

# A Study on the Trends and Patterns of Public Distribution System during Pre- and Post-National Food Security Act (2013)

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**Abstract:** The paper discusses the trends and patterns of public distribution system before and after the National Food Security Act of 2013. Food Security has been an important objective for a life of dignity for the citizens of India. The act ensured that procurement, allotment and distribution of food grains was streamlined and laid out the duties and responsibilities of the centre and the state. The policy made a shift from welfare to rights of the citizens and outlined beneficiaries under the targeted public distribution system (TPDS).

**Keywords:** Food Security, NFSA act, PDS, TPDS

## Introduction

The food security system in India is run by a link between Centre and State organisation that encompasses centralised and decentralised food grains procurement via price support operations, allotments and distribution for consumers/beneficiaries of food grain at reasonable prices through the TPDS and the maintenance of buffer stocks. The procurement systems in India are aimed at delivering the right price for farmers, making food grain affordable to consumers of low incomes, maintaining buffer stocks to provide contingencies and shortages, and reducing food price volatility.

## Public Distribution System

Public Distribution System is one of the basic essential components of food security as it makes an easy availability and accessibility of food at grass root level. The economic and social policies by India supported public distribution of food grains for steady planned economic development. Various issues pertaining to Public Distribution System are frequently been addressed under five-year plans and has become an area of concern for the stake holders and policy makers. Public Distribution System has been functioning for more than six decades and has helped the government to alleviate the poverty to large extent. Public Distribution System also have played a significant role by making available rice and wheat at fixed prices to the consumers in all over the country, it handles 15 per cent total availability of rice and wheat for reasonable safety of poor; Public Distribution System also supplies the grains for the food for work programme and also have catered in fighting drought.

Over the years the department of Public Distribution is charged with the prime responsibility of controlling the food economy of the country. The Public Distribution System is considered as a principle instrument in the hands of the government for providing safety net to the poor and the underprivileged. The system serves the triple objective of protecting the poor, enhancing the nutritional status and generating a moderate influence on the market prices. A close watch is kept on the stock and price levels of food grains and efforts are made to ensure their adequate availability at reasonable prices in different parts of the country.

The Public Distribution System's (PDS) operational details vary by state. Although it is a matter of national food policy that fair price shops are established, the implementation of these policies remains the direct responsibility of state governments. In the procurement and interstate movement of cereals, the centre plays a leading role. It also has a prominent role to play in establishing the support price that influences the price of the PDS problem in the state. The Food Corporation of India (FCI) has acquired the role of supplying the States necessary for feeding the central allocation of the PDS channels. The central government also provides guidance on operational details of the PDS to the states from time to time in order to operate the PDS efficiently.

### **Organization and Working of PDS in India**

For the proper management and distribution of food grains the government of India has created Ministry of Consumer Affairs, Food and Public Distribution. The ministry has been divided into two departments namely Department of Food and Public Distribution and Department of Consumer Affairs.

The PDS organisation is a combination of tasks and responsibilities of the Union and of the State. In dialogue with the relevant States, the Government of India determines the quantity of food grain to procure in each state. It also decides on the prices of procurement. This is done on the basis of the advice given by the Commission for Agricultural Costs & Prices (CACP) which calculates the cost of production and estimates a reasonable farmers' pay price. The prices for each State are basically the same. Although there are different quality prices, there are no ecological or other production conditions-related price differentials. Individual states adjust small amounts to these recommended prices in implementing procurement policy.

The FCI operates a number of large warehouses throughout the country where foodgrains are stored after procurement. Food can be transported if the Government of India (GOI) makes a decision in consultation with state governments. Aside from allocating funds to states, the GOI also determines the issue price, or the selling price of the FCI. In terms of distribution within states, the state government is, once again, the policy-making institution. It has the authority to decide how to distribute the food that has been allotted to it (to everybody, to targeted groups only, to concentrate on cities or on rural areas, etc).

Each state has its own policy regarding distribution. This distribution process is overseen by the state Department of Food and/or Civil Supplies. Many states have established parastatal trading corporations that act as PDS wholesalers. They pick up food from the FCI warehouse to storage facilities near retail outlets, known as fair price shops. The retail sale of PDS commodities is carried out by either this state cooperative, co-operative societies, or private fair price shop owners.

### **Targeted Public Distribution System (TPDS)**

After, the Chief Ministers' Conference held in July 1996, a revised scheme known as the Targeted Public Distribution System was introduced countrywide with a network of 4.74 lakh Fair Price Shops. Under the Targeted Public Distribution System a two-tier subsidized pricing system is followed. Cardholders are classified as Above Poverty Line (APL) and Below Poverty Line (BPL). The Below Poverty Line families are entitled to receive the essential commodities at a price, which is very close to the economic cost. Below Poverty Line families are identified based on the methodology given by Lakdawala Expert Group on estimates of poverty.

- a) Households below the poverty line or BPL (BPL Yellow ration card holders are provided with 35 Kgs food grains (Wheat + Rice))
- b) Households above the poverty line or APL. (APL Saffron ration card holders are provided with 15 Kgs food grains (Wheat + Rice)).

The Targeted Public Distribution System was further extended in December 2000 to include the Antyodaya Anna Yojana Scheme (AAY) out of BPL families was included to provide dedicated food grain allotments at highly subsidised prices to the poorest of the poor. It consists of the identification of 10 million of the poorest families out of the total Below Poverty Line population of 65.2 million- 'the Poorest of the Poor', and provides them with 25 kg of food grains per family per month at the price of Rs 2 per kg of wheat and Rs 3 per kg of rice.

### **National Food Security Act, (NFSA) 2013**

The enactment of the National Food Security Act, (NFSA) 2013 on July 5, 2013 marks a paradigm shift in the approach to food security from welfare to rights based approach. The objective is to provide for food and nutritional security in human life cycle approach, by ensuring access to adequate quantity of quality food at affordable prices to people to live a life with dignity. The Act legally entitles upto 75% of the rural population and 50% of the urban population to receive subsidized food grains under Targeted Public Distribution System. About two thirds of the population therefore is covered under the Act to receive highly subsidised food grains. The National Food Security Act, (NFSA) 2013 is being implemented in all the States/UTs, on an all India basis. Out of maximum coverage of 81.35 crore, around 80 crore persons have been covered under NFSA at present for receiving highly subsidized food grains. The identification of beneficiaries by States/UTs is a continuous process, which involves exclusion of ineligible/fake/duplicate ration cards and also exclusion on account of death, migration etc. and inclusion on account of birth as also that of genuine left-out households.

## Responsibilities under NFSA

NFSA defines the joint responsibility of the Centre and States/UTs. While the Centre is responsible for allocation of required food grains to States/UTs, transportation of food grains up to designated depots in each State/UT and providing central assistance to States/UTs for delivery of food grains from designated FCI godowns to the doorstep of the FPSs, the States/UTs are responsible for effective implementation of the Act, which inter-alia includes identification of eligible households, issuing ration cards to them, distribution of food grain entitlements to eligible households through fair price shops (FPS), issuance of licenses to Fair Price Shop dealers and their monitoring, setting up effective grievance redressal mechanism and necessary strengthening of Targeted Public Distribution System (TPDS).

## Ration Card Category types as per NFSA

The new NFSA system categorizes households mainly into two: Priority Household (PHH) and Non-priority Household (NPHH). The households fulfilling the eligibility criteria will be considered as priority households for inclusion in the NFSA and their ration card is known as Priority Household Ration Card. Those who are ineligible be listed in the Non-priority households and their ration cards are known as Non-priority Household Ration card.

The priority category includes:

- Priority House Hold (PHH) Ration Card
- Antyodaya Anna Yojana (AAY) Ration Card
- Annapurna Yojna (AY) Ration Card
- State Priority Ration Cards (SPHH)

## Review of Literature

Chennakrishnan (2012) - concludes in his research article "Evolution of Public Distribution System in India" that the quantity-rationing food subsidy program has contributed to the upward pressures on food prices and ensured access of food to urban consumers. Kumar and Mohanty (2012) mentioned that corruption at the micro level as well as macro level has resulted in failure of the Public Distribution System. Raghav Puri (2012) analysed and found that after procurement at MSP rates, the food grain is transported to FCI godowns where it is procured by State Governments at the CIP (Central Issue Price), which is substantially lower than the FCIs costs.

Balani (2013) - reported on "the functioning of the Public Distribution System" which describes the functioning of the existing Targeted Public Distribution System mechanism and the role played by the centre and states. Dinesh Das (2013) suggested that Fair Price Shops are the core part of the distribution system which is closely linked with the beneficiaries. Himanshu and Abhijit Sen (2013) found that many states have revitalized PDS by widening access with positive effects on poverty reduction and on leakage.

Sawant and Jadhav (2013) investigated the effect of public distribution in the context of social security and poverty alleviation in India.

Ghuman and Dhiman (2014) suggested that under proper food management system, food security should go hand in hand with fair price for the farmers. Food security does not mean overflowing of FCI godowns and food grains procured and stored at high costs with some of them sub-standard and rotting. Food security actually means access to food grains to all sections of society at all time at affordable price. They emphasized the important role of PDS in food security schemes.

Rahman (2014) - analysed on the performance and outreach of India's public distribution system in the rural areas. Lavanya and Santhe (2015) In their article "Public Distribution System in India – an overview" analysed how PDS is supplemental in nature by providing limited food and non-food items at subsidized prices not intended to fulfil the entire requirement of the commodities distributed to the beneficiaries. Anjana Thampi (2017) attempts to study the impact of PDS on the nutritional indicators of children of between 7-9 years between 2004- 2005 and 2011-2012 in the context of the recent evidence of the revival of public Distribution system in certain states. Makkur et al. (2019) study highlights the importance nutrient intake of beneficiaries who are the socially & economically deprived sections of population who are identified as below poverty line (BPL) households.

Many studies have taken place in the recent days and have focused on various issues of Public distribution system, but, very little efforts have been made to study the changes that have taken place after the introduction of Nation food security Act of 2013, thus, this article is an attempt to analyse the trends and patterns of PDS Pre- and Post-NFSA.

### **Objective**

- To analyse the trends determining PDS in India during pre- and post-NFSA phase.

### **Hypothesis**

- The pre- and post-NFSA phase does not influence the determinants of Public distribution system.

### **Methodology**

The data for the present study is drawn from secondary sources to accomplish the set objectives of the research endeavour. The Secondary data are collected from government reports and statistics through Food and Civil Supplies consumers' affairs department. Published sources like FAO, World Development Reports, Economic Surveys, NSS publications etc, to understand the determinants of public distribution system. Moreover, Census reports, Statistical Abstracts and other related published/unpublished documents were also utilized for the study.

The study adopted the pre- and post- method to analyse the effectiveness of the Public Distribution System. Therefore the time series data for the period 1991-92 to 2018-19 was collected for the macro analysis. While the 1991-92 to 2001-02 is considered as pre-NFSA (phase 1), 2002-03 to 2012-13 is considered as pre-NFSA (phase 2). Whereas, 2013-14 to 2018-19 is considered as post-NFSA phase for understanding the immediate and later impact of national food security act on production, procurement, minimum support price, allocation and off take, stockings and food subsidy.

The analytical part in the present study were analysed using SPSS v.21, further Simple Linear Regression analysis test was applied to study the functional relationship between the variables and provides a mechanism for prediction.

## Results and Discussions

### Determinants of PDS

Given agriculture's overwhelming importance in the Indian economy, the performance of agriculture in general, and foodgrains production in particular, has remained a recurring theme of discussions and debates, particularly since the introduction of new agricultural technology in the mid-1960s. A number of studies on various aspects of agricultural development are available in the literature, such as area growth, crop production and productivity, sources of growth, changes in cropping patterns, input use, extent of instability, sources of instability, and so on (Mehra, 1981; Hazell, 1982, Bhalla and Singh 1997; Ahluwalia, 1991, Dev, 1987; Sawant and Achuthan, 1995). Despite rapid population growth, India's agriculture sector has an impressive long-term track record of keeping the country out of serious food shortages.

The public distribution system in India has been influenced by a number of determinants. These are production of foodgrains, procurement, allocation, off take, stocks and food subsidies on food grains.



**Table 1: Time series data of various Determinants of PDS (1991-92) to (2018-19).**

Phase	Year	Production (Million Tonnes)	Procurement (Million tonnes)	Allocation (Million tonnes)	Offtake (Million tonnes)	Buffer stock (Million Tonnes)	Food Subsidy (In Crores)
Pre NFSA (Phase 1)	1991-92	168.38	18.2	21.72	20.74	11.07	2850
	1992-93	179.48	19.1	20.73	17.95	12.67	2800
	1993-94	184.26	26.44	21.97	18.6	20.55	5537
	1994-95	191.5	23.45	24.13	19.44	26.8	5100
	1995-96	180.42	23.9	25.93	24.35	20.82	5377
	1996-97	199.34	20.03	25.88	25.63	43.41	6066
	1997-98	192.26	23.81	22.94	18.96	18.13	7900
	1998-99	203.61	24.08	23.04	20.73	21.82	9100
	1999-00	209.8	30.76	24.21	23.05	28.91	9434
	2000-01	196.81	35.29	27.83	18.21	44.69	12060
	2001-02	212.85	41.75	30.37	31.31	50.95	17499
Pre NFSA (Phase 2)	2002-03	174.77	38.03	74.68	49.84	32.81	24176
	2003-04	213.19	36.58	71.56	49.33	20	25160
	2004-05	198.36	40.84	71.69	41.47	17.41	25746
	2005-06	208.6	41.69	71.72	42.32	15.69	23071
	2006-07	217.28	34.36	57.93	36.77	17.87	23828
	2007-08	230.78	39.85	39.81	37.42	19.63	31260
	2008-09	234.47	56.78	38.10	39.5	35.02	43668
	2009-10	218.11	57.41	48.2	49.78	42.83	58242
	2010-11	244.49	56.70	58.23	53.04	44.18	62929
	2011-12	259.29	63.37	61.46	56.49	53.30	72370
	2012-13	257.13	72.18	62.76	65.91	59.66	84554
Post NFSA Phase	2013-14	265.05	56.93	56.60	59.81	38.1	89740
	2014-15	252.03	60.06	61.28	56.06	34.31	113171
	2015-16	251.54	62.29	61.01	63.75	36.69	134919
	2016-17	275.11	61.06	62.89	61.95	31.13	130672
	2017-18	285.01	69.00	60.64	60.38	38.1	139981
	2018-19	285.21	80.18	61.21	65.88	46.38	171127
Compound annual growth rate (CAGR %)		1.9%	5.4%	3.8%	4.2%	5.2%	15.7%

**Source: Ministry of Food, Consumer Affairs and Public Distribution, GOI.**

**Production:** The production of food grains has increased from 168.38 million tonnes in 1991–92 to 285.21 million tonnes in 2018–19. The compound annual growth rate during this period stood at (1.9%).

**Procurement:** Procurement of foodgrains is one of the central pillars of the food management policy. Foodgrains are procured by the Food Corporation of India (FCI). The FCI procures foodgrains from producers at pre-determined prices, known as Minimum Support Prices (MSP). These have been fixed by GOI for 25 essential commodities, including rice, wheat, paddy and sugar. During the Pre NFSA (Phase 1) 1991-92 the total procurement of foodgrains was 18.2 Million Tonnes. This has steadily increased to 41.75 Million Tonnes in the year 2001-02. In the Pre NFSA (Phase 2) 2002-03 the total procurement of foodgrains

was 38.03 Million Tonnes. Significantly this has increased to 72.18 Million Tonnes in the year 2012-13. Moreover, In the Post NFSA phase 2013-14 the procurement of foodgrains was 56.93 Million Tonnes. This has increased to 80.18 Million Tonnes in the year 2018-19. From the period 1991-92 to 2018-19 the procurement of food grains has seen a (5.4%) of compound annual growth rate.

**Allocation and Offtake:** The central government allocates food grains from a central pool to state governments for distribution to BPL, AAY, and APL families through various welfare programmes. Every year, the allocation to a state is adjusted based on the state's average consumption over the previous three years. During the Pre NFSA (Phase 1) 1991-92 the Government of India had allocated 21.72 million tonnes of foodgrains to States/UTs/Welfare Institutions, of which the total off take of foodgrains from the central pool was 20.74 million tonnes of foodgrains. This has increased to 30.37 million tonnes of allocation of food grains and out of which 31.31 million tonnes were lifted (off take) by states/UT/other welfare institutions in 2001-02. During the Pre NFSA (Phase 2) 2002-03 the allocation of food grains was 74.68 million tonnes, of which the total off take of foodgrains from the central pool was 49.84 million tonnes of foodgrains. Furthermore, during 2012-13 the allocation of foodgrains had significantly decrease to 62.76 million tonnes and out of which 65.91 million tonnes were lifted (off take) by states/UT/other welfare institutions. In the Post NFSA phase 2013-14 the allocation of food grains was 56.60 million tonnes, of which the total off take of foodgrains from the central pool was 59.81 million tonnes of foodgrains. This has increased to 61.21 Million Tonnes of allocation and 65.88 million tonnes of off take respectively in 2018-19.

**Buffer stock:** The maintenance of a buffer stock is important for ensuring national food security. Stocks mainly of rice and wheat are regularly maintained from year to year at a substantial cost in order to effectively take care of variations in domestic food grain output. These variations occur quite regularly due to climate and man-made factors. Buffer stocks are created from the domestic food surpluses available in years of high production. They are also built and maintained through imports as and when necessary. The optimum size of the buffer stocks at any point of time is based on the suggestions of expert committees appointed for the purpose by the government from time to time. Stock position of foodgrains with public agencies (Central and States) during the Pre NFSA (Phase 1) 1991-92 was 11.07 million tonnes, which increased to 50.95 million tonnes in 2001-02. During the Pre NFSA (Phase 2) 2002-03 was 32.81 million tonnes, which increased to 59.66 million tonnes in 2012-13. In the Post NFSA Phase, during 2013-14 the stock position of foodgrains was 38.1 million tonnes, which increased to 46.38 million tonnes in 2018-19.

**Food Subsidy:** Food subsidies are the prominent feature of the Indian economy. Food subsidies have been the subject of debate due to their socio-political importance to the economy. Subsidies in general and food subsidies in particular, have recently increased, posing a growing policy challenge for the government. Subsidies in Indian agriculture have increased significantly in the post-reforms period. Food subsidies increased from Rs. 2,850 crore in 1991-92 to about Rs. 171,127 crore in 2018-19, an increase of over 50 times in the past 3 decades. Food subsidies during the Pre NFSA (Phase 1) 1991-92 were Rs. 2850 crores, which increased to Rs. 17499 crores in 2001-02. Furthermore, food subsidies during the Pre NFSA (Phase



2) 2002-03 was Rs. 24176 crores, which increased to Rs. 84554 crores in 2012-13. The Post NFSA phase 2013-14 has experienced Rs. 89740 crores of food subsidy, which increased to Rs. 171,127 crores in 2018-19.

### Phase wise Trend Analysis of determinants of PDS in India

To analyse the trend patterns of determinants of public distribution system in India, the linear regression model have been fitted for the each determinants for the periods of this study. The independent variable (exogenous) is time factor that is year (Pre-NFSA Phase 1, Pre-NFSA Phase 2 and Post-NFSA Phase) and dependent variable (endogenous) is each determinant of public distribution system i.e. (Production, Procurement, Allocation, Off take, Buffer stock and Food Subsidy).

$$Y = a + bt$$

Where,

$Y$  = Determinants of Public distribution system

$t$  = Time trend variable

$a$  is the “constant intercept,”  $b$  is the “regression coefficient that represent the estimated change in the value of dependent variable, for each unit change in independent variable values,”.

***H0: The pre- and post-NFSA phase does not influence the determinants of Public distribution system.***

***H1: The pre- and post-NFSA phase influences the determinants of Public distribution system.***

**Table 2: Phase-wise Trend of Determinants of Public Distribution System.**

Factors	Regression Co-efficient			R <sup>2</sup>	Mean	CAGR (%)
	a	b	t-value			
Pre-NFSA (Phase 1) (1991-92 to 2001-02)						
Production	-7144.505	3.676	5.918*	.796	192.61	2.15
Procurement	-3542.049	1.788	4.325*	.675	26.07	7.84
Allocation	-1303.815	.665	3.598*	.590	24.43	3.09
Off take	-1147.387	.586	1.621	.226	21.72	3.81
Buffer Stock	-6140.565	3.090	3.544*	.582	27.25	14.89
Food Subsidy	-2396643.400	1204.536	7.242*	.854	7611.18	17.94
Pre-NFSA (Phase 2) (2002-03 to 2012-13)						
Production	-13840.281	7.007	6.880*	.840	223.31	3.57
Procurement	-6872.523	3.449	6.079*	.804	48.89	5.99
Allocation	3841.020	-1.884	-1.660	.234	59.64	-1.57
Off take	-2896.461	1.467	1.930	.293	47.44	2.57
Buffer Stock	-7615.730	3.811	4.069*	.648	32.58	5.57
Food Subsidy	-12591083.52	6295.100	7.318*	.856	43182.18	12.05
Post NFSA Phase (2013-14 to 2018-19)						
Production	-13740.417	6.951	3.803*	.743	272.94	1.62
Procurement	-8359.044	4.180	5.823*	.871	67.11	5.03
Allocation	-721.346	.388	1.079	.189	60.57	0.93
Off take	-1634.881	.841	1.597	.338	61.43	0.57
Buffer Stock	-5773.827	2.884	2.360*	.527	40.17	5.79
Food Subsidy	-21736815.71	10848.071	4.558*	.806	132896.29	7.68

\* Significant at 5 per cent level; Note: Data computed by researcher.

**Pre-NFSA Phase 1 (1991-92 to 2001-02)**

Table depicts that during Pre-NFSA Phase 1 (1991-92 to 2001-02), the correlation ( $R^2$  values) of the various determinants of PDS assumed in this phase were found to be satisfactory, i.e. the determinant food subsidy and production had a high positive correlation with  $R^2$  value of (.854) and (.796) respectively; on the other hand Procurement, Allocation and buffer stock had a moderate positive correlation with  $R^2$  value of (.675), (.590) and (.582) respectively. The off take of foodgrains had a very low positive correlation with  $R^2$  value of (.226). The trend coefficients for all the determinants of PDS considered during this phase were found to be statistically significant.

During this phase the trend coefficient of production of food grains is 3.676 which shows that the production of foodgrains increased by 192.61 million tonnes on an average per annum. The coefficient of procurement of foodgrains is 1.788 which shows an increase of 26.07 million tonnes procurement of food grains on an average annually. The coefficient of allocation and off take of foodgrains is .665 and .586 respectively, and during this period the allocation and off take has increased annually by 24.43 and 21.72 million tonnes on an average. The coefficient of buffer stock during this period is 3.090 which shows that the buffer stock of foodgrains have increased by 27.25 million tonnes on an average per annum. And finally with regard to the coefficient of food subsidy it is 1204.536 which show that an annual increase of Rs. 7611.18 crores was witnessed during this phase. The percentage changes of all the determinants of PDS over this phase were found to be positive in India.

The compound annual growth rate analysis shows that the highest growth rate during this phase was observed in food subsidy of foodgrains which had increased by 17.94%, followed by Buffer stock at 14.89%.

**Pre-NFSA Phase 2 (2002-03 to 2012-13)**

In the Pre-NFSA Phase 2 (2002-03 to 2012-13), the  $R^2$  values of the various determinants of PDS assumed in this study were found to be satisfactory, i.e. the determinant food subsidy, production and procurement had a high positive correlation with  $R^2$  value of (.856), (.840) and (.804) respectively; the buffer stock had a moderate positive correlation with  $R^2$  value of (.648). Whereas the Allocation and off take had a very low positive correlation with  $R^2$  value of (.234) and (.293) respectively. The trend coefficients for all the determinants of PDS considered in the study during this phase were found to be statistically significant.

During this phase the trend coefficient of production of food grains is 7.007 which shows that the production of foodgrains increased by 223.31 million tonnes on an average per annum. The coefficient of procurement of foodgrains is 3.449 which show an increase of 48.89 million tonnes procurement of food grains on an average annually. The coefficient of allocation and off take of foodgrains is (-1.884) and 1.467 respectively, and during this phase the allocation and off take has increased annually by 59.64 and 47.44 million tonnes on an average. The coefficient of buffer stock during this phase is 3.811 which shows that the buffer stock of foodgrains have increased by 32.58 million tonnes on an average per annum. And finally

with regard to the coefficient of food subsidy it is 6295.100 which shows that an annual increase of Rs. 43182.18 crores on an average during this phase. The percentage changes of all the determinants of PDS except allocation were found to be positive in India during this phase.

The compound growth rate analysis shows that the highest compound growth rate during this phase was observed in food subsidy which had increased by 12.05 per cent, on the other hand the compound annual growth rate of Allocation had decreased i.e. (-1.57 percent).

#### ***Post NFSA Phase (2013-14 to 2018-19)***

During the Post-NFSA Phase (2013-14 to 2018-19), the  $R^2$  values of the determinants of PDS assumed in this study were found to be satisfactory, i.e. the determinant procurement, food subsidy, and production had a high positive correlation with  $R^2$  value of (.871), (.806) and (.743) respectively; the buffer stock had a moderate positive correlation with  $R^2$  value of (.527). The Allocation and off take had a very low positive correlation with  $R^2$  value of (.189) and (.338) respectively. The trend coefficients for all the determinants of PDS considered during this phase were found to be statistically significant.

During this phase the trend coefficient of production of food grains is 6.951 which shows that the production of foodgrains increased by 272.94 million tonnes on an average per. The coefficient of procurement of foodgrains is 4.180 which show an increase of 67.11 million tonnes procurement of food grains on an average annually. The coefficient of allocation and off take of foodgrains is .388 and .841 respectively, and during this phase the allocation and off take has increased annually by 60.57 and 61.43 million tonnes on an average. The coefficient of buffer stock during this phase is 2.884 which shows that the buffer stock of foodgrains have increased by 40.17 million tonnes on an average per annum. And finally with regard to the coefficient of food subsidy it is 10848.071 which shows that an annual increase of Rs. 132896.29 crores on an average during this phase. The percentage changes of all the determinants of PDS over this phase were found to be positive in India.

The compound growth rate analysis shows that the highest growth rate during this phase was observed in food subsidy which had increased by 7.68 per cent, followed by procurement and buffer stock i.e. 5.03 and 5.79 percent.

#### **Conclusion**

Thus, from the overall findings it can be portrayed that phase-wise, all the determinants of Public distribution system have seen a positive trend in India. The determinant production, procurement and food subsidy have subsequently increased accordingly, but, on the other hand, the determinants such as allocation, off take and stocking had also performed positively but at a very slow rate of growth. Moreover, from the above data it can be concluded that the pre- and post NFSA phase have statistically influenced the determinants of public distribution system.

## References

- 1) Anjana Thampi (2017). The impact of the Public Distribution System in India. Indian journal of Human Development 10(3) 353-365.
- 2) D Lavanya Kumari and K Santha Kumari (2015). Public Distribution System in India – an overview. International journal of applied research volume 5- Issues 5 May 2015 / ISSN-2249–5556.
- 3) Nawani, N.P., "Towards Food for All-Ideas for A New PDS", Ministry of Information and Broadcasting, Government of India, New Delhi, 1995.
- 4) Sanathanan, "PDS in Rural Area - A Case Study", Yojana, March, 1992.
- 5) Sanchit Makkur, Sumedha Minocha, Sumathi Swaminathan, Anura V Kurpad (2019) Millets in the Indian Plate: A policy perspective. Economics & Political weekly, September 7th 2019 Vol. Liv No 36 – Page no 49-55.
- 6) Sathyanarayana, S. and Ramani, G. (2008). "Rural Retail Management", Journal of Contemporary Research in Management, pp. 81-99.
- 7) Sawant, B. S. and Rahul, J. J. (2013). "Public Distribution System of Essential Commodities as a Social Security: A Study of Satara District Maharashtra", International Journal of Management & Business Studies, Vol. 3 (1), pp. 31-33.
- 8) Subhashish Bhandra Varad Pande (2019) A Hundred Small Steps. The Indian Express, September 26th 2019.
- 9) Suprit Panigrahi (2014). "An Evaluation of Targeted Public Distribution System in Sundargarh District of Odisha", (Published) Diss. National Institute of Technology, Rourkela.
- 10) Swaminathan, M. and Misra, N. (2001). Errors in Targeting- Public Distribution of food in a Maharashtra village. Economic and Political Weekly, June 30.

## Reports:

- GOI, (2017-2018). Annual Report - Department of food and public distribution, Ministry of Consumer affairs, food and public distribution, New Delhi.
- GOI, (Archival, Back Issues). Annual Report – Department of Consumer affairs, Ministry of Consumer affairs, food and public distribution, New Delhi.
- National Food Security Bill, (2013).
- Food and Agriculture Organization, Report (2013).
- Global food security Index, Report (2014).
- GOI, (2015-2016). Annual Report - Department of food and public distribution, Ministry of Consumer affairs, food and public distribution, New Delhi.
- GOI, (2014--2015). Annual Report – Department of Consumer affairs, Ministry of Consumer affairs, food and public distribution, New Delhi.
- GOI, (2005). Performance evaluation of Targeted Public Distribution System, Programme evaluation organization planning commission, New Delhi.