



## A Study on Utilisation of Public Distribution System in the Post Pandemic Period

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**ABSTRACT:** Public distribution system act as an important safety net for millions of people in India.. In the Global Hunger Index 2022, India is ranked 107th out of 121 nations. Public distribution system plays a crucial role in ensuring food security. This study analyses the trend of procurement of food grains in India and utilization of the public distribution system by households above and below the poverty line prior to and after the COVID-19 pandemic.

**KEYWORDS:** Public distribution system, foodsecurity, food grain consumption

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### I. INTRODUCTION

The United Nations Committee on World Food Security defines food security as “all people, at all times, having physical, social, and economic access to sufficient, safe, and nutritious food that meets their food preferences and dietary needs for an active and healthy life”. In the Global Hunger Index 2022, India is ranked 107th out of 121 nations. The Indian government has taken several measures to ensure food security in the country. The public distribution system (PDS) is one of the flagship programs of the Government of India through which the government distributes subsidized food grains to the people of India.

The public distribution system has become a significant food security measure. State and central governments work together to run the system. The central government is responsible for procurement, storage, transportation, and bulk allocation to state governments, while the state government is responsible for identifying eligible families, issuing ration cards, and supervising the PDS's operation. Throughout history, the public distribution system has changed and evolved significantly. The Revamped Public Distribution System (RPDS) introduced in 1992 strengthened PDS by providing essential commodities to people living in remote areas. The Targeted Public Distribution System (TPDS) launched in 1997 focused on the poor. In December 200, to make Targeted Public Distribution System more beneficial, Antyodaya Anna Yojana was launched. Along with Anytodaya Anna Yojana, another scheme named Annapoorna was launched, which provides 10 kg of food grains per month for free to people over the age of 65.

Kerala, as a consumer state, relies on other states for basics and other resources. Public distribution system is crucial in a state with a significant shortfall in food grain production. The government ensures the smooth distribution of food across the state. In Kerala, the Public Distribution System was established in 1965. The Civil Supplies Department bears the responsibility of running PDS efficiently and ensures the distribution of food grains at the price fixed by the government. Even in the midst of the Covid-19 outbreak, the state went well beyond by providing ration card users with Onam Food Kits, which contain 11 grocery items.

PDS has been the subject of numerous research studies undertaken by individuals, institutions, and government bodies. This study aims to trace the procurement trend of food grains in India and the utilization pattern of public distribution systems before and after the outbreak of the Covid-19 pandemic. When the government declared a nationwide lockdown to contain COVID-19, Finance Minister Nirmala Sitharaman announced free food grains and cash payments to women, impoverished senior citizens, and farmers on March 26, 2020, as part of Pradhan Mantri Gareeb Kalyan Yojana. The imposition of a nationwide lockdown disrupted all economic activity. Many families experienced significant losses in income, employment, and savings. This study was an attempt to find out whether there has been any change in the procurement of food grains and the utilisation of the public distribution system.

## II. OBJECTIVES

This study tries to analyze the trend of procurement of foodgrains, assesses the satisfaction level of public and to compare the utilization of public distribution system pre and post COVID 19 pandemic.

## III. METHODOLOGY

The study uses both primary and secondary data. Total procurement data on wheat and rice for the period between 1984-2022 is taken from the Reserve Bank of India's (RBI) Handbook of Statistics on Indian Economy to analyze the trend of procurement. A trend graph and simple regression are used to depict the trend in food grain procurement. The Chow test is used to determine if there is a structural break in the data.

To study the utilization of the public distribution system, a household survey of 80 samples was conducted in Kozhikode. The survey was carried out using a random sampling method. The sample contains 40 households from the BPL category and 40 from the APL category. The number of items purchased before and after COVID 19 pandemic by different sections is compared using a paired t-test. The formula for the t-test is given below.

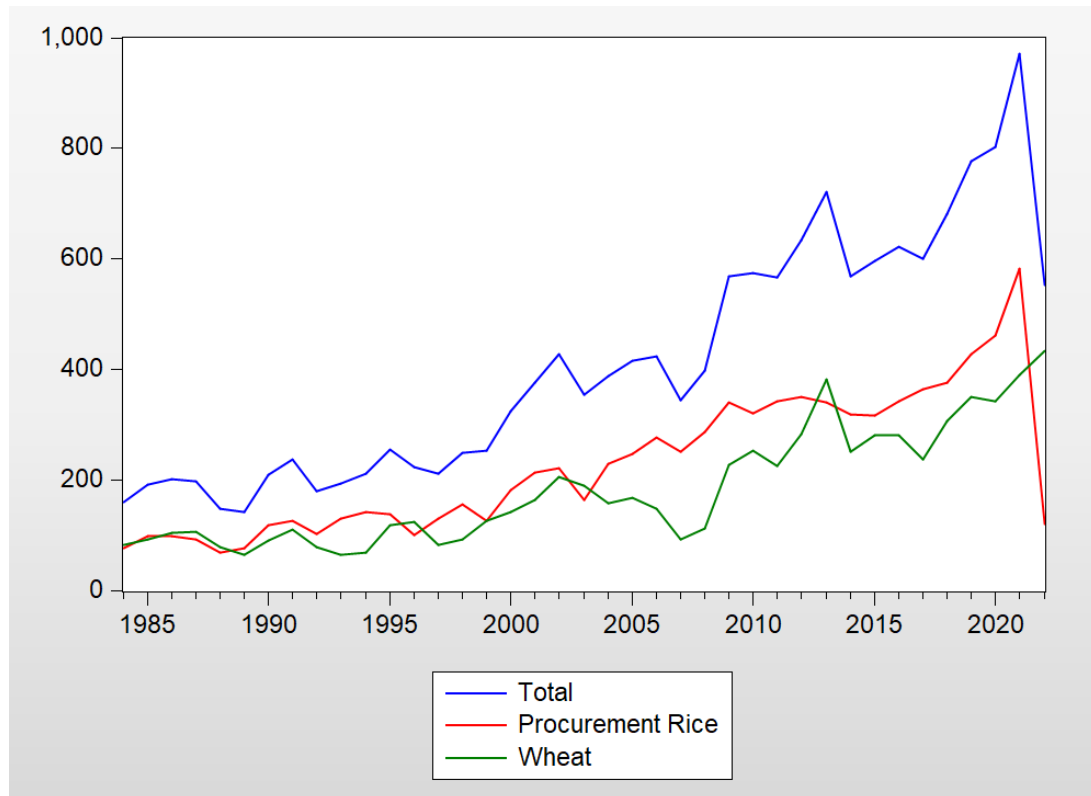
$$t = \frac{\sum d}{\sqrt{\frac{n(\sum d^2) - (\sum d)^2}{n-1}}}$$

Here, d is the difference per paired value. n is the number of samples. The satisfaction level of people is analysed and interpreted using tables and graphs.

## IV. FINDINGS

Trend of procurement of food grains in India: Rice and wheat accounts for a large share of the food grain distribution. Procurement data of wheat and rice for the time period between 1984-2022 has been analysed.

**Figure 1:** Procurement of rice and wheat



(Author's calculation)

Figure 1 shows the trend line of total procurement of wheat and rice for the time period of 1984 - 2022. The significance of trend line is examined by regression analysis.

**Table 1:** Regression of procurement trend line

Dependent Variable: Total procurement  
 Method: Least Squares  
 Date: 08/08/22 Time: 10:55  
 Sample: 1984 2022  
 Included observations: 39

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-34859.27	2324.971	-14.99342	0.0000
YEAR	17.60775	1.160726	15.16960	0.0000

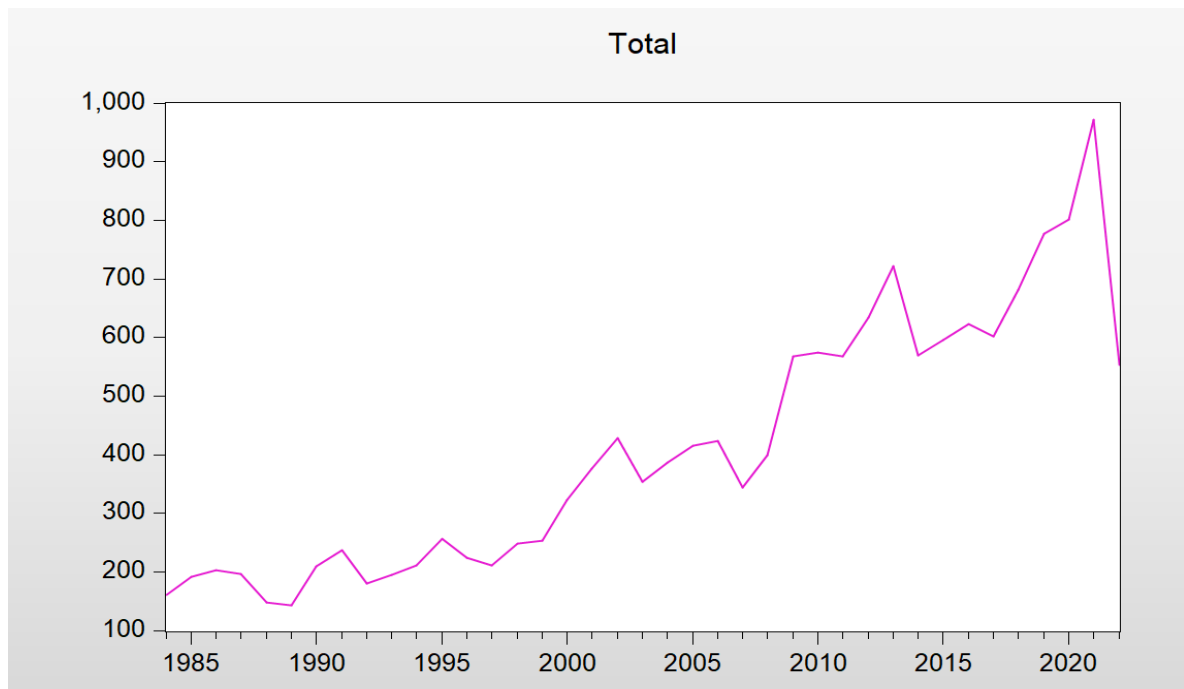
  

R-squared	0.861484	Mean dependent var	409.0564
Adjusted R-squared	0.857740	S.D. dependent var	216.2978
S.E. of regression	81.58178	Akaike info criterion	11.69101
Sum squared resid	246256.7	Schwarz criterion	11.77632
Log likelihood	-225.9747	Hannan-Quinn criter.	11.72162
F-statistic	230.1169	Durbin-Watson stat	1.334741
Prob(F-statistic)	0.000000		

(Author's calculation)

Table 1 shows the regression of the trend of procurement. The table above clearly that the P value is less than 0.05 and  $|t|$  is 15.16 with a slope coefficient of 17.6. This indicates that the trend line is well-fitted. And we can conclude that there exists a significant positive trend in the total procurement. As years pass, the procurement showing an upward trend. this may be due to increase in the food grain production, due to development of storage capacity etc

**Figure 2:** Total procurement of wheat and rice



(Author's calculation)

Figure 2, shows the trend line of total procurement of wheat and rice from 1984 to 2022. We can suspect a structural break in 2020. Chow breakpoint test can be conducted to check the structural break.

**Table 2:** Chow Breakpoint test of Trend line

Chow Breakpoint Test: 2020

Null Hypothesis: No breaks at specified breakpoints

Varying regressors: All equation variables

Equation Sample: 1984 2022

F-statistic	4.475213	Prob. F(2,35)	0.0186
Log likelihood ratio	8.880855	Prob. Chi-Square(2)	0.0118
Wald Statistic	8.950425	Prob. Chi-Square(2)	0.0114

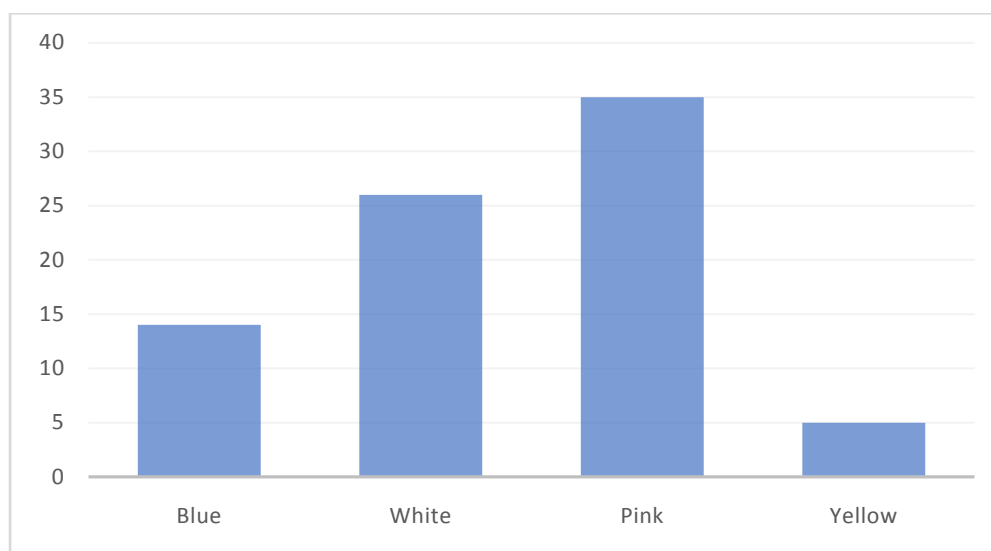
(Author's calculation)

The table 2 shows a breakpoint test of the trend line. The null hypothesis is that there is no break at specified breakpoints. The probability value of f test is less than 0.05. Hence, we reject the null hypothesis. There was a structural break in 2020. We can examine whether the utilisation of public distribution changed before and after the COVID-19 pandemic since there is a structural break in the foodgrain procurement process.

It is evident that total procurement is severely affected due to covid 19 pandemic. So it is important to check whether there is any change in the utilisation pattern of consumers in Kerala, the state with a well-functioning PDS.

A primary household survey was conducted in the Kozhikode district to understand the satisfaction level and the utilization of public distribution system. The sample contains 80 households with 40 from the BPL category and 40 from the APL category.

**Figure 3** Categorization of respondents on the basis of ration card



Source: sample survey

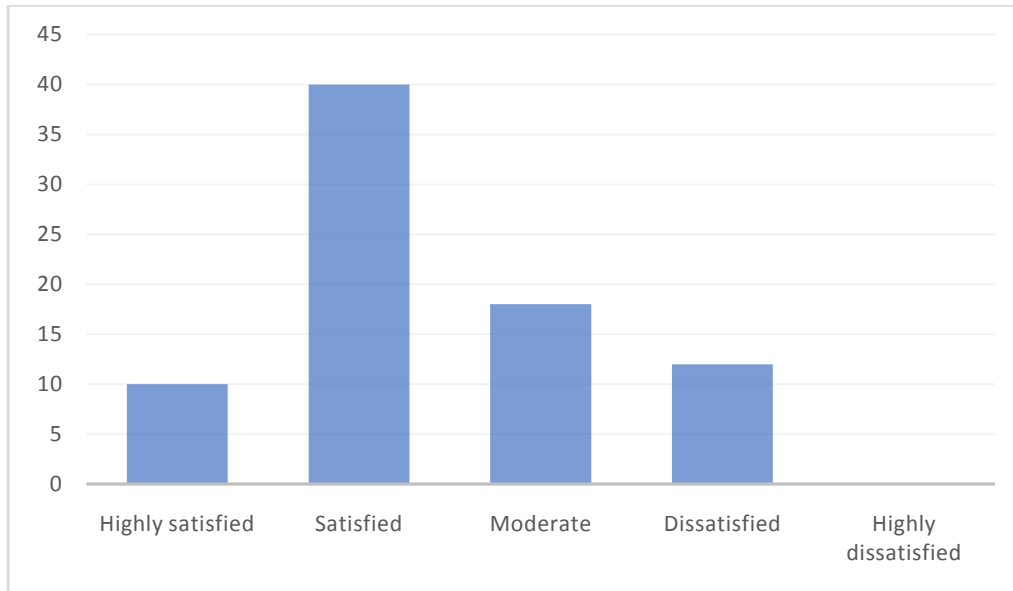
Figure3 shows the number of respondents on the basis of ration card. 43.75% were pink ration card holders and 32.5% were white card holders. Only 17.5% were blue cardholders and 6.25% were yellow card holders.

Socio economics background of respondents: Most of the respondents belonged to Hindu religion. 83.75% of respondents belonged to the Hindu community, 13.75% were Muslims, and the remaining 2.5% were Christians. 22.5% of the respondents earned between Rs 20,000 and Rs 30,000. 30% belonged to the income

class of 50000.18.75% of the respondents worked in the private sector, 13.75% were coolies, and 12.5% were government employees.

Satisfaction level of respondents: The satisfaction of level of different cardholders with the present entitlement of items, quality of items, overall functioning of the fair price shops are measured to understand the satisfaction and perception of people towards public distribution

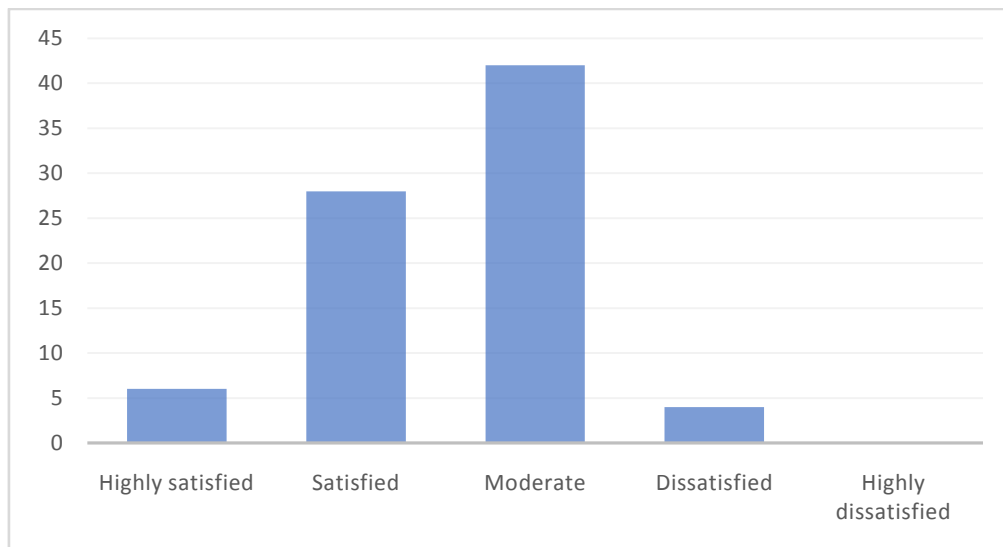
**Figure 4** Satisfaction level of present entitlement system.



Source: sample survey

From the figure4, it is shown that 50% of the respondents were satisfied with the present allocation of food items. 15% were dissatisfied by the present allocation.

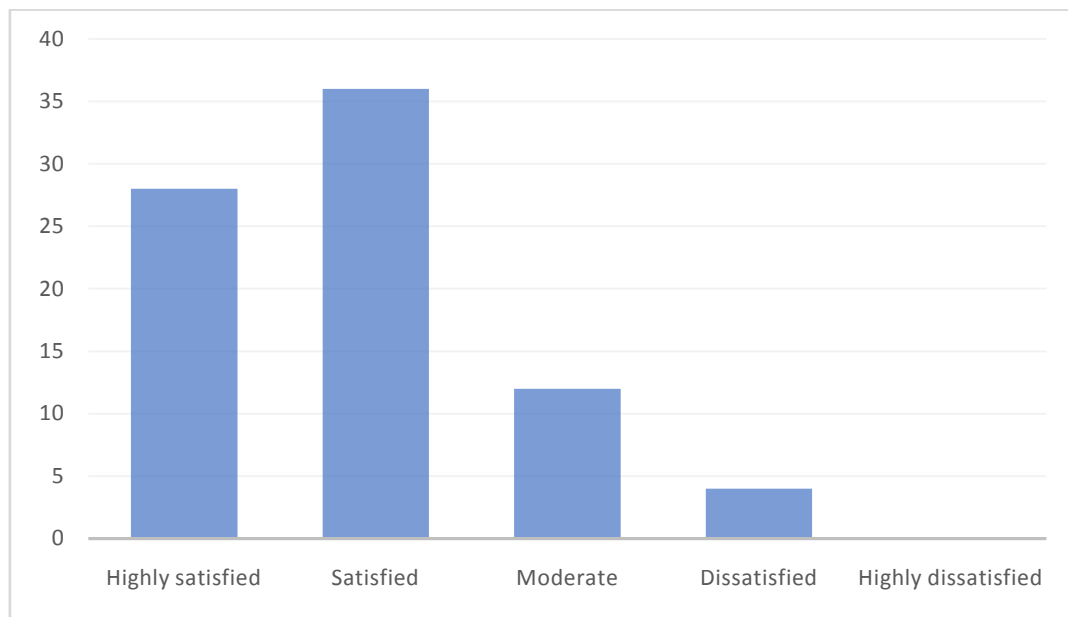
**Figure 5** Satisfaction level of quality of items



Source: sample survey

From the figure5, it can be seen that 52.5% of the respondents were moderate about the quality of food items while 35% were satisfied with the quality of items distributed.

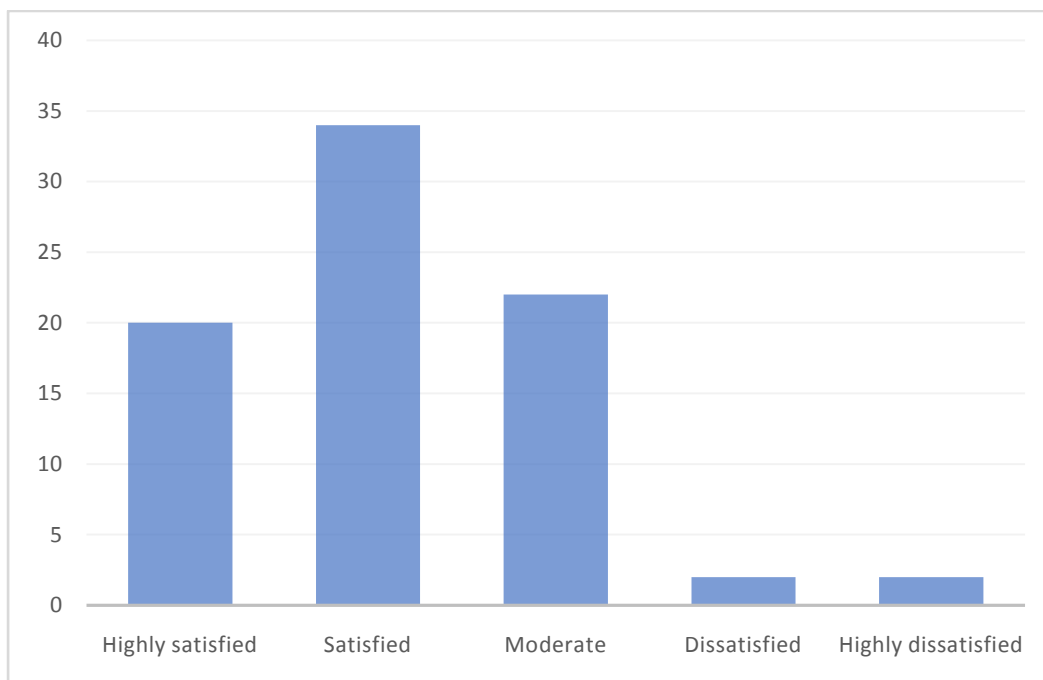
**Figure 6** Satisfaction with the Location of store



Source: sample survey

Figure 6 shows that 45% of the respondents were satisfied with the location of store. 35% were highly satisfied by the location of fair price shops.

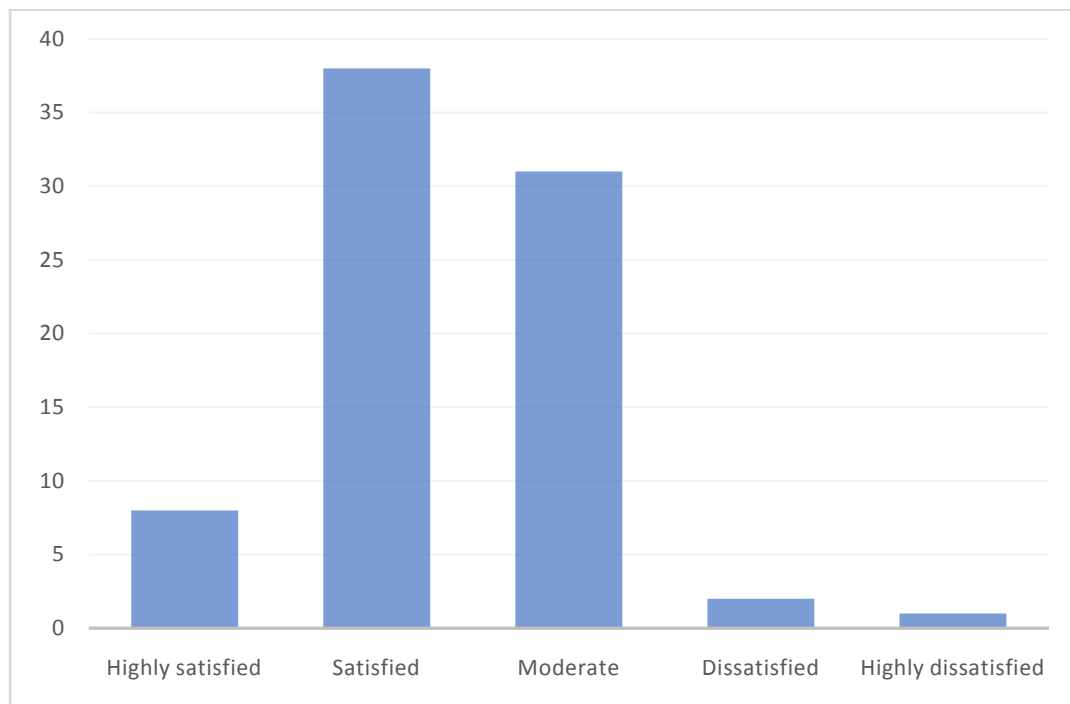
**Figure 6** Satisfaction towards Behaviour of Store keeper



Source: sample survey

Figure 7 shows that 42.5% were satisfied by the behaviour of the dealer. 27.5% of the respondents having moderate opinion regarding the behaviour of the dealer. 25% of the respondents were highly satisfied by the behaviour of the dealer.

**Figure 8** Satisfaction level towards overall functioning



Source: sample survey

From the figure 8, it can be seen that 47.5% of the respondents were satisfied with the overall functioning of fair price shops. 38.75% were moderate about the overall functioning of fair price shops.

Most of the respondents were satisfied with the present allocation of food items. Majority of the respondents were having a moderate opinion about the quality of food items while 35% were satisfied with the quality of items distributed. 45% of the respondents were satisfied with the location of store. 35% were highly satisfied by the location of fair price shops. 47.5% of the respondents were satisfied with the overall functioning of fair price shops.

Utilization of public distribution system : Paired t test is used to assess the change in the consumption of APL and BPL households. The paired t-test is a method used to test whether the mean difference between pairs of measurements is zero or not. The households are divided into two Above Poverty Line (APL) and Below Poverty Line (BPL), number of commodities they purchased from public distribution system before and after covid is analyzed with the help of paired t test.

**Table 3** : Paired Samples Test of BPL households

		Paired Differences				t	df	Sig. (2-tailed)	
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower				Upper
Pair 1	BPL households Before covid - BPL households after covid	-.107	.497	.094	-.300	.086	1.140	27	.264

(Source: Author's calculation from sample survey data)

Table 3 shows the paired t test of BPL households. The paired t test done for comparing the mean of the number of items purchased by BPL households before and after covid. The null hypothesis is there is no

difference between the mean of the number of items purchased by BPL households before and after covid. The t-value calculated is 1.140 and the p-value is .264. Hence, we accept the null hypothesis. This implies that there is no significant change in the utilization pattern of public distribution system by BPL households.

**Table 4 : Paired Samples Test of APL households**

		Paired Differences				t	df	Sig. (2-tailed)	
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower				Upper
Pair 1	APL HOUSEHOLDS before covid - APL HOUSEHOLDS after covid	-2.750	1.856	.257	-3.267	-2.233	-10.682	51	.000

(Author's calculation)

The table 4 shows the paired t test of APL households. The null hypothesis is there is no difference between the mean of the number of items purchased by APL households before and after covid pandemic. The t value calculated is 10.682 and the p-value is 0.00. Hence, we reject the null hypothesis. Therefore, there is a significant change in the utilization of public distribution system by APL households.

### III. CONCLUSION

The public distribution system, being the most important safety net, plays an important role in ensuring the food security of the nation. From the trend line of procurement, we can confirm that there was a structural break in 2020. The reason for the break may be due to the outbreak of the COVID-19 pandemic.

The second objective was to analyse the satisfaction level of people towards public distribution system. It was found out that majority of the respondents were satisfied with the overall functioning of the system. People were having a moderate opinion on the quality of items distributed. Majority of the people were satisfied with the present entitlement. Most of the respondents were satisfied with the location of store.

From the analysis of the utilization of public distribution system, it is clear that there is a change in utilization pattern of APL households. The covid pandemic may have adversely affected the income of the households and this may be the cause of the change in consumption from the PDS. The pandemic reconnected several households with the public distribution system.

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