

Evaluating the Role of the Public Distribution System in Enhancing Food Security and Livelihood Resilience among Backward Communities in Kerala

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Abstract

The Public Distribution System (PDS) in India is a cornerstone of the nation's food security framework, aimed at providing subsidized food grains to economically disadvantaged households. This study evaluates the role of the PDS in enhancing food security and mitigating livelihood vulnerability among backward communities in Malappuram district, Kerala. Using primary data from 103 respondents belonging to Scheduled Castes, Other Backward Classes, and Antyodaya Anna Yojana beneficiaries, the study examines patterns of PDS usage, satisfaction levels, and perceived impacts on economic well-being. The findings reveal that while the PDS is widely accessed and generally effective in ensuring basic food security, it falls short in addressing broader economic vulnerabilities. Irregularities in supply, quality concerns, and access barriers remain persistent issues. The study concludes with policy recommendations emphasizing the need for systemic reforms, improved targeting, and integration of PDS with complementary welfare programs to enhance its effectiveness and equity. The insights contribute to the broader discourse on inclusive development and social protection in India.

Keywords: Public Distribution System (PDS); Food Security; Backward Communities; Livelihood Vulnerability; Kerala

1. Introduction

The Public Distribution System (PDS) in India plays a crucial role in enhancing food security and mitigating livelihood vulnerability, especially among backward communities who face deep-rooted socio-economic disadvantages. As a large-scale government initiative, PDS distributes essential commodities like rice, wheat, and sugar at subsidized rates to low-income households, serving as a vital safety net. For marginalized populations, including Scheduled Castes, Scheduled Tribes, and Other Backward Classes, the system offers not just food relief but also a mechanism to cope with financial instability. In regions such as Malappuram district in Kerala, where backward communities are numerically and socially significant, the PDS serves as a key buffer against hunger, inflation, and supply disruptions, thereby supporting both physical sustenance and socio-economic resilience.

Despite its intended benefits, the PDS is not free from challenges. Issues such as irregular distribution, poor quality of supplies, limited access, and administrative inefficiencies continue to hinder its performance. These challenges are particularly critical for backward communities, who often rely

heavily on the system for their basic nutritional needs. Understanding the role of PDS in such contexts requires a detailed examination of its real-world implementation and its capacity to address both food insecurity and the vulnerability of livelihoods. Such an analysis must go beyond theoretical policy frameworks to capture the lived experiences of beneficiaries and their interactions with the system.

While previous research has broadly examined the functioning of PDS across India and has recognized its contribution to poverty alleviation and food access, there remains a significant gap in localized, community-specific assessments. Most studies have focused on state-level evaluations or have emphasized technological reforms without thoroughly exploring their ground-level impact. In particular, there is limited empirical work on how PDS affects both food consumption patterns and economic vulnerability among backward communities at the district level in Kerala. The absence of such localized insight limits the understanding of how well the system is working for the very groups it is intended to protect.

This study seeks to fill that gap by focusing specifically on the backward communities of Malappuram district. Through the use of primary data, it examines how effectively the PDS supports household food security and reduces the exposure of families to livelihood shocks. It provides a comprehensive evaluation of the accessibility, adequacy, and perceived impact of PDS on the daily lives of beneficiaries. By linking food security to economic vulnerability, the study offers a dual perspective that contributes both academically and practically to the discourse on welfare systems.

The findings of this study hold significant importance for society and public policy. In a time when economic uncertainties and inflationary pressures are rising, an effective and inclusive public distribution system is critical to sustaining vulnerable communities. Insights from this study can inform policymakers about the strengths and weaknesses of current PDS implementation, helping to guide targeted reforms aimed at improving coverage, reducing corruption, and enhancing efficiency. For society, especially for the backward communities that often lack representation in policy discussions, this research provides a platform for their voices to be heard and their needs to be addressed more effectively. Ultimately, the study contributes toward the broader goal of inclusive development and poverty reduction by evaluating and strengthening one of the most essential pillars of India's social safety net.

2. Review of Literature

Food security has emerged as a pressing concern in India, where despite sustained economic growth, large sections of the population continue to experience hunger, malnutrition, and hidden micronutrient deficiencies (George & McKay, 2019). The conceptual foundation of food security is widely accepted as having four core dimensions: availability, access, utilization, and stability (FAO, 2008). In this framework, the Public Distribution System (PDS) has been a central policy instrument aimed at ensuring access to essential food grains at subsidized prices, especially for vulnerable populations.

Historically, the PDS was launched as a universal food distribution program in post-World War II India and later evolved into the Targeted Public Distribution System (TPDS) in 1997 to more efficiently direct food subsidies to below poverty line (BPL) households (George & McKay, 2019). Despite these reforms, empirical evidence has shown persistent operational inefficiencies such as leakage, corruption, and exclusion errors (Drèze & Khera, 2015), which undermine the intended benefits of the system.

Recent evaluations of the PDS suggest that while it does provide a critical safety net against hunger, its efficacy in enhancing long-term nutritional outcomes remains limited. Studies have highlighted that access to the PDS varies significantly across regions, with urban-rural and inter-state disparities reflecting governance capacity and logistical challenges (Khera, 2011). Additionally, environmental concerns such as climate change have been cited as exacerbating food insecurity, especially through their impact on agricultural productivity (George & McKay, 2019; Swaminathan, 2012).

The introduction of the National Food Security Act (NFSA) in 2013 was a landmark effort aimed at legal entitlements for food access. However, critiques have noted that without addressing the supply chain inefficiencies and implementation gaps, the NFSA may not fully realize its transformative potential (Mehrotra, 2015). Moreover, while the Food Corporation of India (FCI) plays a key role in procurement and storage, it has often been criticized for being bureaucratic and lacking in transparency (Ramakumar, 2014).

Scholars have also drawn attention to “hidden hunger,” characterized by chronic micronutrient deficiencies, particularly affecting children and women, which is inadequately addressed by a calorie-focused system like the PDS (George & McKay, 2019; NITI Aayog, 2017). Thus, while the PDS continues to serve as a vital policy tool in India’s food security architecture, literature strongly calls for systemic reforms to improve its efficiency, transparency, and nutritional inclusiveness.

3. Data and Methodology

This study investigates the impact of the Public Distribution System (PDS) on food security and livelihood vulnerability among backward communities in Malappuram district, Kerala. The research adopts a cross-sectional design, collecting primary data from individuals belonging to socio-economically disadvantaged groups. A total of 103 respondents were selected using a random sampling method to ensure fair representation across different parts of the district. The sample primarily includes individuals from marginalized sections such as Scheduled Castes (SC), Other Backward Classes (OBC), and Antyodaya Anna Yojana (AAY) beneficiaries, who are the primary targets of the PDS.

The data collection process was carried out through structured questionnaires. These questionnaires were designed to gather detailed information on the demographic characteristics of households, their occupation and income levels, the type of ration card possessed, and their experiences with the PDS in terms of accessibility, adequacy, and satisfaction. Specific questions also addressed issues related to food availability, frequency of PDS usage, and household coping mechanisms during economic hardship, thereby linking food security to livelihood resilience.

To analyze the data, descriptive statistics were used to summarize the key socio-economic features of the respondents and their PDS utilization patterns. This included frequency distributions and percentage analysis to interpret the level of access and satisfaction with the PDS. Additionally, inferential statistical tools such as the Chi-square test were applied to examine the association between types of ration cards and respondents’ perceptions of food security and vulnerability reduction. These tests helped in identifying whether the PDS significantly influenced the ability of households to withstand economic shocks and maintain food adequacy.

4. Results and Discussion

Socio-Economic and Demographic Profile of Respondents

Understanding the socio-economic and demographic characteristics of the respondents is essential for analyzing their dependence on the Public Distribution System (PDS) and the challenges they face in ensuring food security. The distribution of respondents by gender reveals a significant skew toward female participants, who make up 89.3% of the sample. This reflects the trend in Kerala where ration cards are often issued in the names of women, emphasizing their central role in household food management and welfare utilization.

The age composition shows that the majority of respondents are in the productive age groups, with 51.5% between 25–45 years and 39.8% between 46–60 years. Younger respondents below 25 years constitute only 3.9%, while those above 60 account for 4.9%. This distribution suggests that the sample consists predominantly of working-age individuals who are likely to bear responsibility for household sustenance and economic decision-making.

In terms of religion, the majority of respondents are Hindus (85.4%), followed by Muslims (11.7%) and Christians (2.9%). This reflects the broader religious demographic composition of many parts of Malappuram district. Caste-wise, the sample is predominantly comprised of individuals from Scheduled Castes (SC), accounting for 68.9%, followed by Other Backward Classes (OBC) at 28.2%. Only 1% belong to Scheduled Tribes (ST), and 1.9% fall under the General category. The dominance of SC and OBC groups aligns with the study's focus on backward and marginalized communities.

Occupational data indicates that most respondents are engaged in informal, low-income employment. Daily wage laborers form the largest occupational group at 43.7%, and agricultural workers constitute 6.8%. A small proportion is self-employed (2.9%) or in government service (1.0%), while 45.6% fall into the 'Other' category, indicating engagement in miscellaneous or unstable forms of work. This occupational profile highlights the economic precarity of the respondents, reinforcing the critical role of PDS in supporting their livelihoods.

Table 1: Socio-Economic and Demographic Characteristics of Respondents

Variable	Categories	Frequency	Percentage
Gender	Female	92	89.3%
	Male	11	10.7%
Age	Below 25	4	3.9%
	25–45	53	51.5%
	46–60	41	39.8%
	Above 60	5	4.9%
Religion	Hindu	88	85.4%

	Muslim	12	11.7%
	Christian	3	2.9%
Caste	SC	71	68.9%
	OBC	29	28.2%
	ST	1	1.0%
	General	2	1.9%
Occupation	Daily wage laborer	45	43.7%
	Agricultural worker	7	6.8%
	Self-employed	3	2.9%
	Government employment	1	1.0%
	Other	47	45.6%

Source: primary data

Ration Card Ownership and PDS Usage Patterns

The analysis of ration card ownership and PDS usage patterns provides critical insight into the extent of the Public Distribution System's reach and effectiveness among the backward communities in Malappuram district. All 103 respondents in the sample reported owning a ration card, indicating full coverage and successful identification of eligible households within the system. This universal ownership reflects the robust administrative penetration of the PDS in the study area.

Among the different categories of ration cards, a significant majority (67.0%) of respondents possess Below Poverty Line (BPL) cards, underscoring their economic vulnerability. A smaller proportion of 22.3% hold Above Poverty Line (APL) cards, while 9.7% are beneficiaries under the Antyodaya Anna Yojana (AAY) scheme, which targets the poorest of the poor. Only one respondent (1.0%) holds a non-priority ration card. The predominance of BPL and AAY cardholders affirms the focus of PDS on socio-economically disadvantaged households. In terms of usage duration, an overwhelming 96.1% of respondents reported using the PDS for more than three years. This long-term reliance on the system signifies its role as a continuous support mechanism for food security. Only a small fraction (3.9%) had been using PDS for one to three years, possibly indicating new entrants into the system or recent shifts in household economic status.

When examining the frequency of receiving food supplies, 79.6% of respondents confirmed receiving supplies regularly, while 20.4% accessed them only occasionally. This suggests that although the system functions consistently for the majority, a notable share of households experience irregularities, which may compromise their food security. Furthermore, 87.4% of respondents indicated they consistently received the full quantity of entitled commodities, while 12.6% received only partial quantities at times—highlighting the presence of distribution inefficiencies or stock shortages.

Regarding satisfaction with food quality, 68.0% of respondents reported being satisfied, and 22.3% were very satisfied. Only 9.7% expressed neutrality, and none expressed dissatisfaction, indicating a generally positive perception of the quality of food grains distributed. However, access-related challenges remain; 37.9% of respondents reported difficulty in accessing PDS services due to reasons such as long queues, distance to ration shops, or irregular operating hours. The remaining 62.1% did not face any access difficulties, suggesting that while access is adequate for a majority, a significant proportion still encounter barriers that need to be addressed. These findings illustrate that while the PDS has achieved widespread coverage and is viewed positively by most users in terms of both quality and quantity, issues related to accessibility and occasional irregularities persist.

Table 2: Ration Card Ownership and PDS Usage Patterns

Variable	Categories	Frequency	Percentage
Ration Card Ownership	Yes	103	100.0%
Types of Ration Cards	BPL	69	67.0%
	APL	23	22.3%
	AAY	10	9.7%
	Non-priority	1	1.0%
Duration of PDS Use	>3 years	99	96.1%
	1–3 years	4	3.9%
Food Supply Frequency	Regular	82	79.6%
	Occasionally	21	20.4%
Full Quantity Received	Yes	90	87.4%
	Sometimes	13	12.6%
Food Quality Satisfaction	Very satisfied	23	22.3%
	Satisfied	70	68.0%
	Neutral	10	9.7%
Difficulty in Accessing	No	64	62.1%
	Yes	39	37.9%

Source: primary data

Perceived Impact of PDS on Food Security and Economic Needs

This section evaluates the beneficiaries' perceptions of the Public Distribution System's impact on food security and their broader economic well-being. The data indicates that an overwhelming majority of respondents—91.3%—believe that the PDS plays a key role in ensuring food security in their

households. A smaller proportion (6.8%) believe it contributes to food security to some extent, while only 1.9% feel that it has no impact. These findings underscore the centrality of PDS in addressing hunger and nutritional needs among marginalized communities.

Despite this strong endorsement of PDS in promoting food availability, the findings related to meeting broader economic needs present a more complex picture. A large segment of respondents report struggling to meet essential needs: 44.7% said they “rarely” meet their needs, and 46.6% stated they “never” do. Only a small fraction—1% and 7.8%—reported meeting their needs “frequently” or “occasionally,” respectively. This suggests that while the PDS alleviates food insecurity, it alone is insufficient to address the wider economic challenges faced by these households.

Regarding the impact of PDS on household income, 66.0% of respondents stated that it positively influenced their income by reducing food-related expenditure, thereby freeing up limited resources for other needs. However, 34.0% indicated that their income was unaffected by the system, possibly due to the limited scope or irregularity of the benefits received. This mixed response highlights the partial financial relief offered by PDS—it reduces food costs but does not fully offset the economic burdens faced by vulnerable families. Finally, when asked whether the PDS is adequate for ensuring food security, 95.1% of respondents affirmed its adequacy, while 4.9% disagreed. The high approval rate reinforces the perception that PDS meets its core objective of providing a basic safety net against hunger. However, when juxtaposed with the data on unmet needs, it becomes evident that PDS, though crucial, must be complemented by other livelihood support mechanisms to promote sustainable well-being.

Table 3: Perceived Impact of PDS on Food Security and Economic Needs

Variable	Categories	Frequency	Percentage
PDS Ensures Food Security	Yes	94	91.3%
	To some extent	7	6.8%
	No	2	1.9%
Difficulty in Meeting Needs	Frequently	1	1.0%
	Occasionally	8	7.8%
	Rarely	46	44.7%
	Never	48	46.6%
Income Affected by PDS	Yes	68	66.0%
	No	35	34.0%
PDS is Adequate for Food Sec.	Yes	98	95.1%
	No	5	4.9%

Source: primary data

Community Perceptions and Suggestions for PDS Improvement

Community feedback plays a crucial role in identifying the practical challenges and areas of improvement in the functioning of the Public Distribution System (PDS). The data collected from respondents provides valuable insights into the key concerns and expectations held by beneficiaries. The most frequently cited suggestion, mentioned by 36.9% of respondents, was the need to improve the quality of food grains distributed through the PDS. This reflects a widespread concern about the nutritional adequacy and freshness of staples like rice and wheat provided under the scheme. Quality issues not only reduce the utility of the food received but also undermine trust in the system.

Another major area highlighted was the need to improve transportation and access to PDS outlets, with 30.1% of respondents identifying this as a priority. In many cases, long distances to fair price shops, limited transportation options, and poor infrastructure pose significant barriers to regular access, particularly for elderly or disabled beneficiaries and those in remote areas. Expanding the coverage of the system was suggested by 13.6% of respondents, indicating that while PDS has broad reach, some vulnerable individuals or families may still be excluded due to eligibility criteria, documentation issues, or administrative oversights. Ensuring inclusivity in the distribution mechanism is essential for comprehensive social protection.

Additionally, 9.7% of respondents called for more regular distribution of supplies. Delays or irregularities in delivery can disrupt food availability for dependent households, forcing them to rely on the market at higher prices. Ensuring timely and consistent supply is thus a critical operational challenge. Smaller, but still significant, proportions of respondents emphasized the need to reduce corruption and leakages in the supply chain (4.9%) and offered other miscellaneous suggestions (4.9%), such as improving staff behavior or digitizing service records. These responses point to concerns about accountability and transparency within the system. These results suggestion reflect a strong user awareness of systemic issues and a desire for reforms that would make the PDS more reliable, accessible, and effective. Incorporating these community-driven insights into policy reforms can lead to a more responsive and equitable distribution system that better meets the needs of its most vulnerable beneficiaries.

Table 4: Community Perceptions and Suggestions for PDS Improvement

Suggested Improvement	Frequency	Percentage
Better quality of food grains	38	36.9%
Improve transportation/access	31	30.1%
Expand coverage	14	13.6%
More regular distribution	10	9.7%
Reduce corruption/leakages	5	4.9%
Other suggestions	5	4.9%

Source: primary data

Relationship Between PDS and Livelihood/Economic Shock Vulnerability

This section explores the extent to which the Public Distribution System (PDS) contributes to reducing livelihood vulnerability and mitigating the effects of economic shocks across different categories of ration cardholders. The analysis highlights variations in perceived benefits based on card type and tests the statistical significance of these relationships. Table 5 reveals that a considerable proportion of respondents across all ration card categories perceive the PDS as helpful in reducing livelihood vulnerability. Among APL (Above Poverty Line) cardholders, 56.5% felt that the PDS significantly reduced their vulnerability, while the figures for BPL (Below Poverty Line) and AAY (Antyodaya Anna Yojana) cardholders were 52.2% and 60.0%, respectively. These findings suggest that even among households not classified as the poorest, the PDS is viewed as a valuable safety net. When it comes to resilience to livelihood shocks, the perceived impact of the PDS varies more markedly across groups. A substantial 79.7% of BPL cardholders reported that the PDS helped improve their resilience, compared to 60.0% of AAY and 47.8% of APL cardholders. These results underscore the critical importance of the PDS for BPL households, who are most exposed to employment and income uncertainties. The chi-square value ($p = 0.048$) indicates that the relationship between ration card type and perceived livelihood shock resilience is statistically significant, affirming that the type of access to PDS influences the level of support beneficiaries experience.

Regarding economic shock vulnerability, the data shows that 76.8% of BPL and 80.0% of AAY cardholders believed the PDS reduced their vulnerability, compared to only 34.8% of APL households. The association between ration card type and reduction in economic shock vulnerability is also statistically significant ($p = 0.011$). This finding reinforces the argument that the PDS is most effective in supporting those with the least economic resilience—particularly those below the poverty line or in the extremely poor AAY category. Interestingly, the single non-priority respondent reported full benefits in terms of economic shock reduction but none for livelihood or shock resilience, reflecting either an outlier case or unique circumstances. The analysis highlights the differentiated impact of PDS across economic categories. The scheme has its greatest protective effects among the poorest households, confirming its role as a vital support mechanism for those most susceptible to food insecurity and economic instability. These findings underscore the need for continued and enhanced targeting of BPL and AAY households in PDS reforms and delivery mechanisms to ensure equitable outcomes and greater system efficiency.

Table 5: Relationship Between PDS and Livelihood/Economic Shock Vulnerability

Ration Card Type	PDS Reduced Livelihood Vulnerability (Yes, a lot)	PDS Improved Shock Resilience (Yes)	PDS Reduced Economic Shock (Yes)
APL	56.5%	47.8%	34.8%
BPL	52.2%	79.7%	76.8%
AAY	60.0%	60.0%	80.0%
Non-priority	0.0%	0.0%	100.0%
Chi-square	0.489	0.048 (significant)	0.011 (significant)

p-value			
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Source: primary data

Conclusion

This study provides critical insights into the functioning and impact of the Public Distribution System (PDS) on the food security and economic resilience of backward communities in Malappuram district, Kerala. The findings affirm that the PDS serves as an indispensable mechanism for alleviating hunger and stabilizing household consumption among socio-economically disadvantaged groups such as Scheduled Castes, Other Backward Classes, and Antyodaya Anna Yojana beneficiaries. The system's high penetration rate, long-term usage, and overall satisfaction levels indicate that it is largely effective in fulfilling its core objective of ensuring basic food availability.

However, while the PDS contributes significantly to reducing food insecurity, it is only partially effective in addressing broader livelihood vulnerabilities. The results show that while food subsidies help ease household financial burdens, they do not suffice to meet overall economic needs or insulate households from income shocks. Furthermore, challenges such as irregular distribution, access barriers, and quality concerns persist and limit the system's full potential. Statistical evidence also suggests that the impact of PDS varies significantly across different categories of ration cardholders, with BPL and AAY beneficiaries gaining more from the system than APL cardholders, validating the importance of continued targeting.

Community feedback points to a strong desire for qualitative and systemic improvements, including better food quality, improved access, and enhanced transparency. These insights highlight the necessity for targeted policy reforms that strengthen the efficiency, equity, and nutritional focus of the PDS. Going forward, integrating the PDS with complementary livelihood support programs and using technology for better governance and monitoring can enhance its capacity to function as a true safety net.

In short, the PDS remains a cornerstone of India's social protection framework. For backward communities in regions like Malappuram, it is not just a channel for food distribution, but a critical buffer against economic shocks. Strengthening and reforming the PDS with community-centered and data-driven approaches is essential to ensure inclusive development, food justice, and long-term resilience among the most vulnerable sections of society.

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