly entitlements and expressed a consistently high level of satisfaction with the quality of the services provided.

The study further indicates that the scheme substantially reduced the practical barriers faced by vulnerable beneficiaries in accessing Fair Price Shops. The absence of statistically significant differences in benefit utilization between senior citizens and differently abled persons suggests that the scheme has ensured equitable access across the beneficiary categories included in the study. Although the study was confined to one district and undertaken during the early phase of implementation, the findings highlight the potential of doorstep delivery as an effective approach to improve access to welfare services.

From a policy perspective, this study demonstrates that doorstep delivery, supported by digital technologies such as point-of-sale (PoS) devices and Aadhaar-based authentication, has enhanced transparency, accountability, and efficiency of service delivery. The findings also emphasize the important contribution of Fair Price Shop personnel in ensuring effective implementation, creating awareness, and strengthening beneficiaries' confidence in the scheme. Collectively, these factors illustrate the potential of the Thayumanavar Scheme as an innovative model for strengthening last-mile delivery of welfare programs.

However, the findings should be interpreted in light of certain limitations. The study was based on a sample of 170 beneficiaries drawn from selected taluks of Pudukkottai District and reflects the beneficiaries' perceptions during the initial stage of implementation. In addition, the complete uniformity of satisfaction responses limited the scope for more advanced statistical analyses. Future studies involving larger samples, comparative district-level analyses, and longitudinal research designs will provide a more comprehensive understanding of beneficiaries' experiences and the scheme's long-term effectiveness.

Despite these limitations, this study provides valuable empirical evidence on the implementation and effectiveness of the Thayumanavar Scheme. The findings may assist policymakers in strengthening, institutionalizing, and expanding doorstep delivery initiatives for vulnerable population groups. With sustained administrative support, continuous monitoring, targeted outreach to under-represented beneficiaries, and adequate financial planning, the Thayumanavar Scheme has considerable potential to serve as a model for inclusive, accessible, and dignified welfare delivery. This study also contributes to the growing body of literature on food security, social protection, and public service delivery by providing evidence of an innovative welfare intervention implemented under Tamil Nadu's Universal Public Distribution System.

Ethical Considerations

This study involved the voluntary participation of beneficiaries of the Thayumanavar Scheme. The respondents were informed about the purpose and objectives of the study before data collection, and their responses were obtained with their willingness to participate in the study. The confidentiality and anonymity of the respondents were maintained throughout the research process. The collected information was used solely for academic research.

Conflict of Interest

The authors declare that there are no conflicts of interest regarding the publication of this article. The study was conducted independently, and no financial, personal, or professional relationships influenced the design, conduct, analysis, or reporting of the research findings.

Acknowledgement

The author expresses sincere gratitude to the District Supply and Consumer Protection Office, Pudukkottai District, for permitting the conduct of this study and providing the necessary administrative support. The author also extends heartfelt thanks to the Fair Price Shop personnel for their cooperation during the field survey and to all the beneficiaries who willingly participated in the study by sharing their valuable time and experience. Their cooperation and support were invaluable for the successful completion of this study.

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