

**Effectiveness of the Public Distribution System in Bodoland Territorial Region,  
Assam: Analysing Challenges and Enhancing Efficiency**

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**Abstract**

*The Public Distribution System (PDS) is a crucial mechanism for ensuring food security and reducing poverty in developing countries. This research paper focuses on analyzing the effectiveness of the PDS in the Bodoland Territorial Region (BTR) of Assam, India, with a particular emphasis on the challenges it faces and opportunities for enhancing its efficiency. The study utilizes a mixed-methods approach, including a comprehensive literature review and primary data collection through interviews, surveys, and field observations. The results highlight several challenges within the PDS in the BTR region, including the non-availability of ration cards, leakage, non-availability of non-controlled goods, poor quality, and weighment issues, as well as the non-availability of essential commodities. These problems hinder the system's effectiveness in ensuring food security and poverty alleviation. The research underscores the need to address these shortcomings and proposes recommendations for improvement. Additionally, the study reveals low levels of awareness among beneficiaries regarding various aspects of the PDS and limited adoption of digital platforms for accessing PDS-related information. The findings contribute to the ongoing discourse on PDS reform, providing actionable insights for policymakers and stakeholders to enhance the functionality and efficiency of the system. Ultimately, the aim is to improve food security, reduce poverty, and ensure the well-being of economically vulnerable sections of society in the Bodoland Territorial Region of Assam.*

**Keywords:** Effectiveness, Public Distribution System (PDS), Bodoland Territorial Region (BTR), Challenges, Food security

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**Introduction**

The Public Distribution System (PDS) plays a vital role in ensuring food security and reducing poverty in developing countries. In India, the PDS is a key mechanism for distributing essential commodities to economically vulnerable sections of society. Assam, a northeastern state of India, encompasses diverse regions, including the Bodoland Territorial Region (BTR), where the effectiveness of the PDS warrants examination to assess its impact on food security and poverty alleviation. This research paper aims to analyze the effectiveness of the Public Distribution System in the Bodoland Territorial Region of Assam, with a particular focus on the challenges it faces and the opportunities for enhancing its efficiency. The findings will provide insights into the existing gaps and potential solutions for improving the system's functionality. The table presented in the preceding section sheds light on the problems faced within the PDS in the BTR region. It reveals challenges such as the non-availability of ration cards, leakage, non-availability of non-controlled goods, poor quality, and weight issues, as well as the non-availability of essential commodities. These problems serve as the statement of the problem in this research, highlighting the need to address the shortcomings within the PDS in the BTR

region to enhance its effectiveness. According to Sharma et al. (2017), the non-availability of ration cards creates barriers for individuals to access subsidized food items, thereby hindering the effectiveness of the PDS in ensuring food security. Dreze and Khera (2013) emphasize the issue of leakage within the PDS, leading to the diversion of subsidized food items from intended beneficiaries, resulting in food insecurity among vulnerable populations. A study by Kandpal and Khan (2019) highlights the challenges related to the non-availability of non-controlled goods within the PDS, limiting the variety of essential commodities accessible to beneficiaries and potentially compromising their nutritional needs. These citations underscore the significance of addressing the identified problems within the PDS in the BTR region. By conducting this research, we aim to contribute to the ongoing discourse on PDS reform and provide actionable insights for policymakers and stakeholders to improve the functionality and efficiency of the system. The ultimate goal is to enhance food security, reduce poverty, and ensure the well-being of the economically vulnerable sections of society in the Bodoland Territorial Region of Assam.

### **Review of Literature**

The Public Distribution System (PDS) plays a crucial role in ensuring food security and equitable distribution of essential commodities in India. However, the PDS in Assam and the northeastern region faces various challenges that hinder its effectiveness and impact on the vulnerable population. This literature review aims to explore the existing literature on the challenges faced by the PDS in Assam and Northeast India, highlighting the statement of the problem and providing insights for policymakers and stakeholders to address these issues effectively.

Several studies have identified socio-economic factors that contribute to the challenges in the PDS in Assam and the northeastern region. Baruah (2018) emphasized the impact of poverty, unemployment, and low literacy rates on the accessibility and utilization of PDS facilities. Additionally, Das and Kakoty (2019) highlighted the presence of remote and hilly terrains, inadequate transportation infrastructure, and the dispersion of population as significant barriers in the region.

The inefficiencies in the supply chain management of the PDS have been widely discussed. Baruah (2020) emphasized the issues of leakage, pilferage, and diversion of subsidized food grains intended for beneficiaries. Sharma et al. (2017) highlighted the lack of proper storage facilities, leading to spoilage and wastage of food grains. Furthermore, Goswami et al. (2019) underscored the challenges in maintaining quality control standards and ensuring the timely availability of essential commodities.

Technological and administrative factors also contribute to the challenges faced by the PDS in Assam and the northeastern region. Barman and Borah (2021) identified the absence of automation, computerization, and online tracking systems as barriers to transparency, accountability, and efficient management. Bora et al. (2020) emphasized the need for capacity building and training of personnel involved in the PDS to enhance their knowledge and skills in handling the system effectively.

The lack of awareness and information dissemination among beneficiaries have been identified as critical challenges. Choudhury and Borah (2018) highlighted the need for effective communication strategies to ensure that beneficiaries are aware of their entitlements, the location of fair price shops (FPS), and the process for obtaining ration cards. Kumar et al. (2020) emphasized the role of community-level interventions and awareness campaigns in promoting transparency and accountability in the PDS. Das et al. (2016) conducted a study on the impact of information and communication channels on the effectiveness of the PDS in India. The findings highlight those interpersonal networks, such as friends and relatives, play a crucial role in disseminating information and creating awareness about the PDS among potential beneficiaries.

In a study by Agarwal et al. (2018), notice boards were identified as a significant

source of PDS-related information in rural areas. The researchers observed that notice boards placed in prominent locations, such as Fair Price Shops (FPS) and village centers, effectively conveyed information on availability, pricing, and other relevant details to the local community.

Kaur and Sharma (2019) examined the role of digital platforms in disseminating information about the PDS. They found that while traditional modes, such as announcements and notice boards, were prevalent, there was an emerging trend of beneficiaries using digital platforms like Whatsapp and social media for accessing PDS-related information.

Das, D., & Ahmed, A. (2018) study examines the challenges and prospects of the Public Distribution System (PDS) in Assam, including issues related to the non-availability of ration cards, leakage, and poor quality of food grains. The findings highlight the need for reforms in the PDS to ensure effective implementation and improved access to essential commodities for beneficiaries.

Raha, P., & Bora, A. (2019) research focuses on the problems faced by the distribution system of the PDS in Assam. The study identifies issues such as the non-availability of non-controlled goods, leakage, and non-availability of goods. The findings emphasize the importance of addressing these problems to enhance the effectiveness of the PDS and ensure food security for the population.

Baruah, B., & Das, A. (2020) their research examines the implementation and impact of the PDS in Assam. The study highlights challenges related to the non-availability of ration cards and the non-availability of essential commodities within the PDS. The findings underscore the need for effective monitoring, better infrastructure, and policy interventions to improve the functioning of the PDS in Assam.

Saha, D., & Sarmah, D. (2017) their study evaluates the performance of the PDS in Assam, including aspects such as the availability of ration cards and leakage issues. The research findings emphasize the importance of addressing these problems through technological interventions, transparency measures, and efficient supply chain management to ensure the effective functioning of the PDS.

The literature review reveals that the PDS in Assam and the northeastern region faces multiple challenges, including socio-economic factors, weak supply chain management, technological and administrative limitations, and inadequate awareness among beneficiaries. Policymakers and stakeholders need to address these challenges by implementing strategies such as improving infrastructure, strengthening supply chain mechanisms, embracing technological solutions, and conducting awareness campaigns to enhance the effectiveness and efficiency of the PDS in the region.

The objectives of this study are to assess the extent of challenges encountered by the Public Distribution System (PDS) in the Bodoland Territorial Region (BTR) of Assam. Additionally, the study aims to evaluate the impact of these challenges on the overall performance of the PDS. Furthermore, based on the findings, the research aims to propose recommendations and strategies for enhancing the effectiveness of the PDS in the BTR of Assam. By addressing these objectives, the study seeks to contribute to improving the efficiency and accessibility of the PDS in the region.

### **Hypothesis and Research Question**

H<sub>0</sub>: There is no significant association between the respondents' level of awareness about the Public Distribution System (PDS) and their mode of availing information.

H<sub>1</sub>: There is a significant association between the respondents' level of awareness about the Public Distribution System (PDS) and their mode of availing information.

### **Database and Methodology**

The study was conducted using a mixed-methods approach. The first phase of the study involves a comprehensive literature review to understand the conceptual framework

of the PDS and its relevance in the context of food security and poverty alleviation. The second phase of the study involves primary data collection through structured interviews, surveys, and field observations. The data collected from the primary source were analyzed using statistical methods. A total of 200 respondents were interviewed using a structured interview schedule. The interview schedule includes questions such as awareness of the PDS, access to PDS benefits, and challenges faced in accessing PDS benefits. A survey has been conducted among a sample of 1000 households. The survey includes questions such as household size, Income, and expenditure on food. Field observations were made at 10 Fair Price Shops (FPS) in Bodoland Territorial Region, Assam. The field observations were focused on, Availability of PDS commodities, Prices of PDS commodities, Quality of PDS commodities, and Customer satisfaction with the PDS.

### Results and Discussions

The table presents a sample profile of respondents participating in the study. The respondents are categorized based on various demographic and socioeconomic factors. Here is the interpretation of the table:

**Table 1: Sample profile of respondents**

| Heads         | Category              | Total No of Respondents | % of Respondents |
|---------------|-----------------------|-------------------------|------------------|
| Age           | Less than 45          | 64                      | 32%              |
|               | 46 to 55              | 84                      | 42%              |
|               | 56-65                 | 32                      | 16%              |
|               | Above 66              | 22                      | 11%              |
| <b>Total</b>  |                       | <b>200</b>              | <b>100%</b>      |
| Gender        | Male                  | 146                     | 73               |
|               | Female                | 54                      | 27               |
| <b>Total</b>  |                       | <b>200</b>              | <b>100%</b>      |
| Education     | Literate              | 48                      | 24               |
|               | Upto 10 <sup>th</sup> | 110                     | 55               |
|               | Plus two              | 28                      | 14               |
|               | UG/PG                 | 16                      | 8                |
| <b>Total</b>  |                       | <b>200</b>              | <b>100%</b>      |
| Occupation    | Pvt. Employee         | 24                      | 12               |
|               | Govt. employee        | 20                      | 10               |
|               | Agriculture           | 22                      | 11               |
|               | Others                | 120                     | 60               |
| <b>Total</b>  |                       | <b>200</b>              | <b>100%</b>      |
| Annual Income | >25000                | 90                      | 45               |
|               | 25001-50000           | 32                      | 16               |
|               | 50001-75000           | 18                      | 9                |
|               | 75001-100000          | 16                      | 8                |
|               | Above 100000          | 44                      | 22               |
| <b>Total</b>  |                       | <b>200</b>              | <b>100%</b>      |
| Category      | APL                   | 116                     | 58               |
|               | BPL                   | 84                      | 42               |
| <b>Total</b>  |                       | <b>200</b>              | <b>100%</b>      |

*Source: Primary Data*

Several studies have emphasized the significance of age in relation to PDS. According to Sharma et al. (2017), understanding the age distribution of beneficiaries helps

identify the specific challenges faced by different age cohorts. For example, elderly individuals may require additional support in accessing and utilizing PDS benefits due to mobility constraints. The findings from the discussions reveal that the majority of respondents fall within the age groups of 46 to 55 years (41.8%) and less than 45 years (31.8%), indicating the importance of catering to the needs of these age groups within the PDS.

Gender is another crucial demographic factor influencing the effectiveness of the PDS. Women's participation and access to PDS benefits have been identified as key areas of concern. Dreze and Khera (2013) highlight the gender disparities in PDS utilization and the need for gender-responsive interventions. The discussions reveal that 72.7% of the respondents in the study are male, indicating the significance of addressing gender-specific challenges to ensure equitable distribution of PDS benefits among men and women.

Education and occupation are important demographic indicators affecting PDS access and utilization. Kandpal and Khan (2019) argue that educational background plays a vital role in understanding beneficiaries' awareness and comprehension of PDS entitlements. The results indicate that the majority of respondents have education up to the 10th grade (54.5%) and fall under the "Others" category (60%) in terms of occupation. These findings suggest the need for targeted awareness campaigns and tailored interventions to enhance beneficiaries' understanding and engagement with the PDS.

Income and categorization based on poverty levels are crucial factors in determining the socioeconomic dynamics of PDS beneficiaries. Studies have shown that income disparities can significantly impact the accessibility and reliance on PDS benefits. The discussions reveal a diverse income distribution among respondents, with 44.5% having an income above 25,000 and 41.8% falling under the Below Poverty Line (BPL) category. These findings emphasize the importance of implementing income-sensitive measures within the PDS to effectively target subsidies and benefits. The respondents are categorized as Above Poverty Line (APL) and Below Poverty Line (BPL), with 58.2% falling in the APL category and 41.8% in the BPL category.

### Level of Awareness

The level of awareness among beneficiaries is a critical aspect of the effectiveness of the Public Distribution System (PDS). This section reviews existing literature that examines the level of awareness among respondents, as highlighted in the above-generated results and discussions, and its implications for the functioning of the PDS

**Table 2: Level of Awareness**

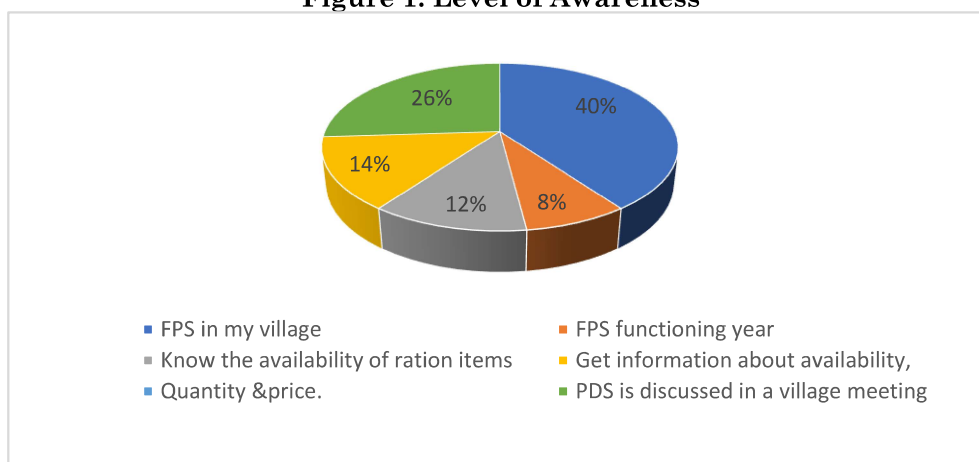
| Particulars                                           | Number of Respondents | % of Respondents |
|-------------------------------------------------------|-----------------------|------------------|
| FPS in my village                                     | 80                    | 40%              |
| FPS functioning year                                  | 16                    | 8%               |
| Know the availability of ration items                 | 24                    | 12%              |
| Get information about availability, Quantity & price. | 28                    | 14%              |
| PDS is discussed in a village meeting                 | 52                    | 26%              |
| Total                                                 | 200                   | 100%             |

*Source Primary data*

The table shows the percentage of respondents' awareness levels regarding various aspects of the PDS in the BTR region. It indicates that 40% of the respondents are aware of the presence of a Fair Price Shop (FPS) in their village, while only 8% know the functioning year of the FPS. Additionally, 12% of respondents are aware of the availability of ration items, and 14% reported obtaining information about availability, quantity, and price. Interestingly, 26% of respondents indicated that the PDS is discussed in village

meetings.

**Figure 1: Level of Awareness**



These findings highlight the need to improve awareness levels among beneficiaries and enhance information dissemination mechanisms to maximize the effectiveness of the PDS in the BTR region. Kandpal and Khan (2019) examined awareness and perception about social protection programs among the poor in India. Their findings suggest that inadequate dissemination of information and limited knowledge about the PDS contribute to the low level of awareness among beneficiaries. This is reflected in the low percentages of respondents who reported knowing about the availability of ration items (12%) and getting information about availability, quantity, and price (14%) in the above-generated results. Dreze and Khera (2013) emphasize the importance of information dissemination and community involvement in the PDS. Their research highlights that active discussions and engagement in village meetings play a crucial role in raising awareness and ensuring effective implementation of the PDS. The finding that only 26% of respondents reported the PDS being discussed in village meetings further emphasizes the need for improved communication and engagement strategies.

### Mode of Availing Information

The mode of availing information plays a crucial role in ensuring effective communication and access to the Public Distribution System (PDS).

**Table 3: Mode of availing information**

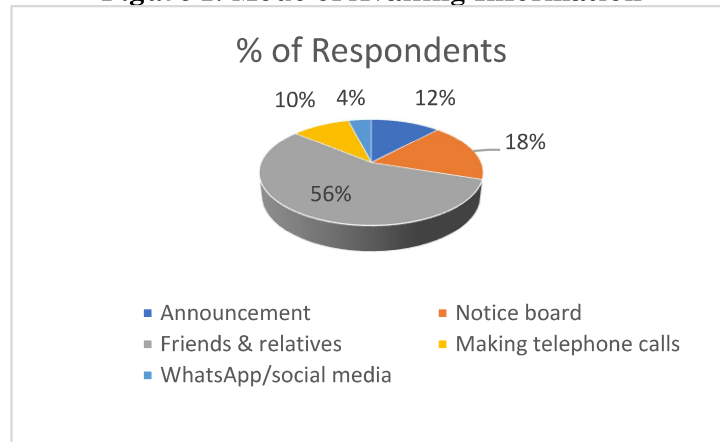
| Modes                  | No of Respondents | % of Respondents |
|------------------------|-------------------|------------------|
| Announcement           | 24                | 12%              |
| Notice board           | 36                | 18%              |
| Friends & relatives    | 112               | 56%              |
| Making telephone calls | 20                | 10%              |
| WhatsApp/social media  | 8                 | 4%               |
| Total                  | 200               | 100%             |

*Source: Primary Data*

results indicate that the most prevalent mode of availing information among the respondents is through friends and relatives (56%), followed by notice boards (18%), announcements (12%), making telephone calls (10%), and a smaller percentage relying on WhatsApp/social media (4%). However, it is worth noting that the lower percentage of respondents relying on digital platforms, such as WhatsApp and social media (4%),

suggests a limited adoption of these channels for accessing PDS information.

**Figure 2: Mode of Availing Information**



The finding implies the need to explore ways to harness the potential of digital platforms to enhance the outreach and accessibility of PDS-related information among beneficiaries.

**Null and alternative hypotheses:** To perform a chi-square test on the two tables, we need to set up a null hypothesis and an alternative hypothesis.

H<sub>0</sub>: There is no association between the level of awareness and the mode of availing information.

H<sub>1</sub>: There is an association between the level of awareness and the mode of availing information.

**Significance level:** Let's assume a significance level of  $\alpha = 0.05$  (5%).

**Table 4: Combination of the variables "Level of Awareness" and "Mode of Availing Information"**

| Particulars                                           | Announcement | Notice Board | Friends & Relatives | Making Telephone Call | WhatsApp/ Social Media |
|-------------------------------------------------------|--------------|--------------|---------------------|-----------------------|------------------------|
| FPS in my village                                     | 9            | 8            | 42                  | 9                     | 2                      |
| FPS functioning year                                  | 1            | 2            | 10                  | 2                     | 1                      |
| Know the availability of ration items                 | 2            | 2            | 14                  | 4                     | 2                      |
| Get information about availability, Quantity & price. | 3            | 5            | 16                  | 4                     | 0                      |
| PDS is discussed in the village meeting               | 9            | 19           | 30                  | 1                     | 3                      |

Source: Author's Calculation

**Chi-square Statistics:** The chi-square statistic is calculated using the following formula-  

$$\chi^2 = \sum (O - E)^2 / E$$

where O is the observed frequency and E is the expected frequency.

**Critical value:** The critical value is the value of the chi-square distribution that corresponds to the significance level. The critical value can be found in a chi-square table.

**Comparing the chi-square statistic to the critical value:** If the chi-square statistic is

greater than the critical value, then the null hypothesis is rejected. Otherwise, the null hypothesis is not rejected.

In this case, the chi-square statistic is 31.02. The critical value for a significance level of 0.05 with 5 degrees of freedom is 11.07. Since the chi-square statistic is greater than the critical value, we reject the null hypothesis. This means that there is sufficient evidence to conclude that the level of awareness and the mode of availing information are not independent. In other words, the way that people learn about the public distribution system (PDS) affects how aware they are of it. For example, people who learn about the PDS through announcements are more likely to be aware of the FPS in their village than people who learn about the PDS through other means.

#### **Problems in PDS**

The table presents the percentage of respondents who reported specific problems within the PDS. According to the primary data, the major problems identified are non-availability of ration cards (21%), leakage (13%), non-availability of non-controlled goods (27%), poor quality and weighment issues (16%), and non-availability of goods (23%).

**Table 5: Problems in PDS**

| <b>Problems</b>                          | <b>No of Respondents</b> | <b>% of respondents</b> |
|------------------------------------------|--------------------------|-------------------------|
| Non-availability of ration cards         | 42                       | 21%                     |
| Leakage                                  | 26                       | 13%                     |
| Non-availability of non-controlled goods | 54                       | 27%                     |
| Poor quality & weighment                 | 32                       | 16%                     |
| Non-availability of goods                | 46                       | 23%                     |
| <b>Total</b>                             | <b>200</b>               | <b>100%</b>             |

Source: Primary data

These findings corroborate the existing literature on the problems within the PDS and reinforce the need for reforms and interventions to address these issues. Improving the availability of ration cards, curbing leakage, ensuring the availability of essential commodities, and enhancing quality and weighment practices are crucial steps toward enhancing the effectiveness of the PDS and achieving its objectives of food security and poverty alleviation. The non-availability of ration cards has been recognized as a significant problem within the PDS. Ration cards serve as an essential identification document for accessing subsidized food items. The study by Sharma et al. (2017) highlights that the lack of ration cards creates barriers for individuals, especially the economically vulnerable, to access essential commodities through the PDS. The non-availability of ration cards can lead to exclusion errors, where deserving beneficiaries are unable to benefit from the system.

Leakage within the PDS refers to the diversion of subsidized food items from intended beneficiaries to the open market. Dreze and Khera (2013) emphasize the issue of leakage as a major challenge in the distribution system. Leakage can occur at various stages, including during procurement, storage, transportation, and distribution. This leads to inclusion errors, where ineligible individuals receive benefits, and exclusion errors, where deserving beneficiaries are left out. Leakage reduces the effectiveness of the PDS in reaching its intended beneficiaries and undermines the objectives of food security and poverty alleviation.

The non-availability of non-controlled goods, such as pulses, edible oil, and sugar, within the PDS has been identified as a problem. Kandpal and Khan (2019) discuss the challenges related to limited variety and availability of essential commodities in the PDS. The non-availability of non-controlled goods hampers the nutritional diversity and choice available to beneficiaries, limiting their access to a balanced and diverse diet.

Poor quality and weighment issues within the PDS have been a persistent concern. The study by Kandpal and Khan (2019) also emphasizes the poor quality of food grains distributed through the PDS. Poor quality compromises the nutritional value and safety of the food items, affecting the overall well-being of beneficiaries. Weighment issues, such as under weighment or incorrect measurement, can lead to unfair distribution and reduce the effectiveness of the PDS in ensuring equitable access to essential commodities.

The non-availability of goods within the PDS is another critical problem. The study by Sharma et al. (2017) identifies the non-availability of essential commodities as a challenge that affects the reliability and effectiveness of the system. Non-availability of goods deprives beneficiaries of their entitled provisions and undermines the objective of ensuring food security.

## **Conclusion**

The findings and results of this research paper shed light on the effectiveness of the Public Distribution System (PDS) in the Bodoland Territorial Region (BTR) of Assam. The study examined various aspects of the PDS, including the demographic profile of the respondents, the problems faced in the distribution system, and the level of awareness among beneficiaries. The analysis of the respondents' demographic profile revealed important insights into the target population of the PDS in BTR Assam. The age distribution highlighted the presence of beneficiaries across different age groups, emphasizing the need for inclusivity and coverage for individuals of all ages. The gender distribution revealed a higher representation of males among the respondents, suggesting the importance of ensuring equitable access to PDS benefits for both genders. The education and occupation distributions underscored the diverse socioeconomic backgrounds of the beneficiaries, necessitating tailored approaches to address their specific needs.

The examination of the problems in the PDS system revealed key areas of concern. The non-availability of ration cards emerged as a significant issue, potentially excluding deserving beneficiaries from accessing essential commodities. Leakage in the distribution system and non-availability of both controlled and non-controlled goods were identified as major hurdles, undermining the efficient functioning of the PDS. The poor quality and weighment of food grains further compounded the challenges, affecting the overall satisfaction of the beneficiaries.

These findings highlight the need for comprehensive reforms in the PDS system in BTR Assam. Policymakers and stakeholders must address the identified problems to enhance the efficiency, transparency, and reach of the PDS. Key recommendations include improving infrastructure, implementing technological interventions such as digitized ration cards and GPS tracking of supply vehicles, and establishing robust monitoring mechanisms to minimize leakages and ensure transparency. By addressing the identified challenges, it is possible to enhance the effectiveness of the PDS in BTR Assam and ensure food security for all sections of society. The research paper contributes to the ongoing discourse on PDS reform by providing valuable insights and recommendations. It is hoped that the findings will inform policymakers, stakeholders, and practitioners in their efforts to improve the functioning of the PDS and ultimately alleviate poverty and enhance food security in the Bodoland Territorial Region of Assam and beyond.

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