Farmers' perspective of FCI Rice Procurement Performance – A Study in Andhra Pradesh

A thesis submitted to the University of Hyderabad in partial fulfillment for the award of the degree of

DOCTOR OF PHILOSOPHY

In

MANAGEMENT

By

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DECLARATION

I, **PITTA DEBORA NEWTON**, hereby declare that the thesis entitled, **"Farmers' perspective of FCI Rice Procurement Performance – A Study in Andhra Pradesh"**, submitted by me under the guidance and research supervision of **Dr. SAPNA SINGH**, is original research work. I also declare that, it has not been submitted previously in part or in full to this University or any other University or Institution for the award of any degree or diploma.

Place: Hyderabad **PITTA DEBOR NEWTON**

Date: Regd. No.: 10MBPH08

CERTIFICATE

This is to certify that the thesis titled, **"Farmers' perspective of FCI Rice Procurement Performance – A Study in Andhra Pradesh"**, submitted by **PITTA DEBORA NEWTON**, Research Scholar enrolled for Ph. D programme in the School of Management Studies, University of Hyderabad, is a bonafide work done under my guidance and research supervision.

The thesis has not been submitted previously in part or in full to this or any other University or Institution for the award of any degree or diploma.

Research Supervisor	***Dean***
(**Dr. SAPNA SINGH**)	(**Prof. B Raja Shekhar**)

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- PITTA DEBORA NEWTON

CONTENTS

ABBREVIATIONS

AGFI	Adjusted Goodness of Fit Index
AVE	Average Variance Extracted
ASV	Average Shared Squared Variance
ADB	Asian Development Banking
BOO	Build Own Operate
BPL	Below Poverty Line
CWC	Central Warehousing Corporation
CIP	Central Issue Prices
CPSEs	Central Public Sector Enterprises
CACP	Commission of Agricultural Costs and Prices
CMR	Custom Milling of Rice
CFA	Confirmatory Factor Analysis
CR	Composite Reliability
CAGR	Compound Annual Growth Rate
CAP	Cover and Plinth
DCMS	Depot Code Management Systems
DPS	Decentralized Procurement System
DRR	Directorate of Rice Research
EFA	Exploratory Factor Analysis
FCI	Food Corporation of India
FCA	Food Corporation Act
FAP	Financial Accounting Package
GoI	Government of India

GATT	General Agreement for Trade and Tariff
HYV	High Yield Variety
ICAR	Indian Council of Agricultural Research
KMO	Kaiser-Meyer-Olkin
MSV	Maximum Shared Squared Variance
MFY	Maximum Feasible Yield
MLE	Maximum Likelihood Estimation
MSP	Minimum Support Price
MMT	Million Metric Tonnes
NSE	National Spot Exchage
NFI	Normed Fit Index
OTR	Out Turn Ratio
OWS	Other Welfare Schemes
PEG	Enterpreneur Guarantee Scheme
PDS	Public Distribution System
RMSEA	Root Mean Square Error of Approx
RDE	Rates of Fertilizers
SWC	State Warehousing Center
SEM	Structural Equation Modelling
SSWM	Site Specific Nutrient Management
TPDS	Targeted Public Distribution System
TLI	Tueker-Lewis Index
VAT	Value Added Tax
WTO	World Trade Organization

Chapter- 1

1.0 INTRODUCTION

Food Corporation of India (FCI) is the central agency responsible for undertaking procurement, transportation and storage operations in India. Along with other State Agencies it undertakes procurement of wheat, paddy and coarse grains under price support scheme and rice under statutory levy scheme. The procurement under price support is taken up mainly to ensure remunerative prices to the farmers for their produce which works as an incentive for achieving better production. To facilitate procurement of food grains, FCI and various State Agencies in consultation with the State Govt. establish a large number of purchase centers at various mandis and key points. The Food Corporation of India (FCI) and State Government Agencies under current dispensation first procure paddy and then get it custom-milled from rice millers by paying fixed tolling charges. Currently, all official agencies procure about 49-53 million tonnes of non-basmati paddy, equal to 32-35 million tonnes of milled rice every year.

Food Corporation of India originated in1965 under the Food Corporations Act (FCA), 1964 (Act No. 37 of 1964) with the primary objective of undertaking purchase, storage, transport, distribute and sell food grains etc. It mainly follows the Central government of India instructions according to section 6(2) of FCA, 1964, and discharge functions towards the interests of consumers and producers. Being a public sector undertaking it has three main objectives to fulfill; (a) procurement of food grains from farmers at remunerative prices; (b) distribution of food grains to consumers through PDS, particularly the vulnerable sections of society at affordable prices; and (c) maintenance of buffer stock of food grains for food security and price stability,

The following are the contemporary challenges faced by FCI:

1) The procurement of rice has increased substantially due to the announcement of minimum support price. In June 2010, FCI has recorded the highest procurement of wheat and rice amounting to 608.79 lakh of tones.
2) The FCI has increased storage capacity to 5% from 274.84 lakh tones in March, 2010 to 274.84 lakh tones in December, 2010. However, this storage capacity needs to be increased gradually in a scientific manner.
3) The high level committee has sanctioned for the construction of godowns with storage capacity of 150.80 Lakh Metric Tonnes, Out of which CWC/SWC have been allotted about 9.48 percent.
4) Modern Technology has been imbibed to minimize losses during transit and storage. The government has facilitated an integrated bulk handling and transportation facility involving the private parties in Build-Own Operate (BOO)
5) FCI has to look after the preservation, maintenance and security of private godowns.
6) The bulk sale of wheat is facilitated through e-platforms of spot exchange NCDEX and NSE for pan India coverage and also ensuring transparency in bidding and tendering process.
7) Continuous requirement of skilled man power in all regions.

To address the modern challenges FCI have started two major projects i.e., IISSFM and FAP. This is helping them in updating on a daily basis across the 1700 depots.

It has also implemented the Financial Accounting Package (FAP) and pay roll applications. FCI has integrated technology in very many facets of its operations such as, Depot Code Management System (DCMS) in all its depots facilitating storage and capacity utilization. Intranet, library automation its web site is dynamic i.e., the divisions can periodically update the respective data.

1.1 FUNCTIONS OF FCI

Being a monopoly, FCI undertakes several workflows by itself. The various functions performed by FCI in order to achieve its main objectives are

1.1.1PROCUREMENT

The FCI work initiates with procurement of food grains like wheat, paddy and coarse grains through the FCI and State Agencies. All these procurements will be paid according to Minimum Support Price (MSP) and bonus if any. To ensure application of MSP, improve efficiency of PDS procurement and to save on transit losses and costs Decentralized Procurement Scheme (DPS) was introduced in 1997-98 to divide the aim to procure and distribute foodgrains by states only for the benefit of farmers.

1.1.2 FEEDING PUBLIC DISTRIBUTION SYSTEM

The GoI aid to economically weaker section of society through PDS is supported by FCI. The FCI is committed to supply 61 MMT through PDS and other welfare schemes at subsidized prices.

1.1.3 PRICING

The price of rice is decided by the GoI and central issue prices (CIP) which are uniform in whole country. NFSA aims to cover overall 67 percent of population (75 percent of rural and 50 percent urban). Quality assurance is given to the buyers through physical verification prior to purchase three samples are taken and then jointly sealed from the stock to be issued. One sample so drawn goes to the recipient to displayed at venue of the sale and the two are retained at the depot and FCI level.

1.1.4 BUFFER STOCKING AND BUFFER NORMS

Maintaining a buffer stock is to meet the foodgrain requirements specified by GoI for target public distribution system (TPDS) and other welfare schemes (OWS) to ensure food security during the high demand and to balance the price fluctuations. Based upon the offtake of different quarters of the same year total yearly stock will be divided. The required foodgrain stock in a quarter is dependent on the seasonality of production and procurement.

Government has to set up technical groups or committees to study buffer stoking norms and to give valid recommendations timely to alter the policy decisions. Recently on 16th January, 2015: GoI (CCEA) has just approved the new buffer stocking norms. The revised norms are: 21.04 million metric tonnes (MMT) on 1st April; 41.12 MMT on 1st July; 30.77 MMT on 1st October, and 21.41 MMT on 1st January, each year. These norms are revised keeping in mind the enhanced need under NFSA. The position of actual stock of wheat and rice (inclusive of un-milled paddy converted to rice) in central pool as on 01.01.2015 is Rice - 231.30 Lakh MT.

1.1.5 IMPORT & EXPORT

In the year 2012-13 GoI has exported 4.5 MMT quantity of Wheat through central public sector enterprises (CPSEs). Whereas, in the year 23113-142 MMT of wheat has exported. During the year 2012-13 to 2014-15 the actual exports are recorded with 5.79 MMT at weighted average FOB rate of US $ 303.35/MT, which was higher than the C-BOT price, indicating a premium.

1.1.6 STORAGE MANAGEMENT

The present storage capacity was 72.49 MMT as on 1st January, 2015 including FCI and state agencies. This capacity consists of 15.71MMT is in Cover and Plinth (CAP). In order to minimize the dependency on CAP Private Entrepreneur Guarantee Scheme" (PEG) were introduced with aim of measurement of procurement and consumption needs of the particular area and storage capacity**.** However, the evaluation of procurement and consumption methods are different. Consuming states consider minimum 4 month requirement stocks for TPDS and OWS whereas, procuring states look for highest stock level observed in last three years.

1.1.7 MOVEMENT

Movement of procured food grains to the vulnerable sections of the society at reasonable prices or subsidized prices. FCI has to balance the movement of procurement and distributions in the form of buffer stocks at various locations of the country. For this FCI has to identify the surplus locations and deficit locations within and outside of the states

and choose the mode of transport. In India ninety percent of food grain movement was made by railways only. And the rest by waterways and roadways. Every day 50 lakh bags (50 KG each) was transported from the procuring locations to consuming locations, covering an average distance of 1500 Kilometre. All India Movement Plan is prepared on monthly basis at FCI HQs keeping in view: quantity available in surplus States, quantity required by consuming States, likely procurement in procuring States, vacant storage capacity both in consuming as well as procuring States, and monthly allocation/off-take.

1.2 PROCUREMENT OF RICE

The Government of India policy for Food grains procurement has three broad objectives:

1) Ensure MSP to the farmers
2) Availability of food grains at affordable prices to the weaker sections of society.
3) Ensures effective market intervention: To keep the prices under check and also adding to the overall food security of the country.

The procurement of rice was undertaken by two schemes namely; price support scheme and statutory levy scheme by FCI of GoI. Price support scheme is adopted to ensure the prices for achieving better production by the farmers. Based upon the recommendation of the Commission of Agricultural Costs and Prices (CACP) GoI announces the MSP before each Rabi and Kharif season. Additionally, other factors like cost of cultivation and reasonable margins for their production.

Large number of purchase centers are formed at various mandis or key points by the FCI and state agencies mutually for smooth functioning of procurement. In view to increase the MSP operations state government decided considering various parameters before establishing the mandis at various locations. More than 44,000 procurement centers were operated to procure rice in the year 2015-16. These kind of effective and extensive support resulted in sustain the farmers and in providing the required impetus for higher investment in agriculture sector for improved productivity. The fixed support price was adopted by all procurement centers formed by GoI specifications. Farmers are free to sell their produce

to any one wherever they get higher prices other than government. However, FCI and state government try to ensure that farmers are not forced to sell their crop for lesser than MSP.

1.3 PROCUREMENT POLICY AND SYSTEM

The minimum support price is offered by central government to support paddy through FCI and state government agencies. As, specified by the GoI all those food grains which are satisfying the prescribed quality within given procurement period are purchased at MSP and rewarded with incentive bonus if any. States are free to disclose the amount of incentive or bonus for paddy along with MSP.

1.4 PROCUREMENT SYSTEMS: Rice is procured through two routes

a) Custom Milling of Rice (CMR)
b) Levy rice.

Paddy is mainly procured by state government in undivided A.P. and output as rice will be delivered to state government and FCI. Another way of procurement of rice in Telangana and Andhra Pradesh is through levy route. With the consensus of GoI and state government can issue an order to rice miller to deliver fix portion of their production at a given percentage. However, Government of India has decided to discontinue levy system of rice procurement w.e.f. 1.10.2015. The state government is responsible to a greater extent for procurement of rice but FCI procure around 70.1 percent of total rice for central pool.

Apart from the FCI and state government, Arhatiyas were also included in procurement of rice under APMC Act for which commission @ 2.5% of MSP is paid in the States of Punjab & Haryana and @2% in Rajasthan. In the states like undivided AP, Tamilnadu and Odisha procurement is made through Co-operative societies and they are paid fixed remunerations at following rates- Wheat: Rs 27.00 /Qtl; Paddy (Grade ‘A’): Rs 32/Qtl; Paddy (Common) : Rs 31.25/Qtl.

1.5 CENTRALIZED AND DECENTRALIZED PROCUREMENT SYSTEMS:

Centralized Procurement System: (Non-DCP)

The food grains are directly procured by FCI or state government under the centralized procurement system. Later, the entire stock is handed over to FCI to store and for subsequent allocation according to GoI. The GoI issues cost-sheets through FCI as the procurement of food grains by the state agencies is reimbursed after the delivery of stocks to FCI.

Decentralized Procurement (DCP)

The scheme of Decentralized Procurement of food grains was introduced by the Government in 1997-98 with a view to enhancing the efficiency of procurement and PDS and encouraging local procurement to the maximum extent thereby extending the benefits of MSP to local farmers as well as to save on transit costs. This also enables procurement of food grains more suited to the local taste.

Under Decentralized Procurement system, state government or state agencies procure, store and distribute rice within the state against the GoI allocation for TPDS and OWS. If excess rice stocks will be handed over to Central pool of FCI. All procurement expenses such as, MSP, arhatiya/society commission, administrative charges, mandi labour charges, transportation **c**harges, custody & maintenance charges, interest charges, gunny cost, milling charges and statutory taxes incurred while procuring, storage and distribution of rice stocks are reimbursed by GoI on laid down principles. The cost of excess stocks handed over to FCI is reimbursed by FCI to the State Government/agencies as per Government of India costs sheet.

At present 6 districts of Andhra Pradesh and 9 districts of Telangana state were adopted DCP to procure rice. For the year 2014-15 Telangana state procured 34.19 Lakh MT and Andhra Pradesh has procured 35.04 Lakh MT

Table 1.1: Minimum Support Price of Paddy

Marketing Year	Paddy Rs. Per Quintal]	
	Common	'A'
2006-07	580 (+Rs. 40 bonus)	610 (+Rs. 40 bonus)
2015-16	1410	1450

The minimum support price for common paddy has increased by rupees 580+40 bonus per quintal in the year 2006-07 to rupees 1,410 per quintal in the year 2015-16. Whereas, For Grade 'A' the minimum support price is rupees 610+40 bonus per quintal in the year 2006-07 to rupees 1,450 per quintal in the year 2015-16.

Rice holds a unique place in Indian Economy as it contributes 70 per cent to the total production of food grains in India. It is noteworthy that in recent times, most of the rice growing areas have received very good rainfall except in the states of Punjab, Haryana, and West Bengal, UP where 95 per cent of the lands are irrigated. Hence, quantum of rainfall does not influence much, the production of rice and its prices. But, prices of rice are increasing due to increased cost of production occurring through increased demand of energy for operating water lifting devices in irrigated areas. Added to this, violent fluctuations in yield per acre and cost per unit of output are noticed. In this context, to safeguard the interests of rice growers, the government started adopting the measure of procurement of rice from the farmers. Hence, in this chapter, an attempt is made to examine the level of procurement at the all India level and across the major producing states of India. Procurement of rice has been made to ensure adequate stock of rice for public distribution system. The PDS is the channel through which rice and other grains are supplied to the BPL and other beneficiaries under the food security scheme at subsidised rates. The aim of food security scheme is to "provide for food and nutrition

security, in human life cycle approach by ensuring access to adequate quantity and quality of food at affordable prices for people to live a life with dignity" Basu, Kaushik (2011). This scheme of food security assumes greater significance since rice is consumed by majority of people in the country. The paradox of high economic growth and slow reduction in the number of food insecure persons needs to be understood in proper perspective.

1.6 Procurement

The Govt. policy of procurement of Food grains has the broad objectives of ensuring MSP to the farmers and also ensuring availability of food grains to the weaker sections at affordable prices. It also ensures effective market intervention thereby keeping the prices under check and also adding to the overall food security of the country. FCI, the nodal central agency of GOI, along with other State Agencies undertakes procurement of wheat, paddy and coarse grains under price support scheme and rice under statutory levy scheme. The procurement under Price Support is taken up mainly to ensure remunerative prices to the farmers for their produce which works as an incentive for achieving better production.

Before the harvest during each Rabi / Kharif Crop season, the Govt. of India announces the minimum support prices (MSP) for procurement on the basis of the recommendation of the Commission of Agricultural Costs and Prices (CACP) which along with other factors, takes into consideration the cost of various agricultural inputs and the reasonable margin for the farmers for their produce. To facilitate procurement of food grains, FCI and various State Agencies in consultation with the State Govt. establish a large number of purchase centres at various mandis and key points. The number of centres and their locations are decided by the State Governments, based on various parameters, so as to maximize the MSP operations. For instance for procuring Wheat & Rice, more than 14000 procurement centres were operated for each crop during 2009-10. Such extensive & effective price support operations have resulted in sustaining the income of farmers over a period and in providing the required impetus for higher investment in agriculture sector for improved productivity.

Whatever stocks which are brought to the purchase centres falling within the Govt. of India2.0 specifications are purchased at the fixed support price. If the farmers get prices better than the support price from other buyers such as traders / millers etc., the farmers are free to sell their produce to them. FCI and the State Govt. /its agencies ensure that the farmers are not compelled to sell their produce below support price.

1.7 Steps in Procurement of Rice

There are various steps involved in the process of procurement of rice. It starts from opening purchase centres at key points and ends with collecting rice from millers. It was shown in Figure-1 and Figure.2.

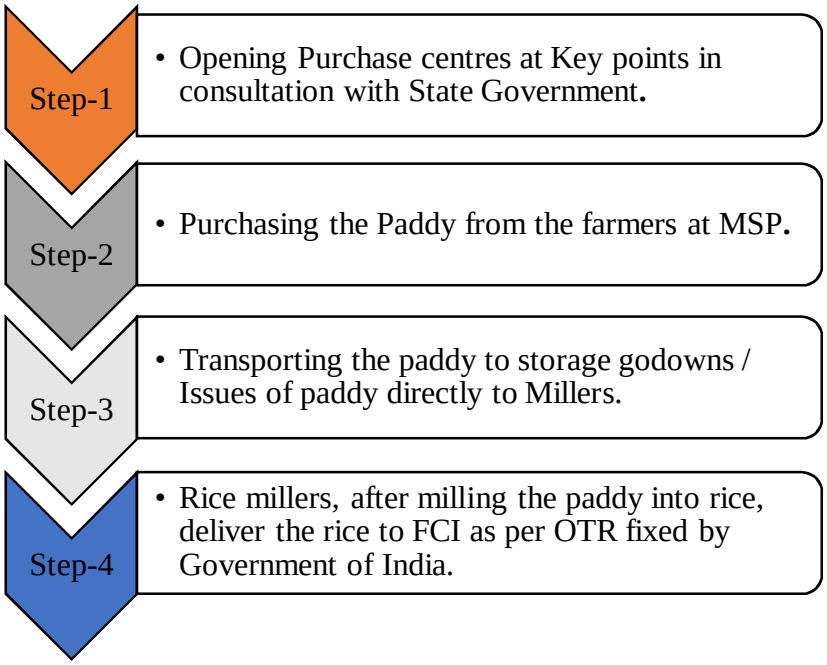

Figure 1: Steps in Procurement performance

Source: Compiled by researcher

1.8 Procurement Cycle of Rice at Food Corporation of India

Farmers bring paddy to the nearest market yards-they will keep them for sale and often sell to the trader and millers. Millers have to purchase paddy from the farmers at minimum support price, fixed by the government of India from time to time.

- Farmers to millers 90% at the minimum support price

- Balance 10% government agency like Food Corporation of India, Civil Supply Corporation
- Miller take that rice into mill paddy, convert paddy into rice according to leave yard

❖ Raw rice 67% (kgs)-outturn one quintal of paddy

❖ Boiled rice 68% (kgs)-outturn one quintal of paddy

Millers have to give 75% order to give the Food Corporation of India 50% (kgs) and remaining 17%(25%) they will sell in open market

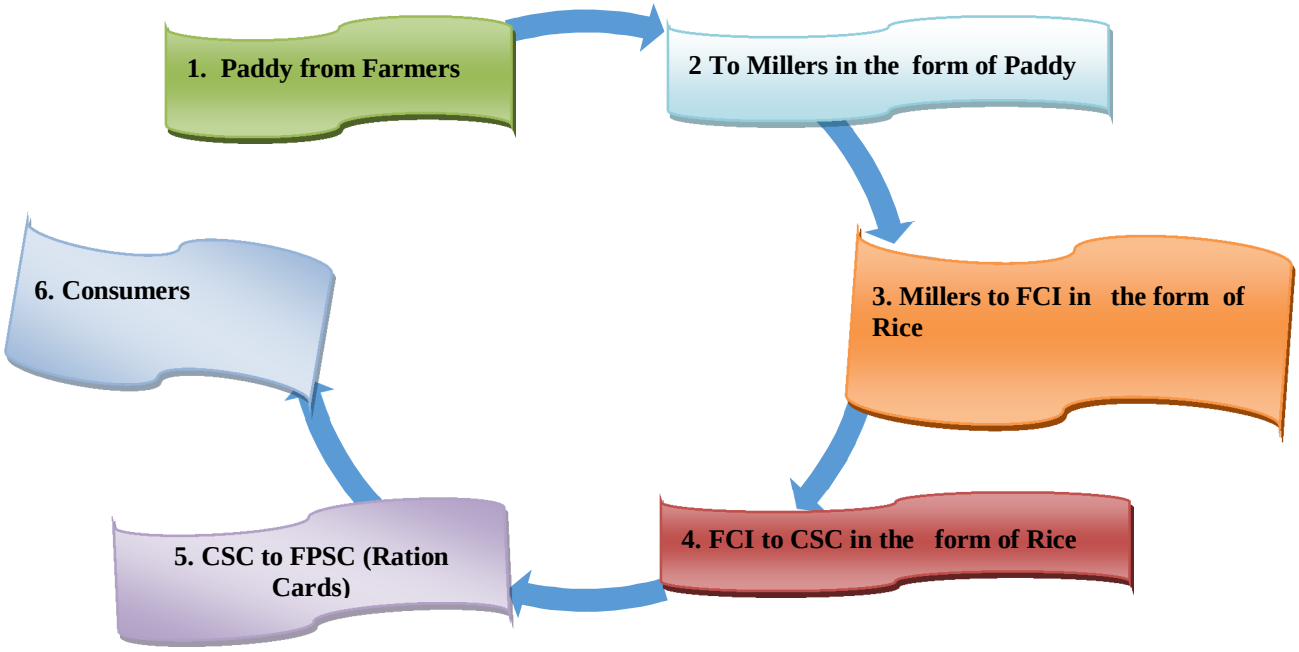

Figure 2: Procurement Cycle

Source: Compiled by Researcher

Table 1.2: Rice procurement for central pool for last ten years.

S. No.	STATES/ UTs	99-00	00-01	01-02	02-03	03-04	04-05	05-06	06-07	07-08	08-09	09-10	10-11	11-12*
1	A.P.	54.98	71.72	64.25	26.22	42.37	39.05	49.72	53.29	75.97	90.58	75.55	96.09	64.19
2	Assam	-	-	-	-	0.17	Neg.	0.01	-	-	0.03	0.08	0.16	0.11
3	Bihar	0.20	0.20	0.89	1.58	3.49	3.42	5.10	4.76	5.55	10.83	8.90	8.83	15.34

4	Chandigarh	0.15	0.16	-	-	-	0.19	0.02	0.10	0.10	0.10	0.14	0.10	0.13
5	Chattisgarh	-	8.56	19.15	12.91	24.00	28.37	32.66	28.65	27.43	28.48	33.57	37.46	41.13
6	Delhi	0.06	-	-	-	-	-	-	-	-	-	-	0.00	0.00
7	Gujarat	-	-	-	-	-	-	-	-	0.23	-	-	0.00	0.04
8	Haryana	9.86	14.76	14.79	13.25	13.34	16.62	20.54	17.77	15.74	14.25	18.19	16.87	19.81
9	H.P.	-	-	0.12	0.07	0.03	0.02	-	-	-	-	-	0.01	0.01
10	Jharkhand	-	-	-	-	0.02	0.01	0.02	0.05	0.19	1.43	0.23	0.00	2.93
11	J&K	-	-	-	-	-	Neg.	0.04	-	-	0.07	-	0.11	0.04
12	Karnataka	1.11	2.29	1.37	-	-	0.21	0.48	0.22	0.19	1.07	0.86	1.80	3.34
13	Kerala	-	-	-	-	-	0.31	0.94	1.51	1.68	2.37	2.61	2.63	3.41
14	M.P.	11.03	1.75	2.73	1.59	1.12	0.43	1.36	0.74	0.69	2.47	2.55	5.16	6.35
15	Maharashtra	0.52	0.36	1.29	1.52	3.21	2.05	1.94	0.97	1.60	2.61	2.29	3.08	1.52
16	Nagaland	-	-	-	-	-	0.11	-	-	-	-	-	0.00	0.00
17	Orissa	8.97	9.18	12.53	8.87	14.09	15.87	17.85	20.02	23.57	28.01	24.96	24.65	21.36
18	Pondicherry	0.09	0.40	0.11	-	-	-	-	0.07	0.06	0.07	0.08	0.40	0.04

19	Punjab	67.87	69.35	72.51	79.39	86.62	91.06	88.65	78.29	79.81	85.54	92.75	86.35	77.31
20	Rajasthan	0.32	0.26	0.39	0.41	0.41	0.22	0.23	0.10	0.19	0.11	-	0.00	0.00
21	Tamilnadu	-	-	8.48	1.07	2.07	6.52	9.26	10.77	9.69	12.01	12.41	15.43	15.77
22	U.P.	14.38	11.73	19.32	13.60	25.54	29.71	31.51	25.59	28.91	40.07	29.01	25.54	33.01
23	Uttranchal	-	0.42	2.35	2.32	3.23	3.16	3.36	1.76	1.47	3.49	3.75	4.22	3.36
24	West Bengal	3.51	4.34	0.48	1.26	9.25	9.39	12.09	6.41	14.29	17.43	12.40	13.10	14.53
Total		173.05	195.48	220.76	164.06	228.96	246.72	275.78	251.07	287.36	341.02	320.34	341.98	323.72
Neg. - Less than 500 tonnes														
*** as on 21.05.2012/**														

1.9 Rising Minimum Support Prices

One of the important factors behind rising subsidy is high food prices in domestic and world markets. Although some of the factors are structural and cyclical but in the short term, a continuing trend of high and volatile food prices is likely in developing Asia (ADB, 2011).

Table 1.3: Minimum Support Price over the years (₹./*quintal)*

Year	MSP of Paddy	Procurement Incidental of Rice	Distribution Cost of Rice	Economic Cost of Rice
2001-02	530	66.8	119.6	1098.0
2002-03	550	61.7	157.7	1165.0
2003-04	550	30.7	214.5	1236.1
2004-05	560	58.5	256.5	1303.6
2005-06	570	39.1	272.4	1339.7
2006-07	620	193.7	289.6	1391.2
2007-08	745	214.9	297.8	1549.9
2008-09	900	226.9	280.8	1740.7
2009-10	1000	288.6	184.9	1820.1
2010-11	1000	313.1	223.5	1983.1
2011-12	1080	366.9	291.3	2184.2
2012-2013	1250	383.3	397.1	2418.7

Source: FCI (2012) -Compiled by Author

The minimum support price of paddy (common) increased marginally from ₹ 530 per quintal in 2001-02 to ₹570 per quintal in 2005-06, an increase of about 7.54 per cent. In contrast, the MSP of paddy more than doubled from ₹ 620 in 2006-07 to ₹1250 in 2012-13 (Table). The average annual growth rate (y-o-y) in MSP increased from 1.8 per cent and 12.1 per cent in case of paddy (common) during the corresponding period. This massive increase in MSP has led to a rapid rise in food subsidy in the country.

1.10 Procurement Incidentals

The procurement incidentals include statutory charges such as market fee, rural development/infrastructure development access and VAT and non-statutory charges like dami/arhatia commission, mandi labour charges, cost of gunny bags, handling charges, internal transport and interest charges. Some of these charges are under the control of FCI and in some cases FCI has no role.

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Chapter- 2

Review of Literature

As, limited studies have been done in the field of rice procurement. The literature pertaining to these studies were reviewed and are presented in this chapter.

Kensuke Kubo (2011) has identified that the Indian government's food policy, which is mainly focused on rice and wheat, consists of two pillars: government procurement of farmers' output, and public distribution of procured output.

S. Mahendra Dev,N. Chandrasekhara Rao (2010) have identified in their study the various problems faced by the food sector in Andhra Pradesh the food security system and worth policy basically consists of three instruments: procurement costs/least possible support worths (MSPs),buffer stocks and public distribution system (PDS).
Currently, FCI official organizations make payment to farmers for the procurement of paddy at minimum possible support worth (MSP), while stocks are put in storage with rice millers under Custom Milling of Rice (CMR) agreement. As of April, 2014 millers held about 15 million tonnes of paddy alone, costing ₹20,000 crore at a MSP of ₹13,450 a tonnes.

M.Ragavan (2004), in his study identified that the Food Corporation of India enters the primary market place and undertakes support purchases of wheat and rice for the central pool. The inverse relationship between food grain procurement and distribution in India is reflected in stocks rising to unmanageable levels.

Madhura Swaminathan (1999), in his study identified the data from FCI performance budgets show clearly that the increase in procurement worth was a critical factor in the increase in economic costs of rice and wheat. The procurement worth, however, is a variable over which the FCI has a control as the central government sets the procurement worth based on the recommendations of the Commission on Agricultural Costs and

Worths. Despite the absolute increase in many constituents of costs, there was an improvement in the operational organization of the FCI during the 1990s. The FCI compared favorably with private traders in the distribution of rice in a large number of states.

Under the current system, the Food Corporation of India (FCI) and other government organizations procure paddy from farmer's at least possible support worth and get this paddy milled from registered millers under Custom Milling of Rice (CMR) agreement. This system is leading to increased stock with millers.

Gulati and Sharma (1990), have examined the issues related to procurement worth of wheat and paddy and their impact on open market place worth's etc. The authors have explored these issues in an empirical frame work. The authors have found from their study that procurement worth's are largely influenced by movements in cost of production and logged open market place worth's with occasional bonanza emanating from non-economic considerations. It is found from their study that procurement worth's have decisive influence on current market place worth formation with other factors like stocks with government and zoning playing only marginal roles. The authors have found from their study that the volume of procurement is significantly affected by level of output and difference between procurement and open market place worth weekly supported by administrative measures. The authors further conclude that the supply of wheat and rice is influenced by their open market place worth's, suitably deflated and non-worth variables like irrigation. The elasticity with respect to shifter variables is much greater than worth elasticity. The authors conclude that results reveal greater diversity. The authors have suggested a supportive role for worth's which becomes critical when non-worth factors are in place.

Hideki Imaoka (1992), in his study has observed that Asia is the major rice distributing and trading region in the world. About 4 million metric tonnes of milled rice, about 50 percent of the world total is annually traded by the Asian nation state. On the other hand the Asian distributing countries annually supply about 4.3 million metric tonne in milled to the world market place. The author has observed that the Asian market place is an

independent market place with US export, and exogenous factor in the sense that a unique international worth is determined solely by the condition that the Asian importing demand for Asian exports is equal to the Asian export to Asia. The author considers that the Asian rice market place is in perfect competition in the sense that every exporter and importer is too small to affect the determination of international worth; consequently there is unique international worth for the commodity bundle rice. The Asian rice market place is highly distorted by fluctuations in domestic production. The author feels that in order to stabilise the Asian rice market place, priority should be given in each country to control the fluctuations in domestic rice production.

Gail L Cramer et al (1993), have estimated the impact of trade liberalisation in twelve distributing and forty six importing nation state and regions. The authors have used worldwide rice spatial symmetry model structural to account for 1986 and 1987 rice trade flows in Japonica, high quality indicia and low quality indicia. The study has revealed that (i) world rice line of work expanded by about 104 percent (ii) world line of work volume as a percentage of world consumption increased from 5.4 to 11.1 percent (iii) world welfare increased $ 5.03 billion (iv) US rice exports increased 51.1 percent, while total gross revenue rose 109 percent (v) exports increased for all exporters (vi) major exporters were, Japan, South Korea, EU, Philippines, Taiwan and Brazil and (vii) movement to free line of work in Japan has important effects on world and US trade volumes, structure and worthy.

Mohandas & Thomas (1997), explained the money matters of rice production in Kuttanad region of Kerala, cultivation price of paddy was Rs.13108.05. Class-I is the marginal farmers was Rs.13309.72, Class-II is the small farmers was Rs.13858.13 and Class-III is the large agriculturalists. The highest expenses of class-I and II for hire charge of own agricultural land was accounted for 24.19% and Rs.3171.30 and 22.38% and Rs.3112.00 of total expenditure, respectively. However, class-III is the highest item of expenses was on fertilizer which camess to 22.39% and Rs.3100.75 of the total cost.

Barah. B.C and S, Pandey (2005), according to the authors during the last decade rice production has undergone a sea change. Proper analysis of these changes is essential to

formulate different policies according to the regions.

2.1. Influence of Compound Annual Growth Rate (CAGR):

George and Mukherjee (1986), found that the evolution rate of area yield fluctuated considerably throughout the districts, crop seasons and time. In spite of the overall decline in area for certain seasons, the growth rate of yield for the Period II (1975-76 to 1983-84) was much higher than that of the Period I (1960-61 to 1974-75), particularly during autumn and winter seasons, but during summer the growth rate of rice production has declined during the Period II, but the decline was comparatively higher in case of summer rice. The Proportion of irrigated (both HYV and Non-HYV) turned out to be a non-significant variable in explaining paddy yield. While the proportion of area under HYV had a significantly influence on yield during autumn and winter but it was found non-significant during summer. Because of this difference in the annual data, HYV area turned out to be unimportant in explaining rice yield. Inter-district variations in paddy yield had been significant in many situations but inter-seasonal variations were not significant.

Krishnan (1991), has discussed about tendencies in progress rates of expense, making and yield of foremost harvests in Kerala for the era 1970-71 to 1986-87 and linked them with the nationwide parallel tendencies. Destructive progress rates of production were reported by three crops namely Rice, Tapioca and Coconut. Optimistic progress rates of production is significant to the two crops namely, Dry Ginger and Rubber. Destructive progress rates for region of rice and tapioca indicated a positive move in cropping pattern in favor of plantation.

According to Bhalla and Singh (2001), Based on the 1970-72 base line the authors identified the CAG rate has drastically changed in eastern India. Whereas, in the year 1980-82 the CAG has declined.

2.2. Studies on Price of Rice

John Kerry King (1953), has observed that rice has been significant crop in the far East countries in the modern period. The shortage of rice becomes more acute since the Second World War. The previous surplus producers of rice were Burma, Indo-China and Thailand. The main deficit areas were India, Ceylon, China, Japan and Malaysia. Both production and movement of rice were badly dislocated by the war labour shortage and lack of transport facilities has effected production and marketing of rice.

Nayyar & Sen (1994), Pointed out that India's larger participation in a number of crops like rice and cotton would worsen its terms of trade and if the volumes are not adjusted quickly there would be a decline in the balance of trade. They argue that the export potential of agriculture does not lie in the major crops but it is in the horticulture and food processing. As per their observation, for these commodities, improved marketing, quality control and logistic are the real drivers and not trade policy restrictions.

According to Amrutha and Ballappa Shivaraya (1997), this was mainly suitable to higher rate of out-turn an higher income per unit of output obtained in large size rice mills (₹. 2096.46/Q) compared to average (₹ 1212.48/q) and small (₹ 1935.36/q) size rice mills. Similarly, the net returns per quintal of output produced being ₹ 829.70 in large size rice mills was significantly higher than that of medium ₹764.52/q and small ₹702.26/q size rice mills.

David Dawe (1998), has argued that some of the causes for the slower growth in area, yield and production has been lower rice prices in both international and domestic markets. Lower prices have reduced the profitability of rice farming especially in the face of higher opportunity costs for labour and land in many rapidly growing Asian financial prudence slow growth of demand for rice due to secular trends in population and per capita consumption of rice dwelling on the importance of re-emerging the Green Revolution in rice.

Srinivasan and Jha (2000), analysed the effects of liberalising food grain trade domestic price stability using a multi-market equilibrium model in which the direction of trade is determined endogenously and world prices are sensitive to the amount traded by India. The study examines, the effect of liberalising external trade in two major food grains rice and wheat, on their domestic price variability in the absence of any government intervention. It then considers the case where the government operates the price band stabilisation schemes to stabilise domestic prices. They use a dynamic stochastic simulation modcl with a multi-market equilibrium approach where prices, consumption, production, trade and stocks of rice and wheat are all determined simultaneously. Their results show that contrary to popular belief, freeing of trade by India leads to greater price stability even though world prices are more volatile.

Gulati and Narayanan (2003), in his study has identified the significant link between rice trade liberalisation and poverty. What would be the result of allowed line of work in rice on line of work movement patterns? And how will rice trade liberalisation and resultant rice price equalisation across nation state influence the prevalence of poverty in the poorer financial prudence? In doing so, the paper concentrations primarily on Asia. The environmentally friendly sustainability of rice systems would require deep reforms in input-pricing plans and also complementary plans connect to the environment. It is also important that government intervention in domestic market place ensures that these reforms do not offer perverse incentives to some crops over others in the interests of allocative effectiveness.

Chengappa P.G. (2003), have studied the profitability rate of cultivation of hybrid rice in Karnataka since the introduction of hybrids in the state in the mid-1990s. Significant positive increase is not reported. It is also found that hybrid rice was higher yielding but less profitable than existing varieties. The authors based on farm-level data noticed the reasons for lower profitability and explained the constraints in hybrid rice expansion. Higher costs of production due to seed costs, higher level of fertilizers and labour use coupled with lower market prices have completely offset the yield gain of hybrid rice. Overall the profitability of rice was a little lower than Hybrid varieties. The authors have

suggested for reformulation of hybrid rice technology pattern to reduce cost of cultivation and improving the quality of rice to create a demand suiting the tastes and preferences of consumers.

Kumbhakar and Bhattarcharya A. (2005), have referred to profit or economic inefficiency defined as profit loss from not operating on the profit frontier, taking into consideration farm specific prices and fixed factors. Consider a farm that maximize profits subject to competitive input and output markets and a single – output technology that is quasi-concare in the (nx1) vector of variable inputs, X and the (m x 1) vector of fixed factors Z. The actual normalized profit function that is assumed to be "well-behaved" can be expressed us; $\Pi (P, Z) = Y (X^*, Z) - \sum Pi\ Xi\ *$, $X^*=g (P, Z)$ where Y (.) is the production function, the asterisk denotes optimized values: Pi= W/P, Pi is the normalized price of input **i,** and **P** and **W** are the output and input prices, respectively.

Vo Thanh Danh (2007), in his study has identified to estimate the supply response of rice in Vietnam by using the dynamic adaptive adjustment and rational expectations models were used to select an appropriate supply response model for rice under different prices of expectation. The authors has found that rice farmers were rational in finding the price expectations behaviour, making supply and marketed surplus were positively responsive to price expectations. Government policy variable had positive effects on rice production. The institutional factor of the household responsibility system had no contribution to rice production improvement. The authors have suggested that technological progress and market regulations should be regarded as potential tools to sustain rice production. Further the author have discussed that the price expectations played a significant role in judgment making of rice agriculturalists. A suitable price course of action becomes a different way to enhance rice production in the country.

Rosegrant.W.Mark, et al (2007), have argued that partial equilibrium agricultural sector model to assess the effect of four trade liberalisation scenario. It reports regional results for cereals and meat trade, the influence on world prices, and net economic benefits. The authors have observed that 16 agricultural commodities and divides the world into 36

countries and regions. World and domestic prices are determined annually at levels the clear world markets. Rice prices increase 13 percent, followed by maize, wheat, and other coarse grains. An important finding is that the net economic benefits for developing countries from liberalizing their own agricultural financial prudence without comparable trade liberalization by the developed country gains under full liberalization.

Raveendaran N. (2008), has argued that price of paddy is fixed on four major criteria viz (i) mistake content (ii) out turn of rice, (iii) percentage of broken rice and (iv) percentage of black grains. The introduction of Rs. 2/- Kg of rice scheme in Andhra Pradesh has direct influence of the price of paddy, and rice in Tamil Nadu. The author has suggested godown facilities as a matter of minimizing the rise in prices of paddy to the wholesalers and millers. The author have suggested for adoption of system of rice intensification (SRI) methods of cultivation for reduction in cost of production of paddy another suggestion for reduction of price of rice relates to direct procurement of rice from millers by organised retailers by eliminating the wholesale rice merchants. The author has also recommended for encouraging farmers and farmer's groups to convert the paddy produced by them into rice and direct sale of the same to consumers through farmer's mandies.

Pandey J.Shruti, Krishnaswamy, K.Kanagasabapathy (2013), have attempted to analyse the once a year price increase trends since 2005-06 in terms of influential factors. First, it is observed that the food price increase has been significant driving factor acting against disinflationary forces. Second, food inflation is caused by both the demand and supply-side factors besides man-made independent policy distortions. Third, food price increases seems to feed on itself through a vicious cycle and assumed a secular and spiraling upward trend. The annual average food price increases (March over March) was 8.9 percent during 2004-05 to 2012-13 and was never seen at comfortable level. The author's find out price increases in cereals was in double digits in five out of eight years mainly because of a continued rise in rice prices and wheat. The price increases in rice prices was 17.9 percent during 2012-13 and in wheat 19.9 percent. As against this, the cost of production per quintal of rice rose from about Rs. 569 per quintal to Rs. 893 per quintal

and that of wheat from Rs. 585 per quintal to Rs. 935 per quintal between 2004-05 and 2009-10. Authors have finally argued in favour of reconsidering traditional instruments of food management, meaning thereby the need to revamp the PDS along with the pricing policy based on MSPs.

2.3. Studies on Demand for Rice

Gupta and George. (1974), with similar findings have reported that the total fixed cost per quintal of paddy processed was found to be lower in large size rice mills (Rs. 32.24/Q) compared to medium (Rs. 35.26/q) and small (Rs. 42.65/q) size rice mills. This clearly indicated the financial prudence of scale in processing of paddy as per unit fixed cost declined with the increase in the quantity processed.

Ashok Mitra (1977), in the context of India's agricultural rice policy, demonstrated that there was a clearly discernible bias against the traditional rice-growing regions government' methods farm price fixation. Of the country's two principal grains, while, in respect of production and consumption, rice is the predominant grain in the south-eastern part, wheat is the cereal in the north-east. Considering the spectacular rise in the production and productivity of the latter and the relative stagnation of the former, the upward adjustment in the procurement price of rice should have been larger than that of wheat.

Kalirajan (1981), has used Cobb–Douglas production function to estimate the economic efficiency of growing high-yielding watered rice in India. He compared the marginal and large scale farm collections. Relative economic efficiency is found to be similar in the cultivation of IR20 in Rabi season between the groups.

Srikanthamurthy (1986), in his study he identified that the resource efficiency in crop growing in Bangalore region observed that, the price tag cultivation of paddy per acre was found to be utmost on marginal farms and lowest on large farms. Thus the way of life of scale of financial prudence was observed in the crop growing of paddy. But study did not notice financial prudence of scale in ragi production.

Muralidharan (1987), has identified the use of efficiency in rice production in Kerala, employing the Cobb-Douglas production model. The coefficient of land and human labor were significantly positive at one percent probabilities level.

Shoichi I et al (1989), have made an empirical study on rice consumption in Asian countries in relation to income levels. The authors have found that empirical results using time-series and cross-sectional data indicate that rice in Asia is becoming an inferior good income elasticity declined and in some cases became negative between 1961 and 1985 in most of the fourteen Asian countries covered by the study. The authors have concluded that domestic demand for rice in these countries is not likely to grow as rapidly as it has in the past. As a consequent there is a potential for excess supplies of rice to develop in Asia putting down ward pressure on rice prices. The authors anticipate that while governments is Asian countries may need to adjust their rice policies in the future world rice suppliers may need to develop new markets for rice.

The authors have drawn the conclusion from their study that decreasing income elasticises mean either the demand curve is shifting in or that it is shifting out by declining amounts. The Asian rice production is approximately 300 million metric tonnes and only ten to eleven mm tons of rice is currently traded in the world market the potential increases in exports from Asia could put substantial pressure on world prices.

Deepak Ahluwalia (1989), has tried to measures the sources of growth in output in the two principal food-grains, wheat and rice over the period 1970-71 to 1983-84. The author has considered the major producing states individually as well as on the aggregate. The analysis is made to study growth from point to point in the peak years of food-grains production in the first part. The second part contrasts these result to the 'trough' years. The author has made major conclusions at the aggregate level.

a) Irrigated yield increases have been substantial and increasing source of growth in both rice and wheat output, especially the former.
b) In the peak years changes in the area components contributed more to growth in wheat then rice.

The better quality of the incentive package available to wheat growers might be behind this development. However the author has concluded that in the trough years the area components accounted for a greater share in the growth of rice than wheat, the author has observed that his analysis provides an insight into the debate on the sources of instability in food-grain production.

Wendy K Olsen (1989), has examined the Andhra Pradesh rice subsidy scheme and shows how much of the cost has in fact been borne through growth in the state government's net indebtedness. The author has observed that the rural and urban poor have gained some ₹240/- per year per household from the rice rationing policy but it is a temporary tenuous gain. The author has concluded that the rice ration cannot "eradicate poverty" since it does not tackle the basic structures which have created poverty. An electoral programme to solve the underlying problem must combine support for a target food subsidy with a set of demand for more fundamental changes.

Bawa and Kainth (1989), have mentioned that structure of processing cost also indicated that large size rice mills (₹1266.76) incurred higher processing cost as compared to medium (₹1247.96) and small (₹1233.10) size rice mills. This was mainly due to the higher total variable cost in large size mills (₹1234.52/q), compared to medium (₹1212.20/q) and small (₹1190.45/q) size rice mills. The total variable cost (97.5) in general formed major component of the total processing cost. The increase in the variable cost procurement cost and higher cost of raw material (86.04) percent.

Dat Van Tran (1995), has observed that the Green Revolution has caused the raise in the rice production to meet the demands of the growing population. However, he argues that the production rate increased at a lower rate than the population and he expressed the view that the deceleration in the growth of rice production is a cause for concern in terms of food security.the productivity decline in rice production has been particularly noticed both on research stations and in farmers' fields. An increased rice yield can lead to increase in farmer's income and food security. The author has suggested that the use of innovative genetic improvements including hybrid rice the new plant type and possibly transgenic rice

can increase the yield ceiling where yield gaps are almost closed.

Praduman kumar et al. (1998), have attempted to measure sustainability of the rice-wheat based cropping systems using the Total Factor Productivity approach. The authors have noticed that the rice and wheat cropping systems in India have significantly contributed to enhancement of food-grain production and achieving the food self-sufficiency and food security. However, the authors feel that the production system is under threat due to stagnating or declining crop productivity and endangering the total factor productivity approach.

Gail L.Cramer et al. (1999), have observed that Japan's rice tariffication implemented in 1999 will reduce their rice imports and world price of rice will fall about $10 per mt as a result of this shift in import request. The entire Japanese pricelist on over-quota rice imports will be $ 4000 per mt ton when the world price of medium grain rice is about $ 500 per mt. The authors comprehend that for Japan to increase its imports close to its free trade amount in the long run it would have to reduce its current import tariff from 2.5 percent to over 5 percent per year. Without these adjustments in rice trade in the World Trade Organization (WTO) Japan will have a difficult time arguing for more trade liberalisation in other markets. The authors have concluded that the implementation of World Trade Organization (WTO) will improve food security and food safety. Modern technology is available to import high quality food products including rice from more countries. The view that reducing trade barriers will improve access to agrarian inputs and food products.

Hiroshi Fujiki (1999), the author has focussed on a comparison between rice production costs in Taiwan and those in the Non-Hokkaido region of Japan. The author has perceived that while the Japanese and Taiwanese financial prudence are similar, it is due to Japan's inefficient use of machinery that Japan's rice production costs are higher than those of Taiwan. The author has indicated that as long as it is desirable to reduce rice production costs the Japanese government should change the legal government should change the legal and institutional arrangements that have induced farmers to be owner-

tillers. Referring to the GATT Uruguay Round accord the author says it is hard to imagine a situation where the Japanese government could set domestic, price of rice at an artificially high level at its will. The Japanese govt sustained the high price of rice through the acreage control programme, but the application of a uniform rate of acreage control independent of farm size is counterproductive given the huge disparity in the average cost of production with respect to farm size. The author suggests that if the reduction in the price of rice is necessary the acreage control program per se is not compatible with this national objective.

Pandey S.et.al (2000), the study focused on wheat and rice production in eastern India. Production of rice is less than two tonnes per hectre this low productivity according to the study has an adverse effect on small farmer's income. The authors suggest that the same can be overcome in due course of time.

Sinha and Siddiq (2000), In their study looked at the rainfed method of cultivating rice and concluded that the future for the same does not have ample potential as it involves least amount of mechanization, chemicals and minor amount of irrigation.

Chandralekha Ghosh and Ajitava Raychaudhari (2003), have made an effort to understand the possible influence of price change consequent upon opening up of the rice market on rice demand supply. They have made the study relating to two major rice producing states of Andhra Pradesh and West Bengal and rice being the biggest share in the consumption basket of households in these two states. The authors have made estimation of price and expenditure elasticity of rice along with other important food items. The findings have practical significance and policy implications. The authors have found that the magnitude of demand elasticity of rice in rural AP is greater than rural West Bengal but supply elasticity is greater in West Bengal than in AP. The authors have concluded that whether there is going to be net availability of rice for export from each of the two states depends on the situation of domestic price after opening up of the financial prudence.

Paul A. Dorosh (2004), has argued that trade liberalisation permitted the import of rice and wheat by the private sector has enhanced country's food security in Bangladesh. The author has suggested that a flexible trade policy may be needed to protect producer interest's term food security particularly in the face of export subsidies or steep declines in

world prices in years of good domestic harvests. Large scale food aid inflows may now threaten to reduce domestic wheat production similarly private sector imports of very low cost wheat and rice may depress prices even in years of normal harvests. The author concludes that south Asian countries liberalise their markets, each country's agricultural and trade policies (particularly those in India) will have a significant influence on its neighbours erratic weather and frequent changes neighbouring country policies may require periodic adjustment in policy, but intra-regional trade has the potential to increase food security and large scale economies to sall countries.

Rai M (2004), in his study traces the history of rice cultivation in varied eco-systems. Different genetic variations and land pools have helped in creating a large diverse rice stock but, our country still lagging behind due to low output.

According to Jha D. et.al (2005), the emphasis on rice research is pre-dominant in the region. The skewed distribution of research output and the surging nutritional insecurity has pushed the demand for apt location specific research.

Barbara Harris-White (2005), has observed that rice is the basis of subsistence and social reproduction in Asia and as its output expands the market surplus rises disproportionately to the growth rate of production. This according to the authors implies that activities that once formed part and parcel of household labour activities also become commercialised, food security depends not only on the market but also on the social and political structures within which markets are situated. One of these social structures is gender. This gendered process consists of two aspects explored by the author. The first is productive deprivation the influence of technological change is shown to be strongly net labour dislocating and strongly prejudiced against female labour. The author finds that poverty ensures the persistence of petty commodity production where women are either self-employed or unwaged family workers. The author has found form his study that in the case of rice production in West Bengal development in production has been accompanied by the dislocating of females from the rice mill labour forces in which financial prudence of scale have been pitched against unwages work in petty production.

Hanumanth Rao C.H. (2005), has made comments on the various contributions submitted at the conference on "economic consequences of the New Rice Technology" at International Rice Institute Los Benos Philippines (1978) the author has expressed is struck by the enormous difference between the economically attainable potential yields of rice and its actual yields. In this context he has referred to the findings of Herd and Wickham who have shown that the gap is almost three fourths of the realisable gap. Factors attributable to this relate to lack of irrigation and flood control in adequate credit and high interest cost and the inadequate research to evolve technologies. The author has referred to the suggestions like investment in infrastructure, reforms and development of credit institutions and research to develop technologies. The author has broadly crystallised the views of other contribution in the above areas in their presentations at the conference.

Biradar D.P. et al (2006), has referred to the result of the demonstration conducted on nonfarm rice, wheat and chickpea across North Karnataka region which show that there have been substantial increases in yields and economic returns compared to recommended and common fertilization practices which lead to stagnant and reduced food production. Rice is mainly grown in Bellary district under the Tungabhadra irrigation project. The authors have observed that productivity of important crops like rice, wheat, and chickpea is low when compared with state and national averages showing potential for yield improvements. Yield under SSNM (Site-specific Nutrient Management) proved to be advantageous than under RDE (Rates of Fertilizers) and PF (Farmers Practices) in rice, wheat and chickpea. The author opined that these results hold promise as an example showing higher yields could be achieved with balanced use of nutrients as per soil test results and crop requirements. RDF can be improved for these crops, SSNM is capable of producing hundreds of thousands of additional tonnes of rice, wheat and chick pea within the region annually generating billions in additional local currency within the state financial prudence.

Elsamma Job (2006), has evaluated the gap between feasible and actual yields obtained by rice farmers of Alappuzha using the frontier production function for estimating

the maximum feasible yield (MFY) and yield gap the author has found that rice yield gap in Alappuzha was estimated at 1588 kg ha with and MFY of 5447 kg actual yield of 3859 kg ha implying of certain constraints in raising productivity at the farm level.

Idiong I.C, (2007), have studied productivity of rice farmers can be raised either by adoption of improved production technologies or improvement in efficiency or both. But with the low rate of adoption of improved rice technologies by farmers in Nigeria, improvement if efficiency becomes the best option in productivity enhancement in the short run. The author estimated a stochastic frontier production function that incorporated inefficiency factors was using maximum likelihood estimation (MLE) techniques to obtain farm specific technical efficiencies as well as their determinants data collection from July 2004 to January 2005. The empirical studies that have made use of this model in determining efficiency in crop production in Nigeria is increasing, but they are relatively fewer studies on rice production in the country. The study has revealed that small swamp rice farmers are not fully technically efficient and therefore there is allowance of efficiency improvement by addressing some important policy variables that negatively and positively influenced farmers' levels of technical efficiency in the area to these farmers will go a long way in addressing their resource use inefficiency problems.

Kumar.Praduman, et al (2007), observed 'Changing Consumption pattern in South Asia', authors have analysed the consumption pattern, nutritional pattern, livestock products and food-grain disaggregated level, using the recent data obtained from FAOstat food balance sheet. They are observed South-Asian countries viz., Bangladesh, India, Nepal, Pakistan and Sri Lanka. The decline in total cereals consumption during the 1990s was mainly on account of reduction in the consumption of rice and coarse cereals, which has been falling continuously since 1980s. In India and Nepal, the per capita rice consumption witnessed upward trend during the 1980s but it started declining during the 1990s. Finally concluded stating that the future demand for food and maintain self-reliance, the south-Asia region must attain a per hectare average yield of 2.4 tonnes for rice, 3.4 tonnes for wheat, 1.4 tonnes for coarse cereals and 1.02 tonnes for pulse by the year 2025.

Nancy Clarkson and Kishore G Kulkarni (2009), have articulated that rice prices are an integral part of national welfare to 60th consumers and producers forcing the Indian government to face competing concerns when implementing policy referring to protectionist policy actions of 2008 the authors have affirmed the increase in national welfare to a tune of $ 260 million and the benefits to consumers due to lower prices producers losses were offset by government and including debt decrease. However, the authors perceived that export tariff for all varieties of rice would have been more beneficial in lowering prices and increasing domestic supply than export restrictions. The authors have further referred to the implications of protectionist policies on the reduction in world welfare in other countries. Banning of non-basmati rice by India led to other major exporting countries like Thailand and Indonesia following suit. This led to higher world prices of rice. Internally export restrictions on rice could lead to negative earnings effect for farmers and could lead to encourage smuggling and hoarding. Externally importing countries could move to self-sufficiency or alternative to rice, decreasing trade opportunities growth and efficiency export restrictions would lead to worsening of heavy debt service burden. The author has concluded in their paper that while protectionist trade policies have proved beneficial in the short-run, the effect is not sustainable.

Devi K. Sita, and Ponnarasi T (2009), have highlighted cost and returns of paddy in the system of rice intensification and their comparison with that convential method with particular adoption of SRI technology in Tamil Nadu. They have applied logistic regression model to empirically quantify the relative influence of various factors in the decision of the respondents who adopted SRI method or conventional methods of rice cultivation. The find outs of the results adoption of SRI technique would help increase rice production without increasing the area under cultivation. It has proved to serve as an alternative method for rice cultivation. The increased productivity and net profit would attract the farmers, and saving in water-use for rice cultivation is an important advantage for efficient water management.

Peter Timmer C. (2010), has disapproved the largely held assumption-that- food security in Asia is related to stable prices for rice in major urban markets of a country. That

approach to food security made sense when a third of the financial prudence was dependent or rice production, marketing, and consumption and well over half of daily caloric intake in some countries came from rice expects for few important exceptions Bangladesh and Viet Nam that world no longer exist. At world level rice accounted for just over one half of one percent of GDP in 1961 over the next half century the share of rice in GDP for the entire world fell to just 0.174 percent of GDP. Regarding consumption the author says the projections suggest a significant decline in global rice consumption in the next four decades. The author has concluded that with more open trade and the globalization of tastes, a shift to more balanced diets in Asia there is a decline in rice consumption.

Peter Timmer C. (2010), has affirmed that food security in Asia has traditionally focused on rice-its production, marketing, and consumption. But rapid economic growth in the region and its accompanying structural transformation are redefining the needs of Asia. The author has heighted the changing role of rice in Asian agricultural production and its implications. The author has marshalled statistics to show that the share of rice in Asian financial prudence as well as household food consumption is declining very rapidly. The author feels the total size of rice demand nevertheless still remains important, because rice nevertheless still remains important, because rice remains the largest single source of calories for significant majority of consumers who are in the category of poor rice production however faces serious challenges and is likely to be more unstable in the future. The author has suggested for building up larger rice reserve as a means to stabilize rice prices in global rice markets. This would help the Asian financial prudence to become much better integrated and more stable.

2.4. Studies on Supply of Rice

Thimmappa (1994), in his study he identified that the economics of high ground paddy and its competitive crops. Means efficiency of high ground paddy indicated that land, dung and seeds were underutilized while fertilizer, human labour were over-utilized on the small farms of Sorab taluk, Shimoga district in Karnataka. Seed top dressing was found to be under- utilized while droppings and hard work were over-utilized on large farms. Land and fertilizer were under-utilized in the small farms of Hangal taluk of Dharwad district and over utilization of resources was reported on the huge farms.

Vishwanath (1997), in his study he identified production in paddy cultivation and point out that seed and human hard work contributed knowingly to the total amount produced in most of the sectors in Karnataka during Kahrif season. Top dressing subsidized meaningfully in southern transition sector and hilly sector. In summer, seed subsidized meaningfully to the output only in central dry sector. In most of the sectors, human labour was significant contributor to the output. Top dressing did not subsidize meaningfully to the amount produced but its coefficients were optimistic in all the sectors.

Vishwa Ballabh and Sushil Pandey (1999), have attempted to throw some light on the nature of economic and institutional changes occurring in rice production systems of two villages in eastern Uttar Pradesh over the last 15 years. The authors maintain that the general perception of the Indian rural labour market particularly in eastern India has been that of an oligopolistic market with large and rich farmers fixing wages and using inter linked credit and land market to their advantage. The authors have mentioned that the changes that have occurred in the areas covered by their study over the past 14 years reflect the dynamism of agricultural sector in rural eastern Indian that has resulted from improved infrastructure, rising opportunity cost of farm labour and greater interaction of the rural sector with the market financial prudence. The study has revealed that the area under sole crop of rice increased from about 20 percent in 1982 to about 28 percent in 1996, an increase of 8 percentage points. The expansion is accounted for by local varieties grown under rainfed conditions. There has been a decline in mixed cropping. The cropping pattern gives an impression of increasing specialisation towards rice-wheat system.

Datta (1999), re-examined the global competitiveness of Indian rice using Policy Analysis Matrix and explicitly recognizing varietal difference and considering costs of processing, transport, marketing as well as by-products use. This is done for two years 1994-95 and 1998-99 for three varieties of non-basmati (Haryana Gaurab, UP-71/12 and PR-106) and Basmati. The results broadly concluded that in three out of four varieties the competition is declining while the DRCR values suggest in two out of four cases the comparative advantage has improved and in other two cases it has deteriorated.

Singh (2002), in his study he attempted that rice production environment in India is characterized by extreme diversity and disparity in multiple ways. It has been estimated that out of the total of 45 million hectares of harvested area under rice in India, only 46 percent of these are irrigated, about 38 percent are rainfed lowland, 13 percent rainfed upland, and 14 percent flood-prone.

Aldas Janaiah (2002), has observed that inspite of huge capital and human researchers invested over the past decade to develop and supply hybrid rice technology for Indian farmers there has not been a noticeable influence on the sector. The author has perceived that Indian has tried to emulate china's success story in the area of hybrid rice research and development but Indian farmers have not readily accepted hybrid rice technology. The author has suggested some options for increased use of the hybrid technology for rice cultivation in India. He has suggested R and D should focus more a development and popularisation of farmer friendly methods besides pursuing know ledge intensive approaches like hybrid rice. He has stressed the need for developing consumer demand for hybrid role through grain quality improvement. The author has suggested for enhancement of farmer realisable yield potential of hybrid variety. He has emphasised the need for developing resistance breeding which can stand the pests and diseases to the crop. Lastly the author has argued for improved crop management methods to exploit full potential of hybrid rice.

Mohanty *et al.*, (2002), in his study he analysed competitiveness of rice in major states of India and found that the rice was the least efficiently produced crops among five major crops discussed in the study. They found the results are consistent with the government plans of attaining food security in grain due to high procurement price and huge subsidization of inputs.

Gulati Ashok and Sudha Narayanan (2003), in his study he explored the link between rice line of work liberalization and poverty, seeking specifically to respond to two questions: 1. what would be the effect of freer line of work in rice on flow patterns? 2. How will rice line of work liberalization and consequent rice price equalization across nations influence the prevalence of poverty in the inferior financial prudence? They concluded that the nations with the highest domestic prices are the wealthiest nations, while those that are competitive in rice trend to have not only lower levels of per capita income but also a large number of poor people.

Naik *et al*., (2004), in his study he identified that the period between 1992-93 and 2000, used the total cost of delivering rice for India and the competitor (Thailand) to a common part of an importing nation i.e., Ivory Coast for Parmal variety of rice. This suggests that India may be losing its competitiveness in rice exports.

Eric J.Wailes (2005), has mentioned that despite the importance of rice as a basic staple global trade accounts for only 6.5 percent of consumption which according to him means that most countries are self-sufficient in rice and face increased price volatility in terms of production shortfalls. Most of Asian rice production is subject to mon-soon climates resulting uncertain yields global rice trade is highly segmented by rice type degree of processing and quality. As staple food the demand for rice is not very responsive to price and income changes. The author has concluded that the combination of a high degree of protection geographic concentration, market segmentation, inelastic supply response to price and inelastic demand response to price and income results in volatile prices and volumes traded state trading enterprises are pervasive in rice trade most notably in china, Indonesia, India, Japan, Republic of Korea, Viet Nam, and Australia state trading tends to

result in a lack of transparency in pricing and trade competitiveness with global policy reform, rice trade is estimated to increase by 10 to 15 percent.

Kormawa P and Toure A. (2005), in his study he identified that the worldwide about 6 percent of the total rice produced enters the international market which point out that most rice is consumed in the producing countries. The authors feel that rice market (export) is thin and is concentrated among the Asian countries USA, Australia, Italy, Uruguay, Argentina and Spain as Myanmar or exporters international rice market provides a platform for highly variable prices. The author attributes it to policy and weather conditions. Rice trade policies are being liberalised in the wake of World Trade Organization (WTO), EU and World Bank trade agreements. These changing policies have direct influence on rice production, consumption, and trade in Africa countries. African countries are net importers of rice spending close to 1.4 billion US dollars annually. Africa is aiming at achieving self-sufficiency in grains and food rice research in Africa has developed technologies for promoting rice production. However, the authors emphasis that unless farmers get access to sufficient quantities of improved seeds chemicals fertilizers and other complementary inputs to improve their yields West Africa rice farmers cannot produce sufficient rice to feed the teeming millions.

Mohanty *et al.*, (2002), analyzed competitiveness of rice in major states of India and found it was least efficiently produced crop among five major crops discussed in the study. They found these results are consistent with the government policies of achieving food security in grain through high procurement price and heavy subsidization of inputs.

Raghvendra Jha et al (2006), have examined market integration in 55 wholesale rice markets in India using monthly data over the period January 1990 to December 1999. They have found that wholesale rice markets are considerably fragmented. They have found that wholesale rice markets are considerably fragmented they have attributed excessive interference in rice markets by government agencies and barriers to internal trade for such fragmentation. The study by the authors had led to the identification of the existing by controls and government interventions in rice markets however well-intentioned as

number productive and responsible for such fragmentation of rice markets such fragmentation hurts efficiency of agricultural operations and isolates some markets stunting the functioning of market signals. The authors have suggested to reform the rules governing interstate commerce in food-grains and to over haul the attendant state government tax policies and regulations. There is an urgent need to reform price policy at the levels of producer, wholesaler and consumer. The authors have also stressed the need for privatising wholesale grain in free trade and thus improving the efficiency of market signals.

Savadatti P.M (2006), has highlighted that basmati rice continues to hold a significant share in the export basket of the country. The author has attempted to study the export scenario of basmati rice direction, changing pattern of export and imports. The analysis has been done with the help of time series data covering the period 1980-81 to 2000-01. She has adopted Markov Chain analysis liner model that captures the net effect in change in the exports of basmati rice over a period of time. The results of Markov chain analysis revealed that the exports are concentrated in Saudi Arabia and Kuwait. A high dependence on one or two export markets would influence the trade balances in the long term for India. It is not good for our Indian agriculture. Therefore, appropriate export promotion strategies have to be evolved to diversify the directions of trade to other countries and it is also imperative to find new markets besides expanding the existing markets in major importing countries.

Vijayakumar B.K (2007), has analysed the worldwide attractiveness of cereals of rice and maize and their financial implications of production over a period of time in Karnataka. The author has made an attempt to estimate NPC, DRC direction of trade, integration of domestic and international prices and supply response of rice and maize. The author has attempted to generalise the performance of maize in the Karnatka with respect to area, production and yield which was in pressive nature as compared to overall.Performance of India for the reference period has been assessed ,structural changes in costs were reported which are due to changes in quantity and quality of inputs associated with the technology process.The lagged area, lagged yield, lagged price, and rainfall were

the determinants of The allocation decision of area, rice and maize crops in Karnataka State. The author has argued that the World Trade Organization factor was negative and non-influencing factor to the both area and yield levels for the selected crops which showed a less competitive advantage in the Pre-World Trade Organization period. The counteraction tests showed that there is integration between domestic and word prices of selected crops.

Kollurmath V.B, et al (2008), have argued that structural changes in cost of production of rice and maize in Karnataka are caused by the changes in the quantity and quality of inputs associated with technological process and globalization. The authors have analysed the influence of globalization and the World Trade Organization (WTO) on the cost of production of rice and maize using tabular analysis. They have concluded that the total cost of cultivation of rice has increased from ₹9008.95 in Pre- World Trade Organization period to ₹23482.68 per hectare in Post- World Trade Organization period. Further in case of maize the cost of cultivation of maize has raised from ₹5970.67 in Pre-World Trade Organization period to ₹9192.88 per hectare in Post- World Trade Organization period. These increases in cost of production of rice and maize were attributed to increase in quantity of inputs and their prices.

Conception Calpe in his article "International Trade in Rice, Recent Developments and Prospects" has observed at the world rice market continues to be regarded as distorted, thin, segmented and volatile on policy front interventions have diminished in the wake of the market continues to be regarded as distorted, thin, segmented and volatile on policy front interventions have diminished in the wake of the market liberalisation launched by several countries since the late 1980s. Nonetheless rice continues to be one of the most protected commodities in developing and developed countries subject to high tariffs and non-tariff barriers, export restrictions or aids, state trading and domestic market interventions. Trade in rice has expanded during the past two decades and largely due to exports from traditional exporter. The bulk of global trade continues to be in the form of milled, India, higher quality rice market wise Africa and a number of Asian countries are destinations of rice flows of lower quality rice. Rice prices have become more

stable during 80s and 90s. The author thus concludes that the rising variability of trade flows was not associated with more volatile world prices. The author has made the observation that international trade in rice has become less distorted less 'thin' more unstable volume-wise but more dependable there much uncertainty on whether the tendencies observed in the 1990s will longer into the rest of the 2000 and in the decades to come.

Nirmala B. and Muthuraman P. (2009), have made a study on the economics and major constraints in rice cultivation in Kaithal district of Haryana during 2007-08 covering four villages. The data obtained by the authors have revealed that total costs in rice production accounted to be ₹33778.68 ha average yield was 4.99 t/ha. Benefit-cost ratio worked out to be 1.27. Pests and disease incidence lack of remunerative price and labour shortage were the major constraints in rice production. The author has concluded that machine labour and human labour constituted major costs in the total variable costs. Since the benefit cost ratio was 1.27 percent rice cultivation is economical in the study area the authors have suggested that management of pests and diseases and addressing the problem of soil salinity will help in enhancing the yield levels in Kaithal district.

Nirmala B (2009), have defined yield gap as the difference between the maximum attainable yield and the farm level yield. Farm level yield is the average farmers yield in a given area at a given time in a given ecology, maximum attainable yield is the yield of experimental on farm plots with negative physical, biological and economic constraints and with known management in a given time and in a given ecology. Yield gap according to the authors has two components the first one relates to non-transferable conditions like environmental condition as they see on gap pertains to the difference in management practices. The second yield gap is manageable and can be bridged by deploying more efficient research and extension services. The authors have found from their study that among the major constrains to rice production labour shortage ranked first followed by lack of remunerative price, pests and disease incidence and untimely release of canal water are mentioned other hindering factors included imbalanced use of fertilizers, non-availability of agricultural machinery, small size of farm, weed infestation, tenancy

problems non-optimal plant population, nutritional disorders, late transplanting, natural calamities, salt effected soils and poor organic matter etc. The authors have concluded that bridging the yield gap requires integrated and holistic approach and adequate institutional support to farmers.

Prasanna P. A. Lakshmi et Al (2009), has provided relationship between farm productivity and farm structure and have been analyzed concentrating mainly on one channel of transmission of this relationship, contribution-usage pattern in rice production. The hypothesized association tested in this study is that land inequality influences access to use of resources in rice production and in-turn influences productivity. Market imperfections aggravate the negative effect of land inequity on productivity. The results have shown that smallholders' share in inputs like fertilizers, and irrigation has increased over time, but a large number of smallholders still do not have access to these resources. Hence, for improving productivity and profitability of rice production of small owners in particular and other agriculturalists in general, addressing of structural unfairness needs attention besides a concentration on technology improvement.

Xiaobai Shen (2010), has provided an historical survey of the evolution of rice technology in China from the traditional farming system to genetically modified rice i.e., today using socio-technological analytical frame work, he has analysed a complex contact of material and social elements and discusses the specificity of technology development and its socio-technical results. The analysis points to two imperatives in rice variety development; wholesale transporting agricultural technology and social mechanism to developing countries are likely to lead to negative consequences; indigenous innovation including deploying cultivating local knowledge will provide better solutions.

Dev S. Mahendra, N Chandrasekhar Rao (2010), have made a study with an in-depth analysis of costs and returns in rice and wheat, which are the furthermost protected crops and underlie the means of support of millions of farmers, this study examines the effectiveness of agricultural price policy in enabling farmers to obtain sufficient profits to promote investment, technology and productivity and thereby to food security. In this attempted objectives are to find out the trends in the movements of costs, prices and returns

in rice and wheat farming to throw light on the influence of price policy on the profitability of farming in two of the most cultivated and consumed food crops in the country. It also tries to bring out the causes that necessitated the recent increases in support prices and their relation to food security of the country. The ratio came down to 0.90 and 0.91 in the case of Cop in the years 2005- 06 and 2006-07. On the whole, the demand that the MSP of rice should be closer or slightly below than wheat, based on the cost data may need a sympathetic hearing.

Basu. Kaushik, (2011), focuses the issue to understand the fundamentals of our food-grain market and policy that lead to this situation and to propose plans for correcting this. The central dispute of the study is that it is commanding that we appearance at the entire system of food production, food procurement and distribution of food. Annoying to correct individual segment of this complicated system is likely to end in failure. The study discusses that there are two different reasons for food-ounce procurement by the state to provide food security to the vulnerable and to even out food grain price fluctuations from one year to another. Further, how to procure the food has an influence on how we release the food, and vice versa. Inspired by the sight of food-grain going waste, it is often made out to be that our central problem is that of poor food grain storage. This study disagrees with this popular observation. While we no doubt had better develop our storage facilities, it is significant to be clear that this in itself will not lower the price of food. Finally author recommended that we need to redesign the mechanism of how we acquire and release food grains to the market.

Aggarwal Ankita and Harsh Mander (2013), have attempted to study issues of National Food Security Act has been steadily watered down since it was first mooted in 2009. The Parliamentary Standing Committee that examined the 2011 Bill has disappointingly continued with “targeting”. National food security, and reduced the government’s resolve to end hunger to the mere distribution of 25 kg of food-grains (wheat and rice) a month to the 37.2% of the country’s population considered below the poverty line (BPL) according to the Planning Commission estimates. The paper points out major issue edict opens the door for commercialization of agriculture and the food system, which

can threaten the country's food sovereignty, further impoverish farmers and increase food prices. The authors suggest policies only hope that the government salvages this bill and delivers on its long-pending promise of ensuring food security for all.

Palanisami K, Karunakaran K R, et. al. (2013), have highlighted major issues System of Rice Intensification be the solution to meet the country's forthcoming rice demand. A shortcut-level study covering 13 major rice-growing states point to that fields with SRI have a higher average yield compared to non-SRI fields. The study was conducted during 2010-11 in 13 states and covered 2,234 sample farmers with SRI and non-SRI fields in the southern region. Finally authors find out results SRI fields have significantly higher yields, but the patterns are different across states. The average yield in SRI parcels in all states is 8.5 quintals per hectare (0.85 tonnes/ha), which is 22% higher than in non-SRI fields. Madhya Pradesh, Gujarat, and Odisha have significantly higher yields in SRI parcels in percentage terms (52%, 54% and 33% respectively), but they have some of the lowest yields among non-SRI fields. Maharashtra, Chhattisgarh, Andhra Pradesh, and Karnataka have the next highest yield increments with SRI – 27%, 24%, 23% and 25% respectively.

Carrasco Bruno, Hiranya Mukhopadhyay (2012), raised the major issues .The South Asia is the most vulnerable region and a large part of its population lives in below or near the poverty line. An empirical analysis of the factors was made that could explain the increase in food prices, while the effect of food price increases on poverty and macroeconomic stability in the region. The paper points-out the major Demand and Supply side factors population growth and increasing disposable incomes which are the key factors that explain the growing demand for food in South Asia. The region experienced limited demographic transition and demonstrates higher fertility rates (2.35) than East Asia (1.98) and south-east Asia (1.98). Similarly the growth rate of rice yields dropped from 3.0 percent to 1.7 percent in the same period, while the annual yield growth of wheat slowed down from 4.2 percent to 0.6 Percent. The author pointed out technological advancement, competitive pricing policy, qulitative storage and marketing, and cooperation of regional agencies should play significant roles in combating food price inflation.

Parikh S Kirit (2013), identification of the poor and the scale of operation are the most critical challenges of the proposed legislation on the right to food. This article suggests universal entitlement that excludes clearly identifiable rich. Food coupons could eliminate the need for the operations of public distribution system and eliminate diversion. It seeks to ensure adequate domestic production through assuring a minimum support price (MSP) to farmers, providing subsidised fertilisers and irrigation water as well as electricity for pumping. This will eliminate the problems of having to procure and distribute more than 500 lakh tonnes of food-grains every year as also the problem of diversion. The costs of the PDS system would be greatly reduced. Food-grains supply would have only a slight influence on the nutritional outcomes.

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Chapter- 3

Research Methodology

3.0 Introduction

This chapter provides a comprehensive detail of the research methodology used for the study. Research methodology collectively presents all the basic beliefs, underlying concepts, ideas and methods utilized for compilation, appraisal and manipulation of data (Saunders et al., 2009). Thus, it includes research design, sources of data, data collection tools and techniques, sampling methods and techniques, data analysis tools and techniques employed. To analyze the Farmers' perspective of FCI Rice Procurement Performance. The reliability and validity of the data is also presented at the end of this chapter.

3.1.Research Methods

Methodology is classified under two categories - Quantitative research method and Qualitative research method. Quantitative research method usually involve large randomized samples, more application of statistics, and few applications of cases demonstrating findings (Cooper and Schindler, 2003). The purpose of quantitative research is to determine the relationship between dependent and independent variables in a population.

3.2.Research Questions

1. What according to the farmers are the factors influencing the procurement performance?
2. How do the farmers perceive rice procurement practice of Food Corporation of India?
3. Are the farmers satisfied with the rice procurement practice of Food Corporation of India?

3.3. Objectives of the study

1. To study the factors affecting the procurement performance of FCI.
2. To study the farmers' perception towards rice procurement practice of FCI.
3. To analyse the farmers' levels of satisfaction towards the rice procurement practice of FCI.
4. To analyse the effect of identified factors on the overall performance of FCI.
5. To identify the most important factors which affect the procurement performance of FCI.

3.4. Hypotheses of the study

H1a: There is a significant difference between the land owned and tenant farmers with respect to their perception towards price practice of FCI.

H1b: There is a significant difference among the farmers of three regions with respect to the price practice of FCI.

H1c: There is a significant difference between literate and illiterate farmers with respect to their perception towards price practice of FCI in procurement of rice

H2a: There is a significant difference between the land owned and tenant farmers with respect to their perception towards Weighment practice of FCI.

H2b: There is a significant difference among the farmers of three regions of farmers with respect to the Weighment practice of FCI.

H2c: There is a significant difference between the literate and illiterate farmers with respect to their perception towards Weighment practice of FCI.

H3a: There is a significant difference between the land owned and tenant farmers with respect to their perception towards payment practice of FCI for procurement of rice.

H3b: There is a significant difference among the farmers of three regions with respect to the payment practice of FCI.

H3c: There is a significant difference between literate and illiterate farmers with respect to their perception towards payment practice of FCI for procurement of rice.

H4a: There is a significant difference between the land owned and tenant farmers with respect to their perception towards responsiveness of FCI staff while procurement of rice.

H4b: There is a significant difference among the farmers of three regions with respect to the responsiveness of FCI's staff.

H4c: There is a significant difference between literate and illiterate farmers with respect to responsiveness of FCI's staff while procurement of rice.

H5a: There is a significant difference between type of farmers and their satisfaction levels towards price practice of FCI in procurement.

H5b: There is a significant difference in the three regions of farmers with respect to their levels of satisfaction towards the price practice of FCI.

H6: There is a significant difference between type of farmers and their satisfaction levels towards Weighment practice of FCI in procurement.

H7: There is a significant difference between type of farmers and their satisfaction levels towards payment practice of FCI in procurement.

H8a: There is a significant difference between type of farmers and their satisfaction levels towards responsiveness of FCI's staff.

H8b: There is a significant difference between the three regions of farmers with respect to their levels of satisfaction towards responsiveness of FCI staff.

H9: Price practice has significant effect on procurement performance.

H10: Weighing practice has significant effect on procurement performance.

H11: Payment practice has significant effect on procurement performance.

H12: Staff Responsiveness has significant effect on procurement performance.

3.5 Research Design

Research design is considered as the blueprint of the proposed research study. It constitutes the procedure for collection, measurement and analysis of data. It is the plan and structure of investigation so conceived as to obtain answers to research questions. It addresses both the structure of the research problem and the plan of investigation used to obtain empirical evidence on relations of the problem (Cooper and Schindler, 2003). Studies can be classified into various types based up on the nature and requirements of the research

methodology used in the studies. The selection of an appropriate research design is an important task for researchers because it plays a crucial role in effectiveness of the research. Generally, research studies are categorized as exploratory research, descriptive research, explanatory /causal research (Yin and Zikmund., 2002; Cooper and Schindler., 2003).

3.5.1 Exploratory Research

Exploratory research is conducted with a view to clarify and define the nature of a problem, where the purpose is to provide insight and understanding, not to provide conclusive evidence. Generally, this type of research is conducted with the expectations that subsequent research will proceed and is flexible in nature. (Yin and Zikmund. 2002; Cooper and Schindler. 2003). Researchers conduct this kind of research as a commencement step, when a problem is broad and not in detail defined. Yin (1994) states that findings of these kind of studies are a valuable means of understanding; what is happening, to seek new insights, to ask questions and to assess phenomenon in a new light.

3.5.2 Descriptive Research

Descriptive research is conducted with a view to describe something, which is under study. When an exact phenomenon is under study, research is wanted to describe it, to clarify and explain its inner associations and properties (Huczynski and Buchana, 1991; Zikmund, 2000). It will depict an accurate profile of people, events or situations (Robson, 1993). Descriptive research in dissimilarity with exploratory research defines questions, people surveyed and methods of analysis prior to beginning of data collection.

3.5.3 Explanatory / Causal Research

Explanatory or Causal Research is conducted with a view to find or analyse cause and effect relationships between the variables which are under study. It explains the effect of independent variables on dependent variables and which variable is responsible, how much variance take place in the dependent variables. Generally, exploratory and descriptive research are executed first and then the causal research follow (Zikmund, 2000). Explanatory or causal studies go further than the description and attempt to explain the explanations for the phenomenon.

Researchers can adopt any type of study which suits their research purpose. Moreover, it can be used in the combination of any two or mix of all three, depends up on the research purpose (Saunders et al., 2000). As this study is aimed to identify, analyse the factors which influence procurement performance and to know the satisfaction levels of farmers towards Food Corporation of India. Exploratory, descriptive research is used for this study to explore the farmers' perceptions and satisfaction levels towards FCI's procurement practice. To examine demographical characteristics of respondents, their perceptions and the procurement performance.

3.6 Research Approach

Research approach can be classified under two categories - Deductive vs the Inductive approaches and Qualitative vs Quantitative approaches.

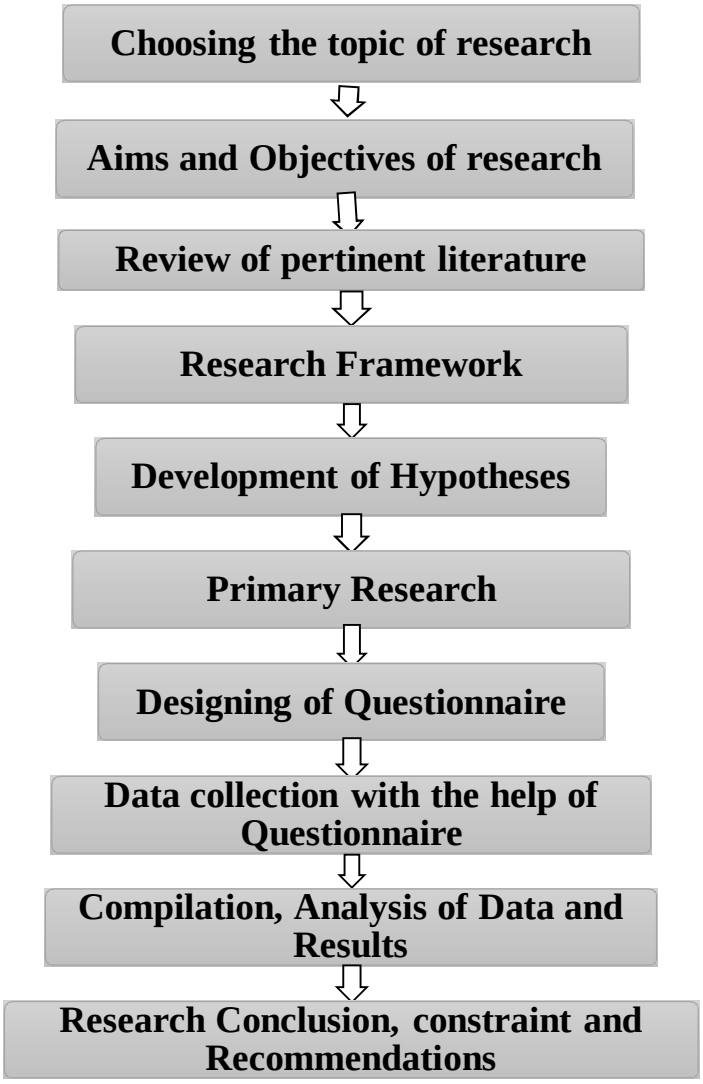
The deductive approach involves research, general to specific. It starts from developing hypotheses from the grounded theories and test it. Whereas inductive approach involves specific to general where theories are developed based up on generalization.

This study adopts deductive research approach wherein hypotheses are developed and tested to fulfill the objectives of the study.

3.7 **Research Process**

The outline of research process followed to carry out this research is given below (Fig. 3.1). This process is based on chosen research design, research approach (i.e. qualitative and deductive), and data collection methods (questionnaire based survey).

Fig (3.1): Research Process followed in the Present research



3.8 Sampling Design

3.8.1 Population

Population for any research study be made up of all elements, individuals, items or objects whose characteristics are existence studied and this is often called target population (Mann, 1995). The target population is the specific group applicable to the study, the group that possesses all information applicable to the researcher (Malhotra, 1996). The population for this study is all the farmers growing paddy crops in three regions in Telangana, Rayalaseema, and Andhra of united Andhra Pradesh (State) which is indefinite in nature.

3.8.2 Sample

A sample is a finite part of the statistical population, whose properties are studied to gain information about whole population (Webster, 1985). It is impossible to include entire indefinite population into the research study. Hence researchers select samples from population and generalize the conclusion to entire population. A farmer, who grows paddy crop is considered as a sample for this study.

3.8.3 Sampling Technique

The sampling is a process of selecting some of the elements in a population on the basis of scientific methods and draw conclusions about the entire population (Cooper and Schindler, 1999). It is determined before any data is collected (Kothari. CR, 2005). Sampling techniques are classified into two type.

1. Probability sampling, which consist of simple random, complex random, systematic, stratified, cluster, multi-stage random sampling.

2. Non-probability sampling, which comprises convenience sampling, purposive sampling, judgemental sampling, quota and snowball sampling.

   Based up on the purpose, nature of population and requirement of research study, suitable sampling technique can be adopted to select the sample from population.

   As the population for this study is indefinite, non-probability quota sampling technique is used to select the sample.

3.9 Research Tool

As this study involve collection of primary data, research tool is essential to collect the data from the sample. A questionnaire was designed based on multi-dimensional scaling in combination of likert, numerival and caterogical scles. Questions are designed in three parts were, Part-A comprises of demographical related questions with nominal and categorical scales, Part-B comprises perceptions and satisfaction related questions with Likert's 5 point scale and Part-C comprises 22 statements related to the 5 factors (Price, Weighment, Payment and Responsiveness) which influence procurement performance with 5-point Likert rating scale where, 1 stands for strongly disagree, 3 stands for neither disagree nor agree and 5 stands for strongly agree. A detailed questionnaire is presented in the form of appendices.

Secondary data is collected from various sources like books, journals, and FCI annual records.

3.10 Data Collection

Marketers and researchers utilize two research options that are primary and secondary research in nature. Saunders et al. (2007) reported that primary researches are generally associated with the assortment of primary data through experimentation, field research, surveys and interviews. This results in the evolution of existing theories or the formation

of new theories. Therefore, a lot of reliable and valid primary data is wanted in this type of marketing research. The researcher followed primary research is quantitative in nature. Primary data is collected from the farmers directly in their respective locations. Usually, farmers live in rural villages, where their lands are located. As majority of the farmers are illiterates, respective village revenue officers' help was taken to obtain information. Farmers are classified into two categories - Land owned Farmers and Tenant Farmers. Same scale is used for both type farmers to collect the data and compare their perceptions, levels of satisfaction with regards to procurement performance of the Food Corporation of India. Secondary data is collected from journals, annual reports of FCI, newspapers, websites and other published and unpublished documents.

3.11 **Sample Size**

Table 3.2 Sampling method and sample size

Population	**Regions**	**Districts in regions**	**Popular Paddy growing districts**	**Sampling districts**	**Sample Size**
Andhra Pradesh	Telangana (10)	Adilabad	Karimnagar Nizamabad	Karimnagar	202
		Hyderabad			
		Karimnagar			
		Nizamabad			
		Mahaboobnagar			
		Medak	Nalgonda Warangal	Nalgonda	200
		Nalgonda			
		Khammam			
		Rangareddy			
		Warangal			
	Andhra (9)	Guntur	Krishna East Godavari	East Godavari	201
		Krishna			
		East Godavari			
		West Godavari			

		Prakasham	Guntur West Godavari	West Godavari	200
		Nellore			
		Vijayanagaram Srikakulam			
		Vishakapattanam			
	Rayalaseema (4)	Anantapur	Chitthoor Kurnol	Chitthoor	201
		Chitthoor			
		Kadapa			
		Kurnool			
Total sample size					1004

3.11.1 Justification for Sample Size

Hair, Anderson & Black, (1995); Okoroafo, (1997) suggest the determination of sample size. They suggested that size of sample can be determined by method of five subjects per one attribute. It denotes sample size should be five times as large as the number of total attribute used in the study. Based up on this suggestion, as this study comprises of 30 attributes, it should have atleast 150 subjects as sample size. But this study has 1004 subjects as sample size, which is higher than the given requirement.

3.12 Data Analysis Tools and Techniques

3.12.1 Data Analysis Tools

The data is analysed using the data analysis software platforms - Microsoft Excel, IBM SPSS 21version and IBM AMOS 21versions.

3.12.2 Data Analysis Techniques

Data was analysed under two parts. Part – one consist of respondents demographical characteristics, which are analysed with the help of descriptive, cross tabulations and graphs. Part-two consists of respondent's perceptions, satisfaction levels and group

differences which are analysed and examined with the help of cross tabulations, independent sample t-test and ANOVA.

For this Exploratory Factor Analysis (EFA), a data reduction technique is used to extract the factors and confirmed the validity with the help of Confirmatory Factor Analysis (CFA). After achieving acceptable model fit indices, Structural Equation modelling (SEM) is used to estimate structural relationship between the dependent and independent factors. It has been chosen to measure the causation among the observed and the unobserved variables. Finally, hypotheses are tested with the help of output of structural equation modelling.

3.13 Constructs and items of the study

Table 3.3 Constructs and Items of the study

Construct	Measurement items
Procurement Performance	1. FCI takes utmost care in procurement process
	2. FCI follows transparency in the procurement process.
	3. I like the procurement practice of FCI.
Price	4. I like to sell my produce at FCI's price.
	5. FCI's Procurement price is reasonable.
	6. FCI's Procurement price is more than market price.
	7. FCI's procurement price gives me good profits.
Weighment	8. FCI's Weighment process are understood by me.
	9. FCI uses standard Weighment tools
	10. Weighment practices of FCI personnel are trust worthy.
	11. FCI's Weighment process is transparent.
	12. I like the FCI's Weighment practice

Payment	13. FCI's payment procedure is good. 14. FCI payments are timely. 15. I am satisfied with the payment process of FCI.
Responsiveness	16. FCI's staff Provide prompt service to farmers. 17. FCI keeps farmers informed as to when procurement will be happen 18. FCI is always ready to respond to farmers' requests. 19. FCI is willing to help farmers.

3.14 Relaibility and Validity Assessment

Cohen, Manion and Morrison (2007) described *Validity* as the term that refers to accuracy of primary data, relevance and accuracy of the questions included the questionnaire and accuracy of the conclusion. In other words, it expresses, whether the variables are measured as accurately as claimed by the researchers or not. Byrman and Bell (2007) also suggested two other criteria for assessing the validity and reliability of the quantitative research. These include authenticity of the data and second method is to check the trustworthiness of the data by examining the research strategy and approach followed during the research. Bryman and Bell (2007) explained that stability of the measurement of a variable is established if the measure gives same values or the values with little variation are computed again and again. So, redoing the same calculation and getting similar values with less variation proves that the method existence used for the data collection is reliable. Diifferent methods are available to measure the reliability such as Cronbachs' alpha coefficient, reset

method, splithalf method, parallel method and Richardson method. Cronbachs' alpha, the popular and commonly used method is used to assess internal consistency of the scale and the result was presented in the following table. 3.4.

Table 3.4 Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.893	.886	18

Hair et al.(2007) suggested that, a scale with the Cronbachs' alpha value of .70 and higher gives the good reliability. For this study the value of Cronbachs' alpha was found .893 which is higher than the suggested value. Hence, the reliability of the scale used in this study found reliable for analysing the data and give authentic results.

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Chapter-4

Data Analysis, Results and Interpretations

4.0 Introduction

This Chapter primarily deals with the analyses carried out on the data related to the research objectives and hypotheses pertaining to the study. Interpretations and Conclusions were drawn on the bases of results emerged out from the various data analyses techniques employed for the study.

4.1. Demographical Characteristics of Respondents

Total 1004 valid questionnaires were obtained from the farmers spreading over sampling districts of Andhra Pradesh and used for the final analysis. Demographical characteristics of respondents were collected and were presented in this section. Let us study one by one.

4.1.1. Region-wise sample distribution

Among the total 1004 respondents, 40% were from Telangana, 40% were from Andhra and 20% were from Rayalaseema regions. The same is depicted in table 4.1.1.

Table 4.1.1. **Region-wise farmers**

Region	Frequency	Percent
Telangana	402	40.0
Andhra	401	40.0
Rayalaseema	201	20.0
Total	1004	100.0

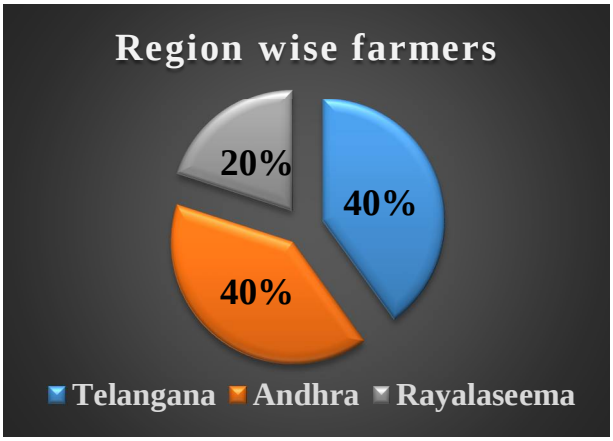


Chart. 4. 1.1: Region-wise farmers

4.1.2. Type of Farmers

Looking at the table 4.1(a), we can find that 52 % (i.e. 522) of the total respondents were land owned farmer, who hold land and 48 % (i.e. 482) were tenant farmers, who take the land on rental basis and cultivate. This was also shown in following pie chart 4.1(a).

Table. 4. 1.2(a): Type of farmers

Type of farmers	**Frequency**	**Percent**
Land owners	522	52.0
Tenant Farmers	482	48.0
Total	1004	100.0

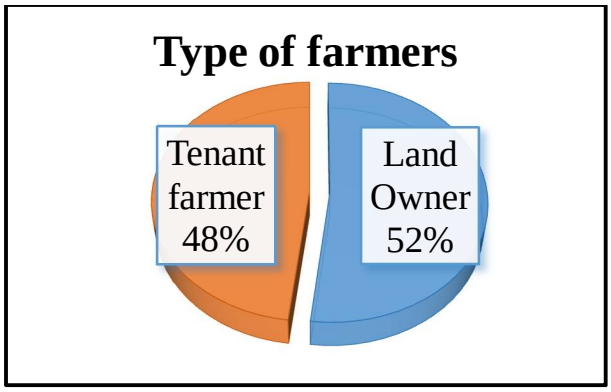


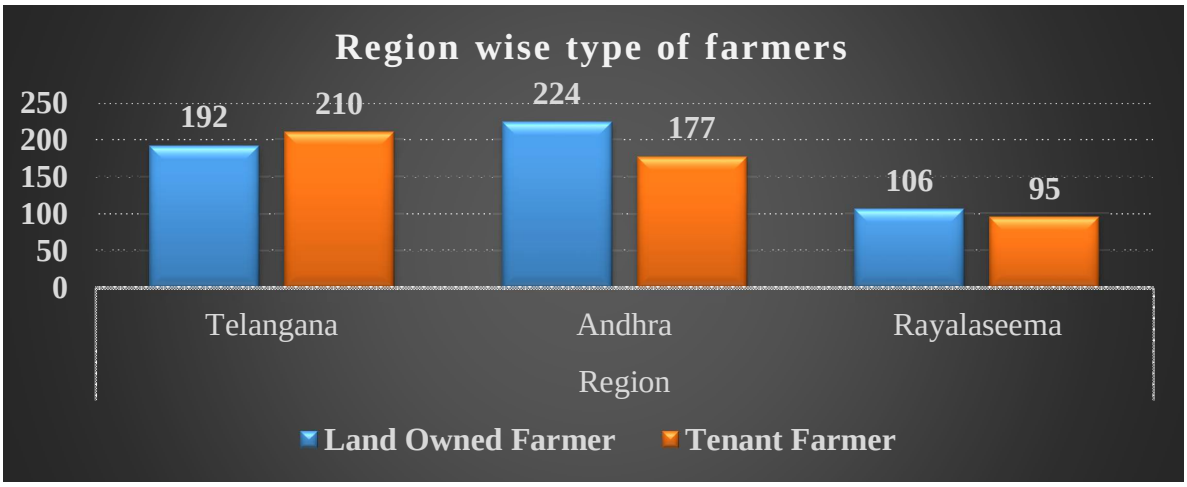
Chart. 4. 1.2(a): Type of farmers

Subsequently, total respondents were sourced from all the three region. The following table 4.1.2(b) shows the composition of respondents from respective regions.

Table 4.1.2(b): Region wise type of farmers

Region	Type of Farmers		Total
	Land Owned Farmer	Tenant Farmer	
Telangana	192	210	402
Andhra	224	177	401
Rayalaseema	106	95	201
Total	522	482	1004

According to the following bar chart, we can notice that Telangana region has more percentage of tenant farmers and on the other hand, Andhra region has land owned farmers.



4.1.3. Educational Status

Looking at the table 4.1.3, it can be found that, majority (53 %, i.e. 529) of the total respondents were illiterates, who do not have even basic literacy; and 47 % (i.e. 475) were literate, who were able to read and write. This was also depicted in the form of pie chart. 4.1.3.

Table. 4. 1.3: Educational status of farmers

Educational Status			
		Frequency	Percent
	Illiterate	529	52.7
	Literate	475	47.3
	Total	1004	100.0

Source: compiled from field study

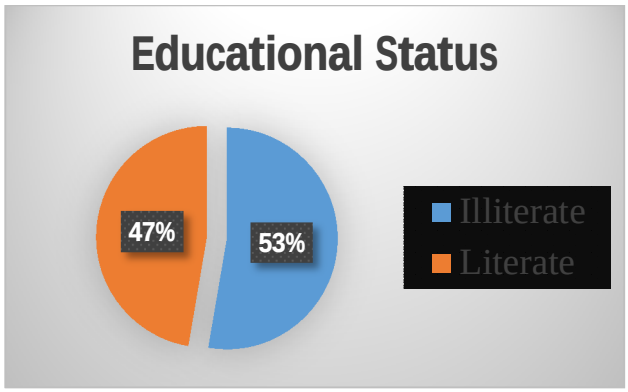


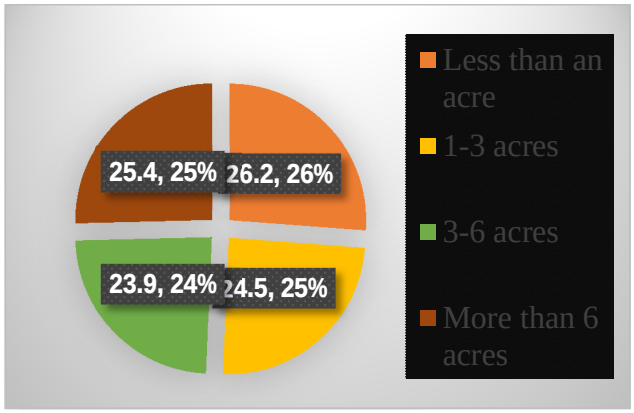
Chart 4.1.3: Educational status of farmers

4.1.4. Area of total land holding

Looking at the table 4.1.4, we can find that 26 % of the total respondents have less than an acre of land while 25% farmers have more than 6 acres of land. Another 49 % of the total respondents have land between 1-6 acres. Thus, this study has a WELL COMPOSED SAMPLE. This is also depicted in the form of pie chart. 4.1.4

Total Land Holdings		
	Frequency	Percent
Less than an acre	263	26.2
1-3 acres	246	24.5
3-6 acres	240	23.9
More than 6 acres	255	25.4
Total	1004	100.0

Table. 4. 1.4: Area of land holding by farmers



Source: compiled from field study **Chart 4.1.4: Area of land holding by farmers**

4.1.5. Area in paddy cultivation

Looking at the table 4.1.5, we can find that 44.8 % of the total respondents cultivate paddy in area of between 1-3 acres. 26% of the respondents cultivate paddy in 3-6 acres. Thus, majority of the paddy was grown in the area between 1-3 acres. This is also depicted in the form of pie chart. 4.1.5.

Table. 4. 1.5: Area in paddy cultivation

Area in paddy cultivation		
	Frequency	Percent
Less than an acre	138	13.7
1-3 acres	449	44.8
3-6 acres	262	26.1
More than 6 acres	155	15.4
Total	1004	100.0

Source: compiled from field study

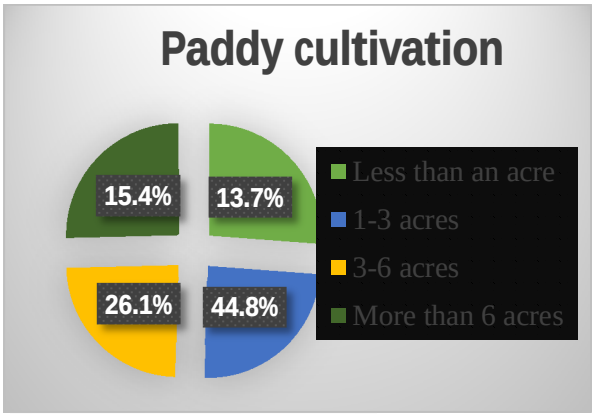


Chart .4.1.5: Area in paddy cultivation

4.1.6. Source of water

Looking at the table 4.1.6, we can find that 26 % of the total respondents have less than an acre of land while 25% farmers have more than 6 acres of land. Another 49 % of the total respondents have land between 1-6 acres. Thus, this study has good composition of the samples. This is also depicted in the form of pie chart. 4.1.6.

Table. 4. 1.6: Source of water

Source of water			
		Frequency	Percent
	Bore well	324	32.2
	Canals	331	33.0
	Ponds	349	34.8
	Total	1004	100.0

Source: compiled from field study

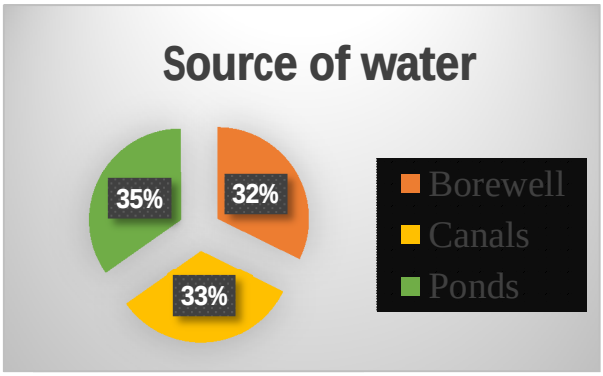


Chart 4.1.6: Source of water

4.2. Objective-1: To know the farmers' perception towards the rice procurement practice of the FCI

To fulfil the objective-1, following analyses were carried out to know the farmers' perception towards procurement practice of Food Corporation of India. Let us examine them on by one.

4.2 .1. Farmers' perceptions towards the price practice

The factor-Price comprises four statements. Analyses related to these statements are presented one by one.

4.2.1.1. Farmers' response to the statement, "FCI's procurement price is reasonable."

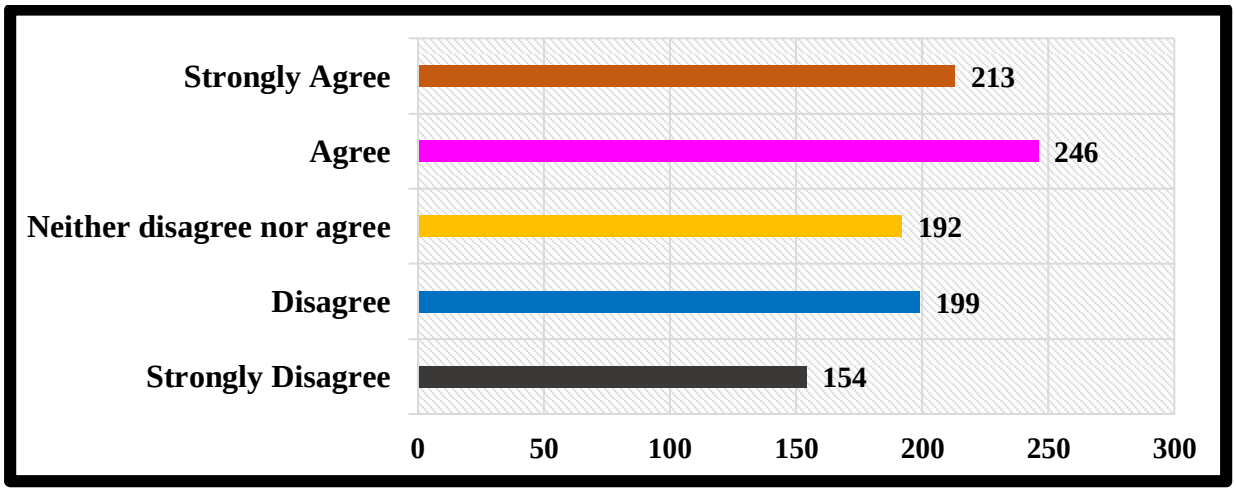
Farmers were asked to give their response on, whether FCI's Procurement price is reasonable or not. Based up on their responses, data was analysed by using cross-tabulation and results were presented in the following table. 4.2.1.1.

Table 4.2.1.1. Farmers' response on the statement, "FCI's procurement price is reasonable"

	Frequency	Percent	Cumulative Percent
Strongly Disagree	154	15.3	15.3
Disagree	199	19.9	35.2
Neither Disagree nor agree	192	19.1	54.3
Agree	246	24.5	78.8
Strongly Agree	213	21.2	100.0
Total	1004	100.0	

Looking at the table 4.2.1.1, we can find that, 45.7% of the total respondents agreed that FCI's Procurement price was reasonable. 19.1% of the total respondents gave mixed opinion and rest 35.2% of total respondents complained that FCI's Procurement price was reasonable. It was also depicted in the following chart.

FCI's Procurement price is reasonable



4.2.1.2. Farmers' response to the statement, "FCI's procurement price is more than market price."

Farmers were asked to give their response on, whether FCI's Procurement price was more than market price. Based up on their responses, data was analysed by using cross-tabulation and results were presented in the following table-4.2.1.2.

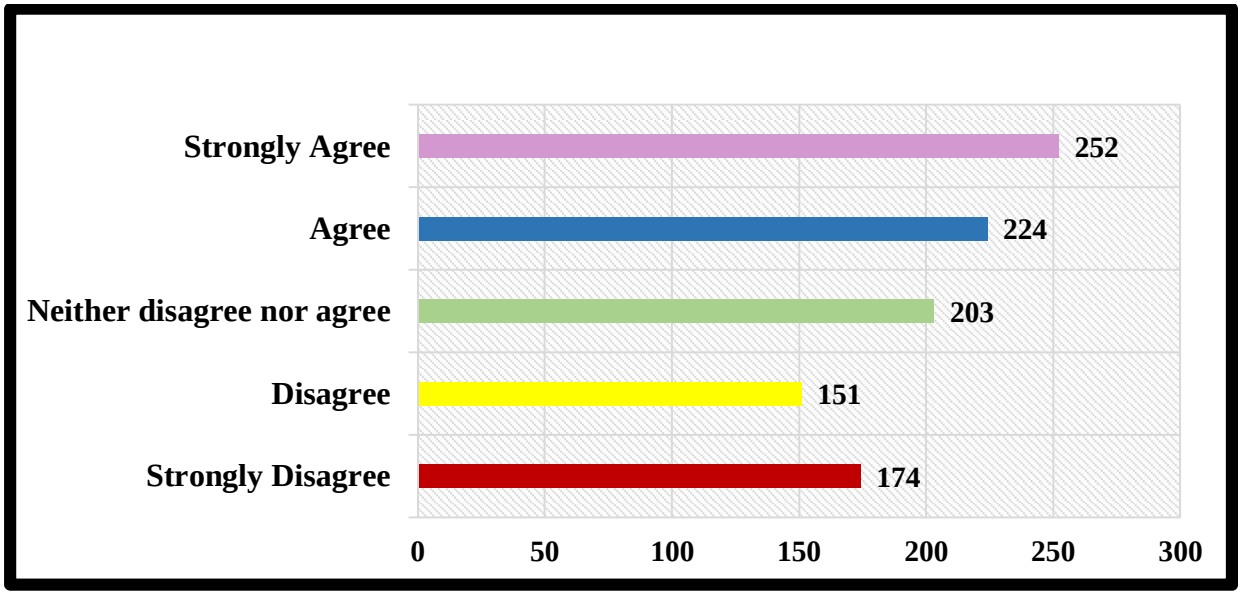
Table. 4.2.1.2. Farmers' response on the statement, "FCI's procurement price is more than market price."

	Frequency	Percent	Cumulative Percent
Strongly Disagree	174	17.3	17.3
Disagree	151	15.1	32.4
Neither Disagree nor agree	203	20.2	52.6

Agree	224	22.3	74.9
Strongly Agree	252	25.1	100.0
Total	1004	100.0	

Looking at the table 4.2.1.2, it was found that, 47.4% of the total respondents agreed that FCI's Procurement price was more than market price. 20.2% of the total respondents gave mixed opinion and rest 32.4% of total respondents complained that FCI's Procurement price was not more than market price. Thus, based up on the opinion of majority respondents, it can be concluded that FCI's Procurement price was more than market price. It was also depicted in the following chart.

FCI's Procurement price is more than market price



4.2.1.3. Farmers' response to the statement, "FCI's procurement price gives me good profits."

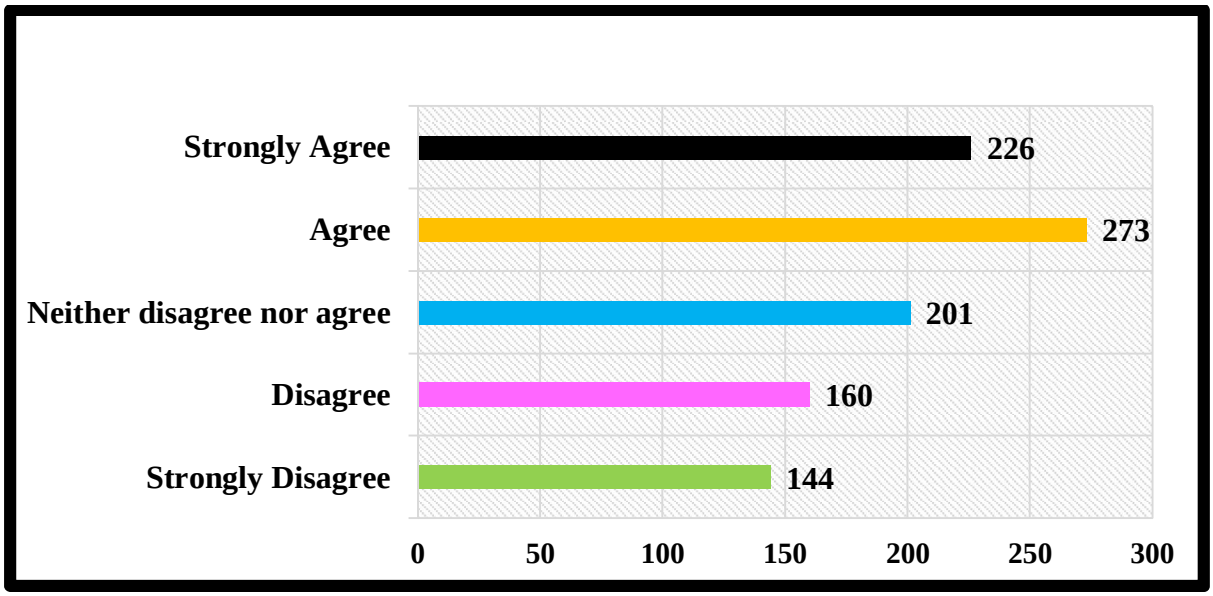
Farmers were asked to give their response on, whether farmers get good profits at FCI's procurement price. Data was analysed by using cross-tabulation and results were presented in the following table. 4.2.1.3.

Table 4.2.1.3.: Farmers' response to the statement, "FCI's procurement price gives me good profits."

	Frequency	Percent	Cumulative Percent
Strongly Disagree	144	14.3	14.3
Disagree	160	16.0	30.3
Neither Disagree nor agree	201	20.0	50.3
Agree	273	27.2	77.5
Strongly Agree	226	22.5	100.0
Total	1004	100.0	

According to table 4.2.1.3, we can find that, 49.7% of the total respondents agreed that farmers get good profits at FCI's procurement price. 20% of the total respondents gave mixed opinion and rest 30.3% of total respondents complained that farmers do not get good profits at FCI's procurement price. Thus, based up on the opinion of majority respondents, it can be concluded that farmers get good profits at FCI's procurement price. It is also depicted in the following chart.

FCI's procurement price gives me good profits



4.2.1.4. Farmers' response to the statement, "I like to sell my produce at FCI's price."

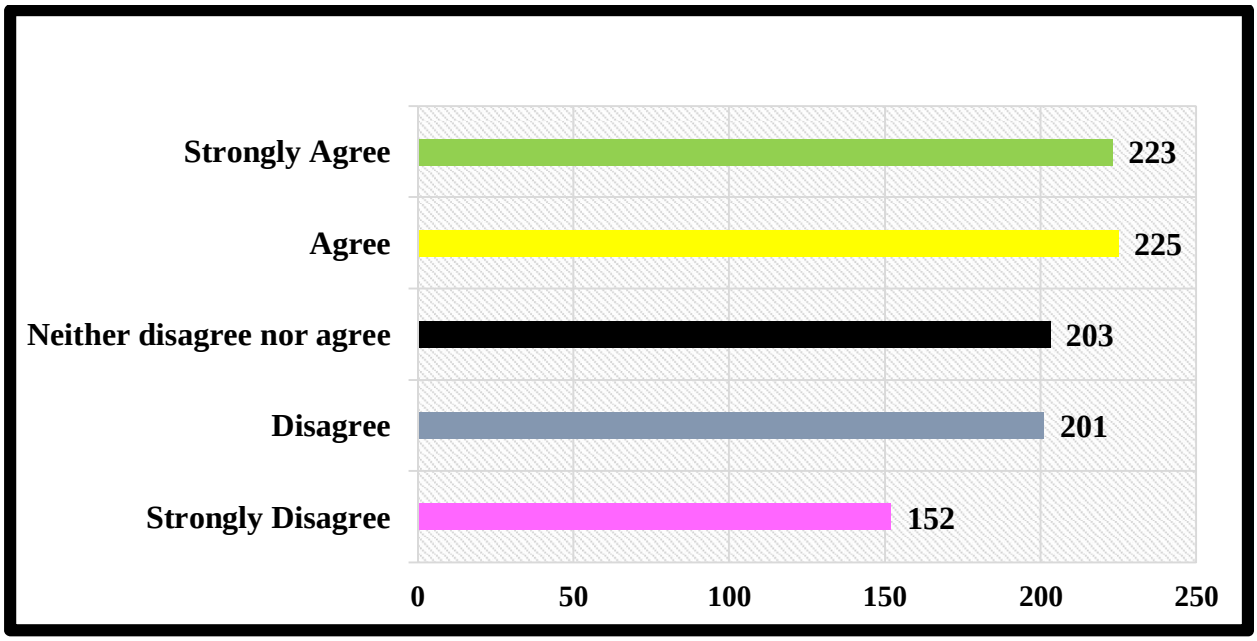
Farmers were asked to give their response on, whether they like to sell their produce at FCI's price, data was analysed by using cross-tabulation and results were presented in the following table.4.2.1.4.

Table 4.2.1.4: farmers' response to the statement, "I like to sell my produce at FCI's price."

	Frequency	Percent	Cumulative Percent
Strongly Disagree	152	15.1	15.1
Disagree	201	20.1	35.2
Neither Disagree nor agree	203	20.2	55.4
Agree	225	22.4	77.8
Strongly Agree	223	22.2	100.0
Total	1004	100.0	

Looking at table 4.2.1.4, we can notice that, 44.6% of the total respondents agreed that they like to sell their produce at FCI's price. 20.2% of the total respondents gave mixed opinion and rest 35.2% of total respondents complained that they do not like to sell their produce at FCI's price. Thus, based up on the opinion of majority respondents, it can be concluded that farmers like to sell their produce at FCI's price. It is also depicted in the following chart.

I like to sell my produce at FCI's price



In this section, hypotheses pertaining to procurement practice of FCI were tested based up on the farmers' perceptions. Procurement practice was evaluated by considering 4 core dimensions- price practice, Weighment practice, payment practice and responsiveness. An attempt has been made to examine them each one by one.

4.2.1.5 Hypotheses-1 testing related to farmers' perceptions towards price practice of FCI

Farmers' perception towards price was examined by formulating and testing the following hypothesis.

Type of farmers and their perception towards price practice of FCI for procurement of rice

To examine the group difference between land-owned and tenant farmers with respect to their perception towards price practice of FCI for procurement of rice. Following hypothesis was formulated to fulfil the objective of the study.

H1a: There is a significant difference between the land owned and tenant farmers with respect to their perception towards price practice of FCI.

To test this hypothesis, Independent sample t-test was applied. The mean and standard deviation values of land owned farmers were (M=3.0015, SD=1.1728) respectively while (M=2.8933, SD=1.2201) for tenant farmers. Results are presented in the following tables.

Table 4.2.1.5(a) Group statistics between type of farmers and price perception

	Type of Farmers	N	Mean	Std. Deviation	Std. Error Mean
Price	Land Owned Farmer	522	3.0015	1.17284	.05133
	Tenant Farmer	482	2.8933	1.22019	.05558

Levene's test was used to analyse the equality of variances, since it was insignificant (F=.1.756, p=.185>0.05), equal variances were assumed and considered the t-value as 1.433 at 1002 degrees of freedom and which was insignificant (.152 > 0.05).

Table 4.2.1.5. (b). Independent sample test for type of farmers and price perception

		Levene's Test for Equality of Variances		t-test for Equality of Means			
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference
Price	Equal variances assumed	1.756	.185	1.433	1002	.152	.10822
	Equal variances not assumed			1.430	987.942	.153	.10822

Hence, H1 was rejected and it can be concluded that there was no significant difference between the land owned and tenant farmers with respect to their perception towards price practice of FCI. It means, land owned and tenant farmers have almost the same perception towards the price practice of FCI.

4.2.1.6 Region-wise farmers and their perception towards price practice of FCI

After knowing the result that price practice of FCI for procurement of rice was not positive at aggregate level by considering responses of all the respondents together, now another

attempt is made to know whether the same perception prevails among all the farmers belong to three regions respectively. To analyse this, following hypothesis was formulated,

H1b: There is a significant difference among the farmers of three regions with respect to the price practice of FCI.

To test this hypothesis, one-way Analysis of Variance (ANOVA) was used to analyse whether significant difference exist among the all three regions of farmers with respect to the price practice of FCI. The result of ANOVA was shown in the following tables.

Table 4.2.1.6(a): Descriptive of price perception region wise

	N	Mean	Std. Deviation	Std. Error
Telangana	402	2.9483	1.19019	.05936
Andhra	401	2.9349	1.19160	.05951
Rayalaseema	201	2.9814	1.22365	.08631
Total	1004	2.9496	1.19643	.03776

Looking at the above table, we can find the mean and standard deviation values of farmers belong to Telangana region were (M=2.9483, SD=1.190), for Andhra region were (M=2.9349, SD=1.191) and for Rayalaseema were (M=2.9814, SD=1.2236). Thus, from the above table, we can observe that mean values in all the three regions are almost same. Hence, we can conclude that the same perception prevails among all the farmers belonging

to the three regions with respect to price practice of FCI. Moreover, the result of ANOVA table shows an insignificant F value (F=.101, p =.904 at DF= 2, 1001).

Table 4.2.1.6(b): ANOVA table for price perception of farmers region wise

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.290	2	.145	.101	.904
Within Groups	1435.458	1001	1.434		
Total	1435.748	1003			

Since the insignificant f-value, **H1b is rejected** and concluded that there was no significant difference among the all three regions of farmers with respect to their perceptions towards price practice of FCI.

4.2.1.7 Farmers' educational status and their perception towards price practice of FCI.

Researcher has examined the group difference between the literate and illiterate farmers with respect to their perception towards price practice of FCI for procurement of rice. Following hypothesis was formulated to fulfil the objective of the study.

H1c: There is a significant difference between literate and illiterate farmers in respect to their perception towards price practice of FCI in procurement of rice.

To test this hypothesis, Independent sample t-test was applied. The mean and standard deviation values of land owned farmers were (M=2.9953, SD=1.21813) and for tenant farmers were (M=2.8986, SD=1.17097). Thus, the mean difference between land owned

and tenant farmers was found as low as .09669. Results were presented in the following tables.

Table 4.2.1.7(a) Group statistics between type of farmers and price perception

	Educational Status	N	Mean	Std. Deviation	Std. Error Mean
Price	Illiterate	529	2.9953	1.21813	.05296
	Literate	475	2.8986	1.17097	.05373

Levene's test was used to analyse the equality of variances, since it was insignificant (F=.3.622, p=.057>0.05), equal variances were assumed and considered the t-value as 1.279 at 1002 degrees of freedom and which was insignificant (.201 > 0.05).

Table 4.2.1.7b). Independent sample test for educational status of farmers and their price perception

		Levene's Test for Equality of Variances		t-test for Equality of Means			
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference
Price	Equal variances assumed	3.622	.057	1.279	1002	.201	.09669
	Equal variances not assumed			1.282	997.342	.200	.09669

Hence, H1c can be rejected and can be concluded that there was no significant difference exist between the literate and illiterate farmers with respect to their perception towards price practice of FCI for procurement of rice. It means literate and illiterate farmers have the same perception towards price practice of FCI.

4.2.2.1 Farmers' perceptions towards weighment practice of FCI

The factor-Weighment comprises of five statements. Analyses related to these statements are presented one by one.

4.2.2.2 Farmers' response to the statement, "FCI's weighment process is transparent."

Farmers were asked to give their response on, whether "FCI's Weighment process was transparent or not. Based up on their responses, data was analysed by using cross-tabulation and one sample

T-test. Results were presented in the following table.4.2.2.2.

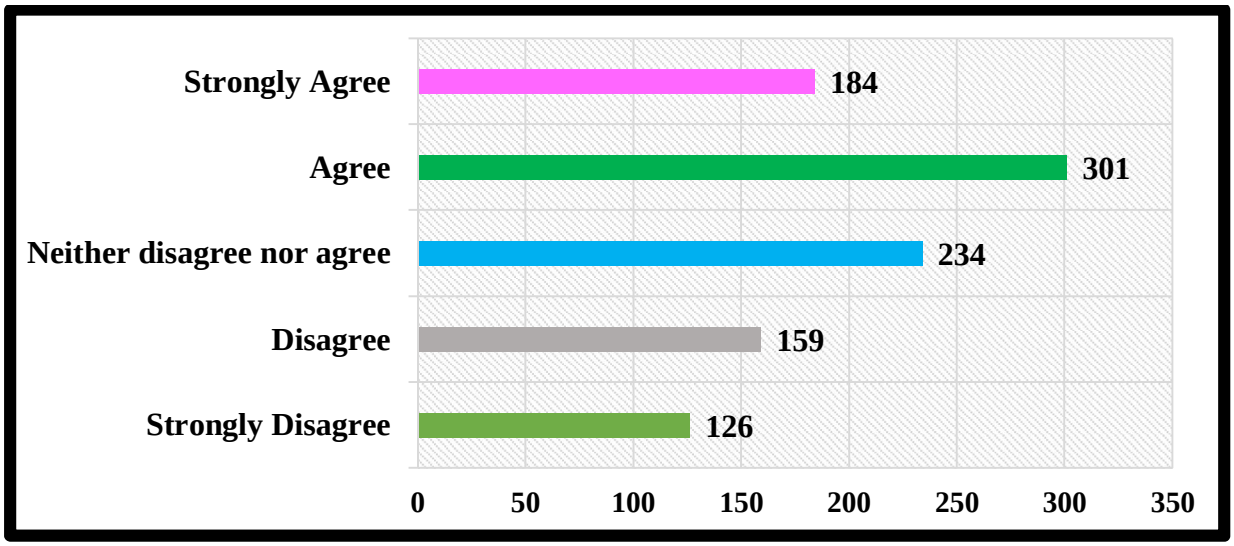
Table 4.2.2.2. Farmers' response on the statement, "FCI's weighment process was transparent."

	Frequency	Percent	Cumulative Percent
Strongly Disagree	126	12.5	12.5
Disagree	159	15.9	28.4
Neither Disagree nor agree	234	23.3	51.7
Agree	301	30.0	81.7

Strongly Agree	184	18.3	100.0
Total	1004	100.0	

According to table 4.2.2.2, it was found that, 48.3% of the total respondents agreed that FCI's Weighment process was transparent. 23.3% of the total respondents gave mixed opinion and rest 28.4% of total respondents complained that FCI's Weighment process was not transparent. The above results are also depicted in the following chart.

FCI's Weighment process is transparent



4.2.2.3. Farmers' response to the statement, "weighment practices of FCI personnel are trust worthy."

Farmers were asked to give their response on, whether they trust the Weighing personnel of FCI. Based up on their responses, data was analysed by using cross-tabulation and results were presented in the following table. 4.2.2.3.

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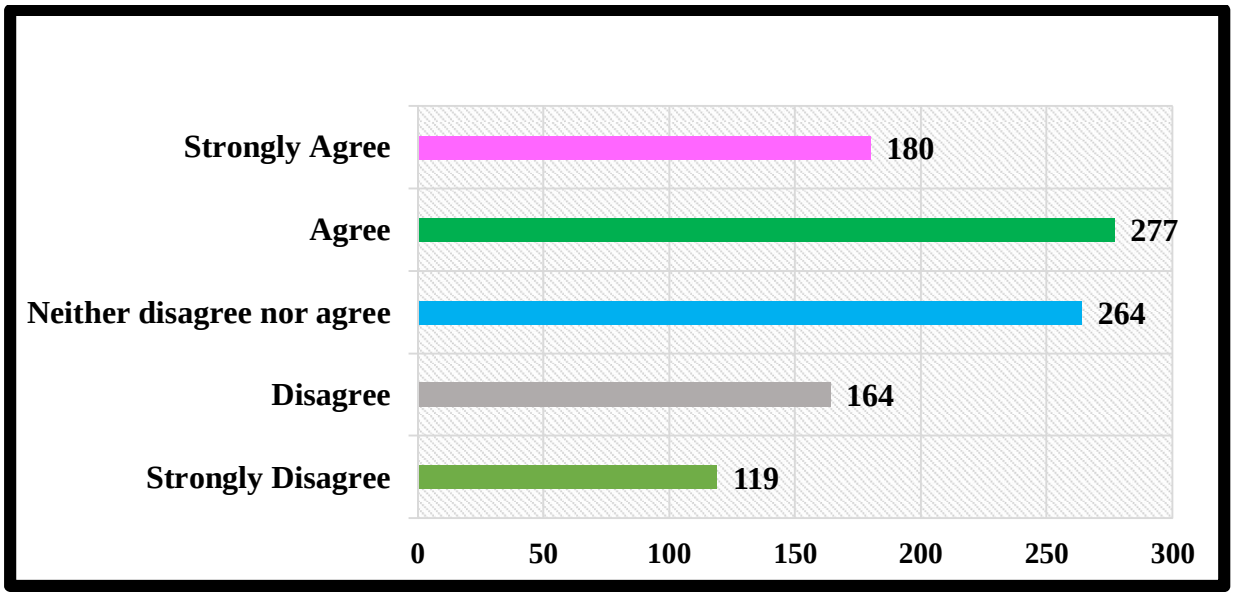
Table 4.2.2.3. Farmers' response to the statement, "weighment practices of FCI personnel are trust worthy."

	Frequency	Percent	Cumulative Percent
Strongly Disagree	119	11.9	11.9
Disagree	164	16.3	28.2
Neither Disagree nor agree	264	26.3	54.5
Agree	277	27.6	82.1
Strongly Agree	180	17.9	100.0
Total	1004	100.0	

Looking at the table 4.2.2.3, we can find that, 45.5% of the total respondents agreed that they trust the Weighing personnel of FCI. 26.3% of the total respondents gave mixed opinion and rest 28.2% of total respondents complained that they do not trust the Weighing personnel of FCI. Thus, based up on the opinion of majority respondents, it can be concluded that majority of the farmers trust the Weighing personnel of FCI. It is also depicted in the following chart.

Weighment practices of FCI personnel are trust worthy



4.2.2.4. Farmers' response to the statement, "FCI uses standard weighment tools."

Farmers were asked to give their response on, whether FCI uses standard Weighment tools or not. Based up on their responses, data was analysed by using cross-tabulation and results were presented in the following table.4.2.2.4.

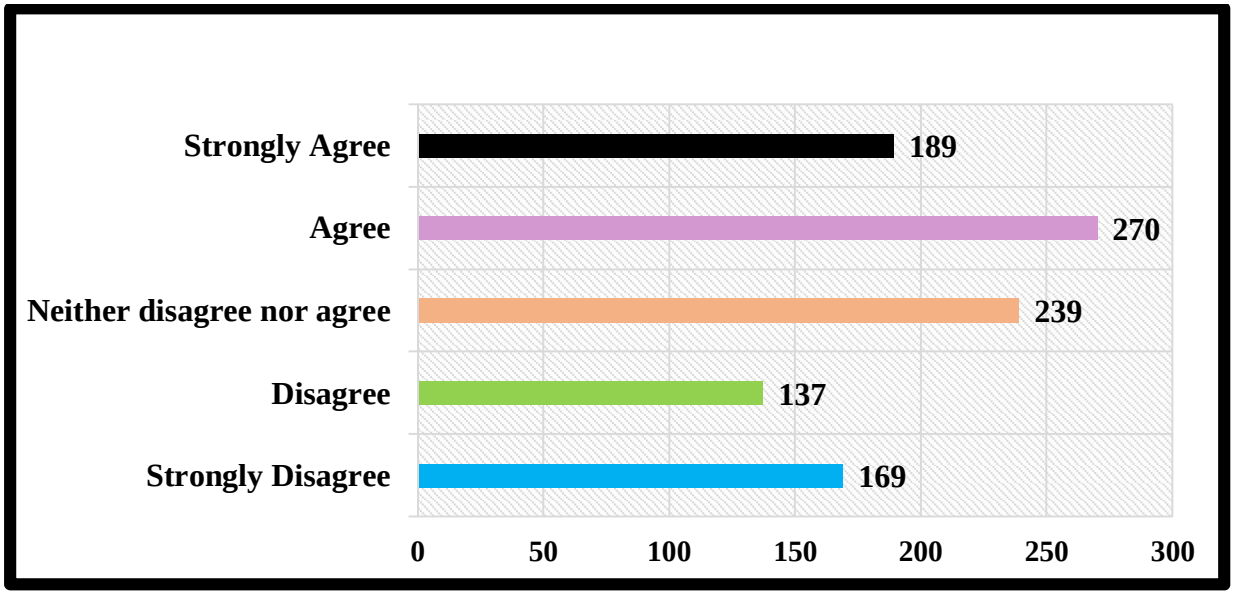
Table 4.2.2.4. Farmers' response to the statement, "FCI uses standard weighment tools."

	Frequency	Percent	Cumulative Percent
Strongly Disagree	169	16.8	16.8
Disagree	137	13.7	30.5
Neither Disagree nor agree	239	23.8	54.3
Agree	270	26.9	81.2

Strongly Agree	189	18.8	100.0
Total	1004	100.0	

Looking at the table 4.2.2.4, we can notice that, 45.7% of the total respondents agreed that FCI uses standard Weighment tools. 23.8% of the total respondents gave mixed opinion and rest 30.5% of total respondents complained that FCI does not use standard Weighment tools. Thus, based up on the opinion of majority respondents, it can be concluded FCI uses standard Weighment tools. It was also depicted in the following chart.

FCI uses standard weighment tools



4.2.2.5. Farmers' response to the statement, "FCI's weighment process are understood by me."

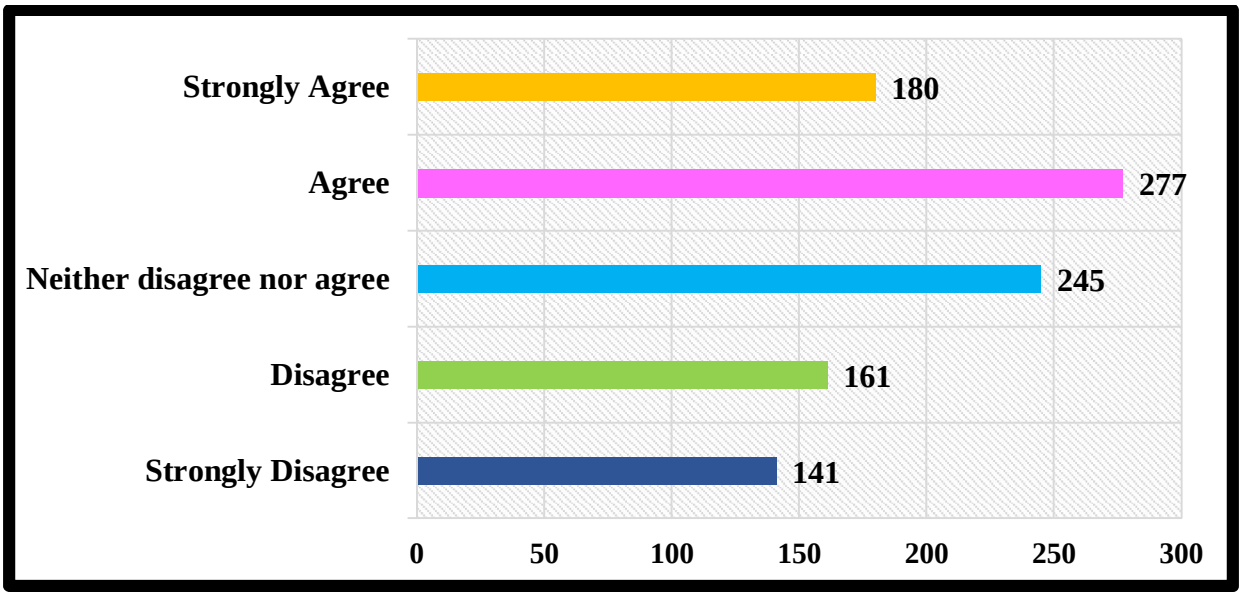
Farmers were asked to give their response on, whether farmers understand the FCI's Weighment process. Data was analysed by using cross-tabulation and results were presented in the following table.4.2.2.5.

Table 4.2.2.5: Farmers' response to the statement, "FCI's weighment process are understood by me."

	Frequency	Percent	Cumulative Percent
Strongly Disagree	141	14.0	14.0
Disagree	161	16.1	30.1
Neither Disagree nor agree	245	24.4	54.5
Agree	277	27.6	82.1
Strongly Agree	180	17.9	100.0
Total	1004	100.0	

According to table 4.2.2.5, we can find that, 45.5% of the total respondents agreed that they understand the FCI's Weighment process. 24.4% of the total respondents gave mixed opinion and rest 30.1% of total respondents complained that they do not understand the FCI's Weighment process. Thus, based up on the opinion of majority respondents, it can be concluded that farmers understand the FCI's Weighment process. It is also depicted in the following chart.

FCI's weighment process are understood by me



4.2.2.6 Farmers' response to the statement, "I like the FCI's weighment practice."

Farmers were asked to give their response on, whether they like FCI's Weighment practice or not. Data was analysed by using cross-tabulation and results were presented in the following table 4.2.2.6 and the bar chart.

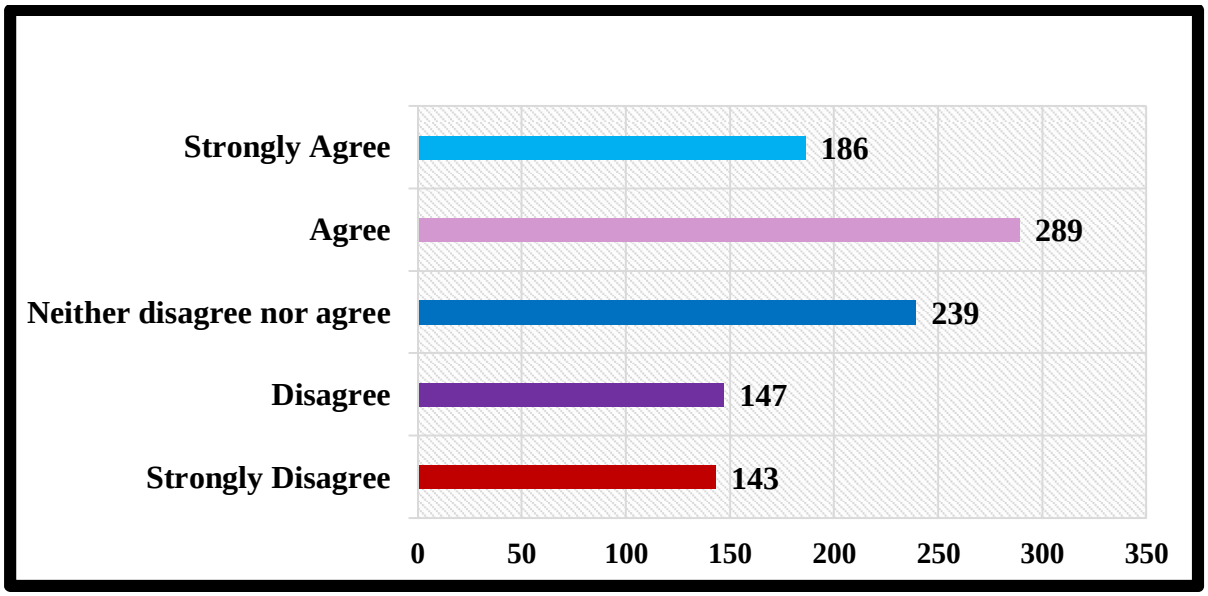
Table 4.2.2.6: Farmers' response to the statement, "I like the FCI's weighment practice."

	Frequency	Percent	Cumulative Percent
Strongly Disagree	143	14.2	14.2
Disagree	147	14.6	28.9
Neither Disagree nor agree	239	23.8	52.7
Agree	289	28.8	81.5

Strongly Agree	186	18.5	100.0
Total	1004	100.0	

Looking at the table 4.2.2.6, we can notice that, 47.3% of the total respondents agreed that FCI they like FCI's Weighment practice. 23.8% of the total respondents gave mixed opinion and rest 28.9% of total respondents complained that they do not like FCI's weighment practice. Thus, based up on the opinion of majority respondents, it can be concluded that majority of the farmers like FCI's weighment practice. It was also depicted in the following chart.

I like the FCI's weighment practice



4.2.2.7 Hypothesis-2 testing related to farmers perception towards the weighment practice of FCI

Farmers' perception towards Weighment practice was examined by formulating and testing the following hypothesis.

Type of farmers and their perception towards weighment practices of FCI

Researcher has examined the group difference between land-owned and tenant farmers with respect to their perception towards weighment practice of FCI for procurement of rice. Thus, following hypothesis was formulated and tested to fulfil the objective.

H2a: There is a significant difference between the land owned and tenant farmers with respect to their perception towards weighment practice of FCI.

To test this hypothesis, Independent sample t-test was applied. The mean and standard deviation values of land owned farmers were (M=2.8943, SD=1.0494) and for tenant farmers were (M=2.8933, SD=1.2201). Results were presented in the following tables.

Table 4.2.2.7(a): Group statistics for type of farmers and perception towards weighment

	Type of Farmers	N	Mean	Std. Deviation	Std. Error Mean
Weighment	Land Owned Farmer	522	2.8943	1.04940	.04593
	Tenant Farmer	482	2.8514	1.07347	.04890

Levene's test was used to analyse the equality of variances, since it was insignificant (F=.412, p=.521>0.05), equal variances were assumed and considered the t-value as .641 at 1002 degrees of freedom and which was insignificant (.552 > 0.05).

Table 4.2.2.7(b): Independent sample test for type of farmers and perception towards weighment

		Levene's Test for Equality of Variances		t-test for Equality of Means			
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference
Weighment	Equal variances assumed	.412	.521	.641	1002	.522	.04293
	Equal variances not assumed			.640	991.591	.522	.04293

Hence, H2a was rejected and can be concluded that there no significant difference exist between the land owned farmers and tenant farmers with respect to their perception towards Weighment practice of FCI for procurement of rice. It means land owned and tenant farmers have the same kind of perception with respect to the Weighment practice of FCI.

4.2.2.8 Region-wise farmers and their perception towards weighment practice of FCI

Researcher made an attempt to examine, whether the farmers belonging to the three regions have same kind of perceptions or differ significantly with respect to Weighment practice of FCI. To analyse this, following hypothesis was formulated,

H2b: There is a significant difference between the farmers of three regions with respect to the weighment practice of FCI.

To test this hypothesis, one-way Analysis of Variance (ANOVA) was used to analyse whether significant difference exist among the three regions of farmers with respect to the Weighment practice of FCI. The result of ANOVA was shown in the following tables.

Table 4.2.2.8(a): Region Wise descriptive for perception towards weighment

	N	Mean	Std. Deviation	Std. Error
Telangana	402	2.8486	1.05154	.05245
Andhra	401	2.9066	1.03446	.05166
Rayalaseema	201	2.8584	1.13203	.07985
Total	1004	2.8737	1.06071	.03348

Looking at the above table, we can find the mean and standard deviation values of farmers belong to Telangana region were (M=2.8486, SD=1.051), for Andhra region were (M=2.9066, SD=1.0344) and for Rayalaseema were (M=2.8584, SD=1.132). Thus, from the above table, we can observe that mean values of all the three regions were almost the same. Hence, we can conclude that the same kind of perception prevails among the farmers

belonging to the three regions with respect to Weighment practice of FCI. Moreover, the result of ANOVA table shows an insignificant F value (F=.326, p =.722 at DF= 2, 1001).

Table 4.2.2.8(b): ANOVA table for perception towards weighment

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.734	2	.367	.326	.722
Within Groups	1127.741	1001	1.127		
Total	1128.475	1003			

Since the insignificant f-value, H2b can be rejected and is concluded that there was no significant difference existing among the three regions of farmers with respect to the Weighment practice of FCI.

4.2.2.9 Farmers' literacy status and their perceptions towards weighment practice of FCI.

Researcher has examined the group difference between literate and illiterate farmers with respect to their perception towards Weighment practice of FCI for procurement of rice. Thus, following hypothesis was formulated and tested to fulfil the objective.

H2c: There is a significant difference between the literate and illiterate farmers with respect to their perception towards weighment practice of FCI.

To test this hypothesis, Independent sample t-test was applied. The mean and standard deviation values of literate farmers were (M=2.8767, SD=1.03500) likewise, for illiterate farmers were (M=2.8767, SD=1.08424). Results were presented in the following tables.

Table 4.2.2.9(a): Group statistics for literacy status and perception towards weighment

	Educational Status	N	Mean	Std. Deviation	Std. Error Mean
Weighment	Illiterate	529	2.8767	1.08424	.04714
	Literate	475	2.8704	1.03500	.04749

Levene's test was used to analyse the equality of variances, since it was insignificant (F=.1.916, p=.167>0.05), equal variances were assumed and considered the t-value as .093 at 1002 degrees of freedom and which was insignificant (.926 > 0.05).

Table 4.2.2.9(b): Independent sample test for literacy status and perception towards weighment

	Levene's Test for Equality of Variances		t-test for Equality of Means			
	F	Sig.	T	df	Sig. (2-tailed)	Mean Difference

Weighment	Equal variances assumed	1.916	.167	.093	1002	.926	.00623
	Equal variances not assumed			.093	998.245	.926	.00623

Hence, H2c can be rejected and was concluded that there no significant difference exist between the literate and illiterate farmers with respect to their perception towards Weighment practice of FCI for procurement of rice. It means literate and illiterate farmers have the same kind of perception with respect to the Weighment practice of FCI.

4.2.3 Farmers perceptions towards the payment practice of FCI

The factor-Payment comprises of three statements. Analysis related to these statements are presented one by one

4.2.3.1.Farmers' response to the statement, "FCI payments are timely."

Farmers were asked to give their response on, whether FCI' pays payment is in time or not. Data was analysed by using cross-tabulation and results were presented in the following table.4.2.3.1 and the bar chart.

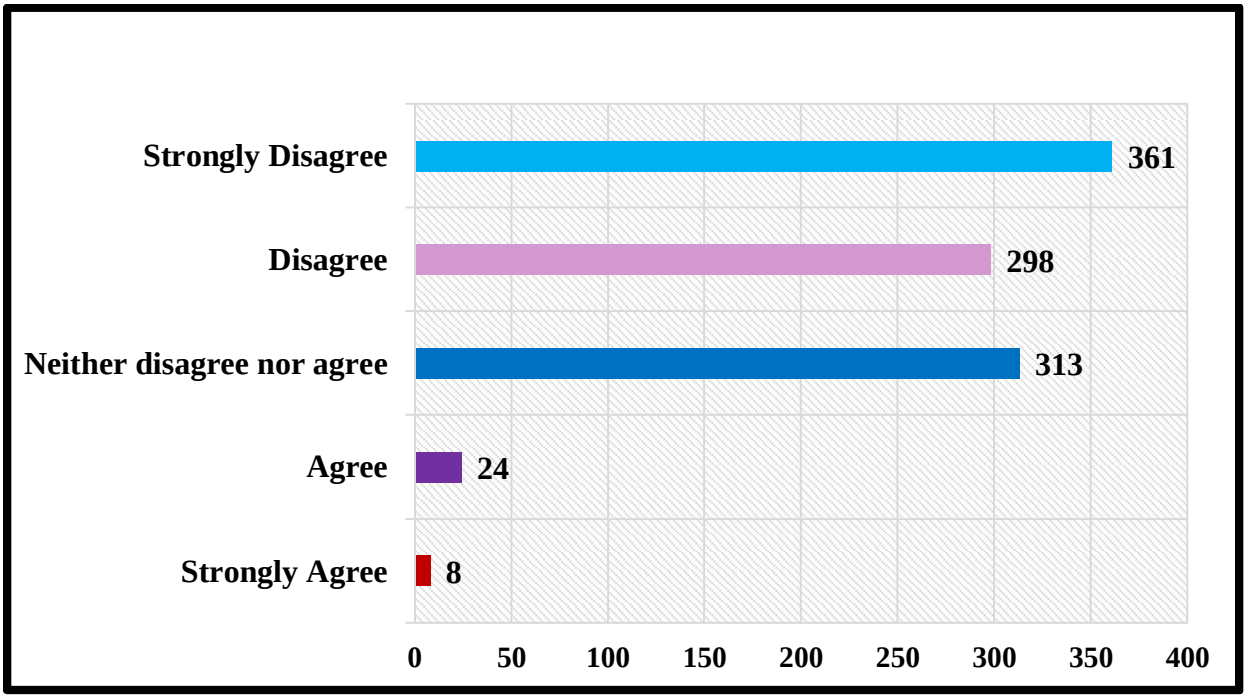
Table 4.2.3.1: Farmers' response to the statement, "FCI payments are timely."

	Frequency	Percent	Cumulative Percent
Strongly Disagree	361	36.0	36.0
Disagree	298	29.7	65.7

Neither Disagree nor agree	313	31.2	96.9
Agree	24	2.4	99.2
Strongly Agree	8	0.8	100.0
Total	1004	100.0	

According to table 4.3.3.1, we can find that, 65.7% of the total respondents Disagreed with the above statement. Which means FCI does not pay the money on time. 31.2% of the respondents gave mixed response and rest only 3.2% of total respondents agreed. Thus, based up on the opinion of majority respondents, it can be concluded that FCI does not pay the money on time to the farmers. It is also depicted in the following chart.

"FCI payments are timely"



4.2.3.2.Farmers' response to the statement, "FCI's payment procedure is good."

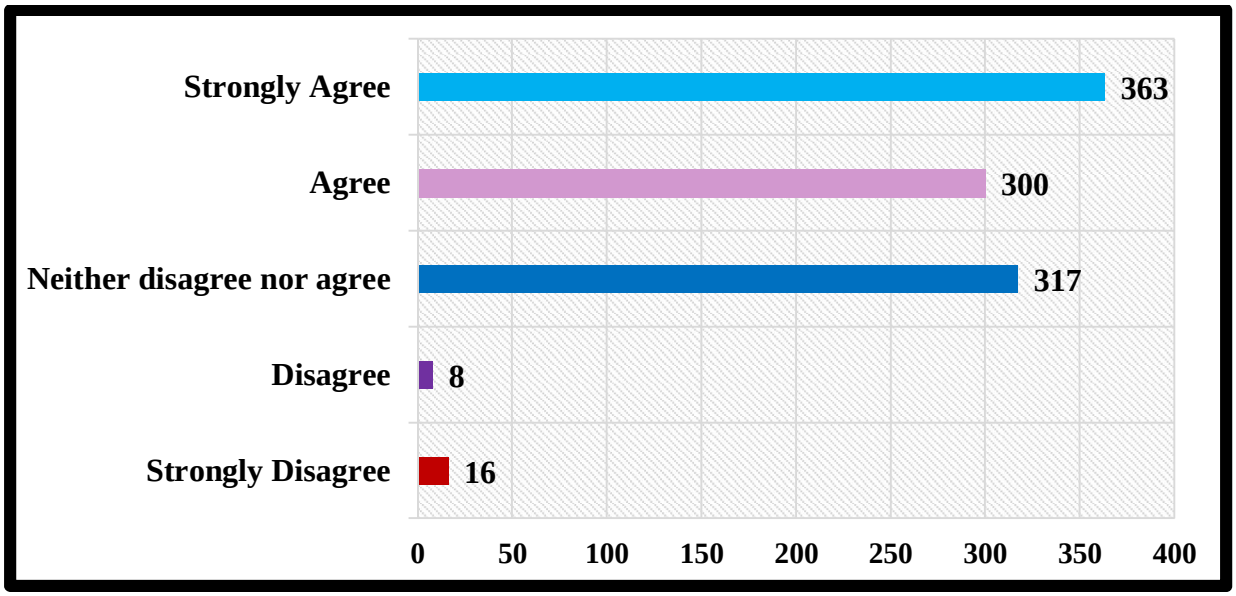
Farmers were asked to give their response on, whether FCI's payment procedure was good or not. Based up on their responses, data was analysed by using cross-tabulation and results were presented in the following table 4.2.3.2.

Table 4.2.3.2: Farmers' response to the statement, "FCI's payment procedure is good."

	Frequency	Percent	Cumulative Percent
Strongly Disagree	16	1.6	1.6
Disagree	8	0.8	2.4
Neither Disagree nor agree	317	31.6	34.0
Agree	300	29.8	63.8
Strongly Agree	363	36.2	100.0
Total	1004	100.0	

Table 4.2.3.2 reveals that, 66% of the total respondents agreed that FCI's payment procedure was good. 31.6% of the total respondents gave mixed opinion and rest 2.4% of total respondents complained that FCI's payment procedure was not good. Thus, based on the opinion of majority respondents, it can be concluded that farmers perceive that FCI's payment procedure was good. For better understanding, it is also depicted in the following chart.

FCI's payment procedure is good



4.2.3.3.Farmers' response to the statement, "I am satisfied with the payment process of FCI."

Farmers were asked to give their response on, whether FCI' staff provide prompt service to farmers or not. Based up on their responses, data was analysed by using cross-tabulation and results were presented in the following table 4.2.3.3.

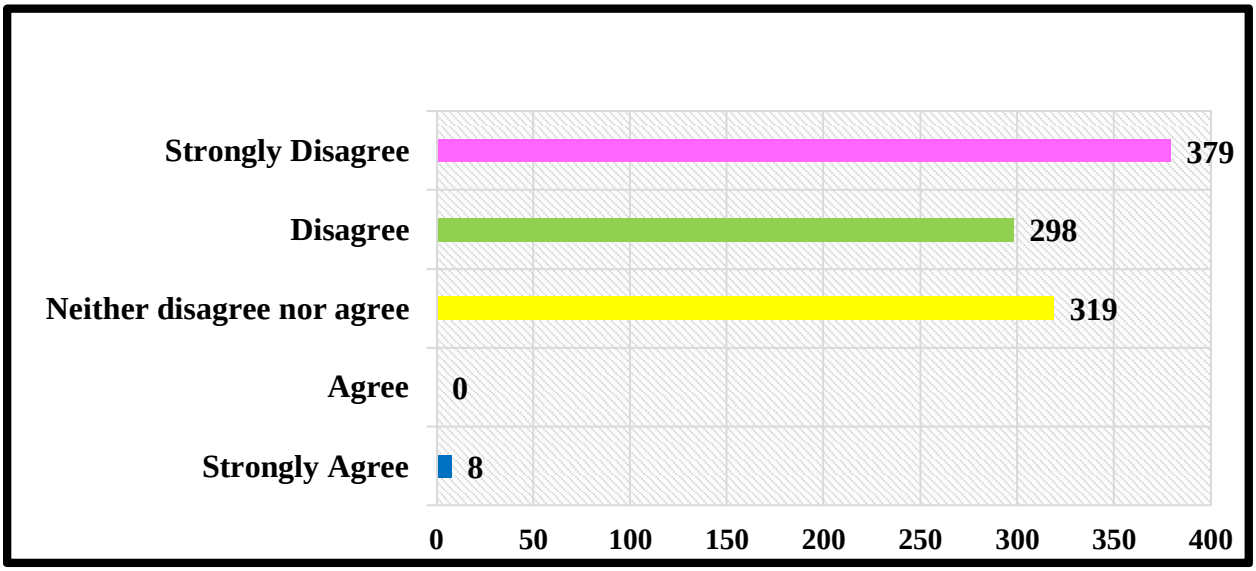
Table 4.2.3.3: Farmers' response to the statement, "I am satisfied with the payment process of FCI."

	Frequency	Percent	Cumulative Percent
Strongly Disagree	379	37.7	37.7
Disagree	298	29.7	67.4
Neither Disagree nor agree	319	31.8	32.6

Agree	0	0	99.2
Strongly Agree	8	0.8	100.0
Total	1004	100.0	

Looking at the table 4.2.3.3, we can notice that, 67.4% of the total respondents did not agree with the above statement.it means they were not satisfied with FCI's payment process. On the other hand only 0.8% of the total respondents agreed. The rest of 31.8% of the total respondents gave mixed response. Thus, based up on the opinion of majority respondents, it can be concluded that majority of the farmers are not satisfied with the FCI's payment process. It is also depicted in the following chart.

"I am satisfied with the payment process of FCI".



4.2.3.4.Hypotheses-3 testing for farmers' perception towards payment practice of FCI

Type of farmers and their perception towards payment practice of FCI

Researcher has examined the group difference between land-owned and tenant farmers with respect to their perception towards payment practice of FCI for procurement of rice. Thus, following hypothesis was formulated and tested to fulfil the objective.

H3a: ***There is a significant difference between the land owned and tenant farmers with respect to their perception towards payment practice of FCI for procurement of rice.***

To test this hypothesis, independent sample t-test was applied. The mean and standard deviation values of land owned farmers were (M=3.6843, SD=.77136), similarly, for tenant farmers were (M=3.7038, SD=.77862). Results were presented in the following tables.

Table 4.2.3.4(a): Group statistics for perceptions towards payment practice

	Type of Farmers	N	Mean	Std. Deviation	Std. Error Mean
Payment	Land Owned Farmer	522	3.6843	.77136	.03376
	Tenant Farmer	482	3.7038	.77862	.03547

Levene's test was used to analyse the equality of variances, since it was insignificant (F=.144, p=.704>0.05), equal variances were assumed and considered the t-value as.398 at 1002 degrees of freedom and which was insignificant (.691 > 0.05).

Table 4.2.3.4(b): Independent sample test for perceptions towards payment practice

		Levene's Test for Equality of Variances		t-test for Equality of Means			
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference
Payment	Equal variances assumed	.144	.704	-.398	1002	.691	-.01949
	Equal variances not assumed			-.398	994.095	.691	-.01949

Hence, H3a can be rejected and was concluded that there was no significant difference exist between the land owned and tenant farmers with respect to their perception towards payment practice of FCI for procurement of rice. It means land owned and tenant farmers have the same kind of perception with respect to the payment practice of FCI.

4.2.3.5 Region-wise farmers and their perception towards payment practice of FCI

Researcher made an attempt to examine, whether the farmers of all the three regions have same kind of perceptions or differ significantly with respect to payment practice of FCI. To analyse this, following hypothesis was formulated,

H3b: ***There is a significant difference among all three regions of farmers with respect to the payment practice of FCI****.*

To test this hypothesis, one-way Analysis of Variance (ANOVA) was used to analyse whether significant difference exist among the three regions of farmers with respect to the payment practice of FCI. The result of ANOVA was shown in the following tables.

Table 4.2.3.5(a): Descriptive for perception towards payment region wise

	N	Mean	Std. Deviation	Std. Error
Telangana	402	3.6724	.78049	.03893
Andhra	401	3.6817	.76182	.03804
Rayalaseema	201	3.7600	.78787	.05557
Total	1004	3.6937	.77453	.02444

Looking at the above table, we can find the mean and standard deviation values of farmers belong to Telangana region were (M=3.6724, SD=.78049), for Andhra region were (M=3.6817, SD=.76182) and for Rayalaseema were (M=3.7600, SD=.78787). Thus, from the above table, we can observe that mean values of all the three regions were almost the same. Hence, we can conclude that the same kind of perception prevails among the farmers belonging to the three regions with respect to payment practice of FCI. Moreover, the result of ANOVA table shows an insignificant F value (F=.937, p =.392 at DF= 2, 1001).

Table 4.2.3.5(b): ANOVA results for perception towards payment region wise

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.124	2	.562	.937	.392
Within Groups	600.572	1001	.600		
Total	601.696	1003			

Since the insignificant F-value, H3b can be rejected and was concluded that there was no significant difference exist among the all three regions of farmers with respect to their perception towards the payment practice of FCI.

4.2.3.6 Farmers' literacy status and their perception towards FCI's payment practice

Researcher has examined the group difference between literate and illiterate farmers with respect to their perception towards payment practice of FCI for procurement of rice. Thus, following hypothesis was formulated and tested to fulfil the objective.

H3c: There is a significant difference between literate and illiterate farmers with respect to their perception towards payment practice of FCI for procurement of rice.

To test this hypothesis, Independent sample t-test was applied. The mean and standard deviation values of illiterate farmers were (M=3.7105, SD=.76840) likewise, for literate farmers were (M=3.6749, SD=.78168). Results were presented in the following tables.

Table 4.2.3.6(a): Group statistic for literacy and perception towards payment

	Educational Status	N	Mean	Std. Deviation	Std. Error Mean
Payment	Illiterate	529	3.7105	.76840	.03341
	Literate	475	3.6749	.78168	.03587

Levene's test was used to analyse the equality of variances, since it was insignificant (F=.1.608, p=.205>0.05), equal variances were assumed and considered the t-value as .727 at 1002 degrees of freedom and which was insignificant (.468 > 0.05).

Table 4.2.3.6(b): Independent sample test for literacy and perception towards payment

		Levene's Test for Equality of Variances		t-test for Equality of Means			
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference
Payment	Equal variances assumed	1.608	.205	.727	1002	.468	.03558
	Equal variances not assumed			.726	986.601	.468	.03558

Hence, H3c was rejected and can be concluded that there was no significant difference exist between the literate and illiterate farmers with respect to their perception towards

payment practice of FCI for procurement of rice. It means that literate and illiterate farmers have the same kind of perception towards payment practice of FCI.

4.2.4. Farmers' perceptions towards the responsiveness of FCI staff

The factor-responsiveness comprises three statements. Analyses related to these statements were presented one by one

4.2.4.1 Farmers' response to the statement "FCI Keeps farmers informed as to when procurement will be happen."

Farmers were asked to give their response on, whether FCI Keeps farmers informed as to when procurement will be performed. Based up on their responses, data was analysed by using cross-tabulation and results were presented in the following table.4.2.4.1.

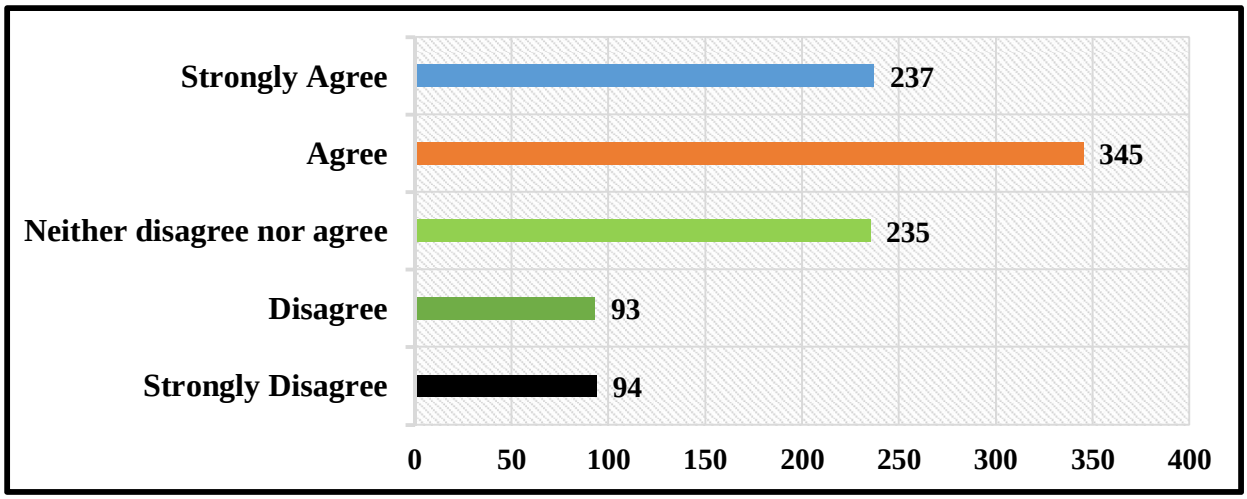
Table 4.2.4.1: Farmers' response towards the statement "FCI Keeps farmers informed as to when procurement will be happen."

	Frequency	Percent	Cumulative Percent
Strongly Disagree	94	9.4	9.4
Disagree	93	9.3	18.6
Neither Disagree nor agree	235	23.4	42.0
Agree	345	34.4	76.4
Strongly Agree	237	23.6	100.0
Total	1004	100.0	

Source: Compiled from primary data

According to table 4.3.4.1, it was found that 58% of the total respondents agreed that FCI keeps farmers informed about as and when FCI goes for procurement. 23.4% of the total respondents gave mixed opinion and rest 18.6% of total respondents complained that FCI does not inform farmers as to when procurement will be performed. Thus, based on the opinion of majority respondents, it is be concluded that FCI keeps farmers informed as to when procurement will be performed. It is also depicted in the following chart.

FCI Keeps farmers informed as to when procurement will be happen



4.2.4.2. Farmers' response towards the statement "FCI's staff provide prompt service to farmers."

Farmers were asked to give their response on, whether FCI' staff provide prompt service to farmers or not. Based up on their responses, data was analysed by using cross-tabulation and results were presented in the following table. 4.2.4.2.

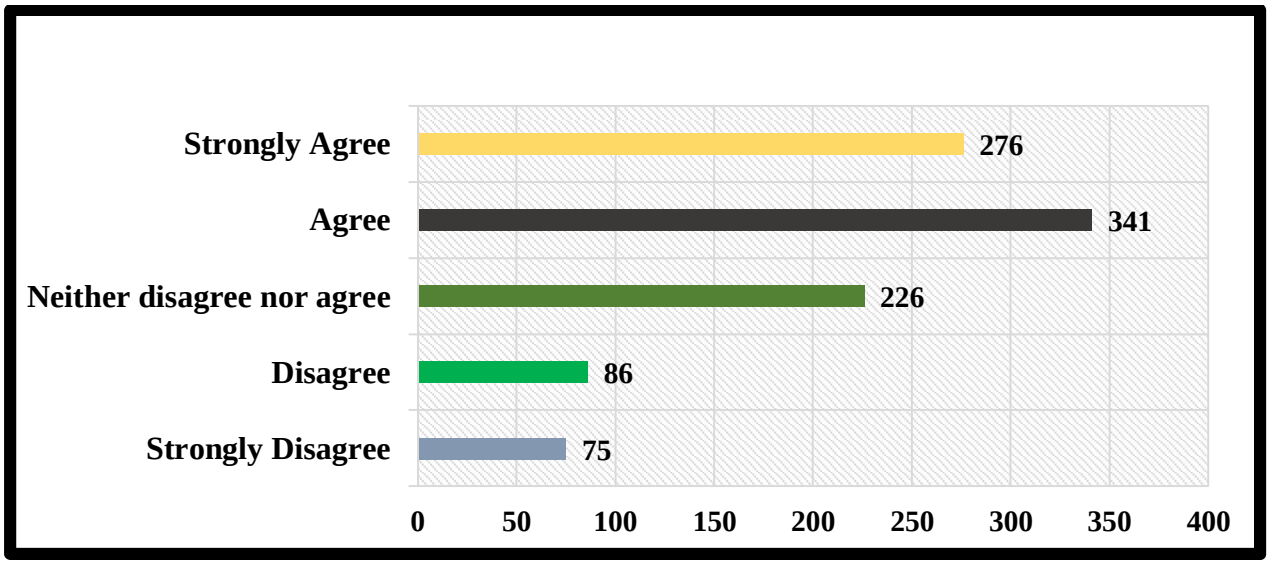
Table 4.2.4.2: Farmers' response towards the statement "FCI's staff provide prompt service to farmers."

	Frequency	Percent	Cumulative Percent
Strongly Disagree	75	7.5	7.5
Disagree	86	8.6	16.0
Neither Disagree nor agree	226	22.5	38.5
Agree	341	34.0	72.5
Strongly Agree	276	27.5	100.0
Total	1004	100.0	

Source: compiled from primary data

According to table 4.2.4.2, we can find that 61.5% of the total respondents agreed that FCI's staff provide prompt services to farmers while procurement process. 22.5% of the total respondents gave mixed opinion and rest 16.% of total respondents complained that FCI's staff does not provide prompt services to farmers while procurement process. Thus, based up on the opinion of majority respondents, it can be concluded that FCI's staff provide prompt services to farmers during procurement process. It is also depicted in the following chart.

FCI's staff provide prompt service to farmers.



4.2.4.3. Farmers' response towards the statement, "FCI is always ready to respond to farmers' requests."

Farmers were asked to give their response on, whether FCI was always ready to respond to farmers' requests. Based on their responses, data was analysed by using cross-tabulation and results were presented in the following table. 4.2.4.3.

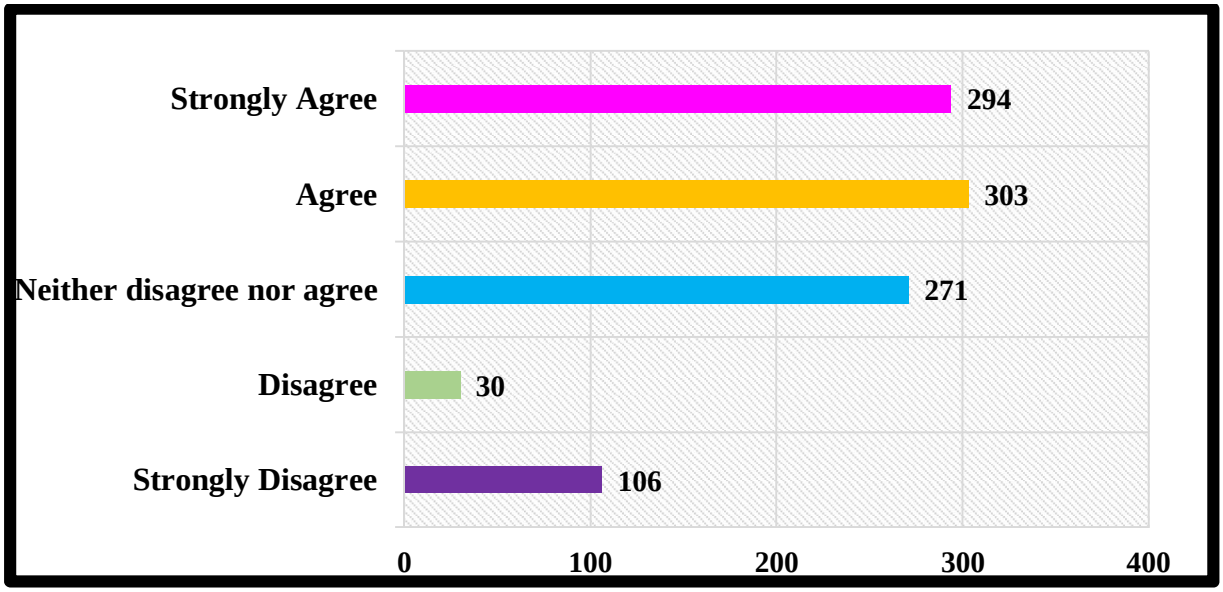
Table 4.2.4.3: Farmers' response towards the statement, "FCI is always ready to respond to farmers' requests."

	Frequency	Percent	Cumulative Percent
Strongly Disagree	106	10.6	10.6
Disagree	30	3.0	13.5
Neither Disagree nor agree	271	27.0	40.5

	Agree	303	30.2	70.7
	Strongly Agree	294	29.3	100.0
	Total	1004	100.0	

According to table 4.2.4.3, we can observe that 59.5% of the total respondents agreed that FCI was always ready to respond to farmers' requests. 27% of the total respondents gave mixed opinion and rest 13.5% of total respondents complained that FCI was always ready to respond to farmers' requests. Thus, based up on the opinion of majority respondents, it can be concluded that FCI was always ready to respond to farmers' requests. It is also depicted in the following chart.

FCI is always ready to respond to farmers' requests



4.2.4.4.Hypotheses-4 testing for farmers' perceptions towards responsiveness of FCI's staff

Farmers' perception towards responsiveness was examined by the formulating and testing the following hypothesis.

Type of farmers and their perception towards responsiveness of FCI's staff

Researcher has examined the group difference between land-owned and tenant farmers with respect to their perception towards responsiveness of FCI' staff while procurement of rice. Thus, following hypothesis was formulated and tested to fulfil the objective.

H4a: ***There is a significant difference between the land owned and tenant farmers with respect to their perception towards responsiveness of FCI staff while procurement of rice.***

To test this hypothesis, Independent sample t-test was applied. The mean and standard deviation values of land owned farmers were (M=2.9411, SD=.86326), similarly, for tenant farmers were (M=2.9432, SD=.87277). Results were presented in the tables.

Table 4.2.4.4(a): Group statistics for type of farmers and perceptions towards responsiveness

	Type of Farmers	N	Mean	Std. Deviation	Std. Error Mean
Responsiveness	Land Owned Farmer	522	2.9411	.86326	.03778
	Tenant Farmer	482	2.9432	.87277	.03975

Levene's test was used to analyse the equality of variances, since it was insignificant (F=.007, p=.931>0.05), equal variances were assumed and considered the t-value as .038 at 1002 degrees of freedom and which was insignificant (.970 > 0.05).

Table 4.2.4.4(b): Independent sample test for type of farmers and perceptions towards responsiveness

		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	t	df	Sig. (2-tailed)
Responsiveness	Equal variances assumed	.007	.931	-.038	1002	.970
	Equal variances not assumed			-.038	993.811	.970

Hence, H4a was rejected and can be concluded that there is no significant difference exist between the land owned and tenant farmers with respect to their perception towards responsiveness of FCI' staff while procurement of rice. It means land owned and tenant farmers have the same kind of perception towards the responsiveness of staff of FCI.

4.2.4.5 Region-wise farmers and their perception towards responsiveness of FCI's staff while procurement of rice.

Researcher made an attempt to examine, whether the farmers belong all the three regions have same kind of perceptions or differ significantly with respect to responsiveness of FCI staff. To analyse this, following hypothesis was formulated,

***H4b**: There is a significant difference among the all three regions of farmers with respect to the responsiveness of FCI's staff.*

To test this hypothesis, one-way Analysis of Variance (ANOVA) was used to analyse whether significant difference exist among the all three regions of farmers with respect to responsiveness of FCI' staff. The result of ANOVA was shown in the following tables.

Table 4.2.4.5(a): Descriptive for region wise farmers perception towards responsiveness

	N	Mean	Std. Deviation	Std. Error
Telangana	402	2.9103	.86793	.04329
Andhra	401	2.9383	.85083	.04249
Rayalaseema	201	3.0133	.89883	.06340
Total	1004	2.9421	.86741	.02738

Looking at the above table, we can find the mean and standard deviation values of farmers belong to Telangana region were (M=2.9103, SD=.86793), for Andhra region were (M=2.9383, SD=.85083) and for Rayalaseema were (M=3.0133, SD=.89883). Thus, from

the above table, we can observe that mean values of all the three regions were almost the same. Hence, we can conclude that the same kind of perception prevails among all the farmers in the three regions with respect to responsiveness of FCI' staff. Moreover, the result of ANOVA table shows an insignificant F value (F=.951, p =.387 at DF= 2, 1001).

Table 4.2.4.5(b): ANOVA table for region wise farmers perception towards responsiveness

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.431	2	.716	.951	.387
Within Groups	753.219	1001	.752		
Total	754.650	1003			

Since the insignificant F-value, H4b can be rejected and was concluded that there was no significant difference among the three regions of farmers with respect to the responsiveness of staff of FCI while procurement.

4.2.4.6 Farmers' literacy status and FCI's staff's responsiveness

An attempt was made to examine the group difference between literate and illiterate farmers with respect to their perception towards responsiveness of FCI's staff while procurement of rice. Thus, following hypothesis was formulated and tested to fulfil the objective.

H4c: There is a significant difference between literate and illiterate farmers with respect to responsiveness of FCI's staff while procurement of rice.

To test this hypothesis, Independent sample t-test was applied. The mean and standard deviation values of illiterate farmers were (M=2.9325, SD=.88306) likewise, for literate farmers were (M=2.9528, SD=.85043). Results were presented in the following tables.

Table 4.2.4.6(a): Group statistics for literacy status and perception towards responsiveness

	Educational Status	N	Mean	Std. Deviation	Std. Error Mean
Responsiveness	Illiterate	529	2.9325	.88306	.03839
	Literate	475	2.9528	.85043	.03902

Levene's test was used to analyse the equality of variances, since it was insignificant (F=.890, p=.346>0.05), equal variances were assumed and considered the t-value as -.369 at 1002 degrees of freedom and which was insignificant (.712 > 0.05).

Table 4.2.4.6(b) : Independent sample test for literacy status and perception towards responsiveness

		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	t	df	Sig. (2-tailed)
Responsiveness	Equal variances assumed	.890	.346	-.369	1002	.712
	Equal variances not assumed			-.370	997.089	.712

Hence, H4c was rejected and can be concluded that there no significant difference between the literate and illiterate farmers with respect to their perception towards responsiveness of FCI's staff while procurement of rice. It means the literate and illiterate farmers have same kind of perception towards responsiveness of FCI's staff.

4.2.5 Farmers' perceptions towards the procurement practice

The factor-Procurement comprises three statements. Analysis related to these statements are presented one by one

4.2.5.1. Farmers' response to the statement, "I like the procurement practice of FCI."

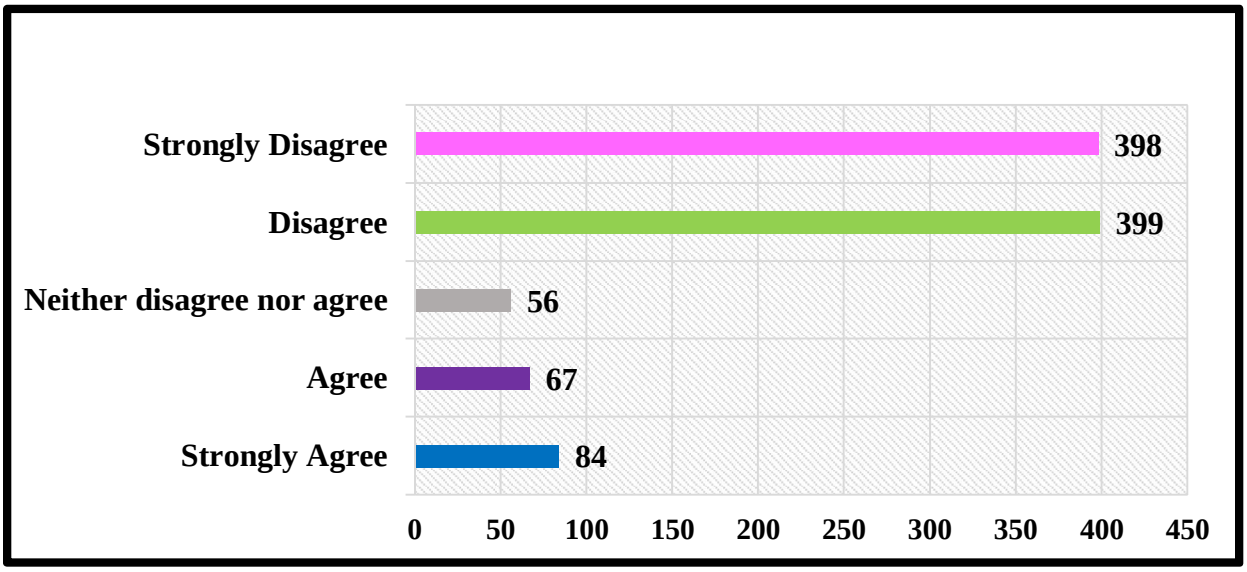
Farmers were asked to give their response on, whether the like procurement practice of FCI or not. Based up on their responses, data was analysed by using cross-tabulation and results were presented in the following table 4.2.5.1 and the bar chart.

Table 4.2.5.1: Farmers' response to the statement, "I like the procurement practice of FCI."

	Frequency	Percent	Cumulative Percent
Strongly Disagree	398	39.6	39.6
Disagree	399	39.7	79.3
Neither Disagree nor agree	56	5.6	84.9
Agree	67	6.7	91.6
Strongly Agree	84	8.4	100.0
Total	1004	100.0	

Table-4.2.5.1 shows that 79.3% of the total respondents did not agree with the above statement. It means they do not like the procurement practice of FCI. On the other hand, only 15.1% of the total respondents agreed that they like the procurement practice. Another 5.6% of the total respondents gave mixed response. Thus, based on the opinion of majority respondents, it can be concluded that majority of the farmers do not like the procurement practice of FCI. The same, it is also depicted in the following chart.

I like the procurement practice of FCI



4.2.5.2. Farmers' response to the statement, "FCI takes utmost care in procurement process"

Farmers were asked to give their response on, whether FCI takes utmost care in procurement process or not. Based up on their responses, data was analysed by using cross-tabulation and results were presented in the following table-4.2.5.2 and the bar chart.

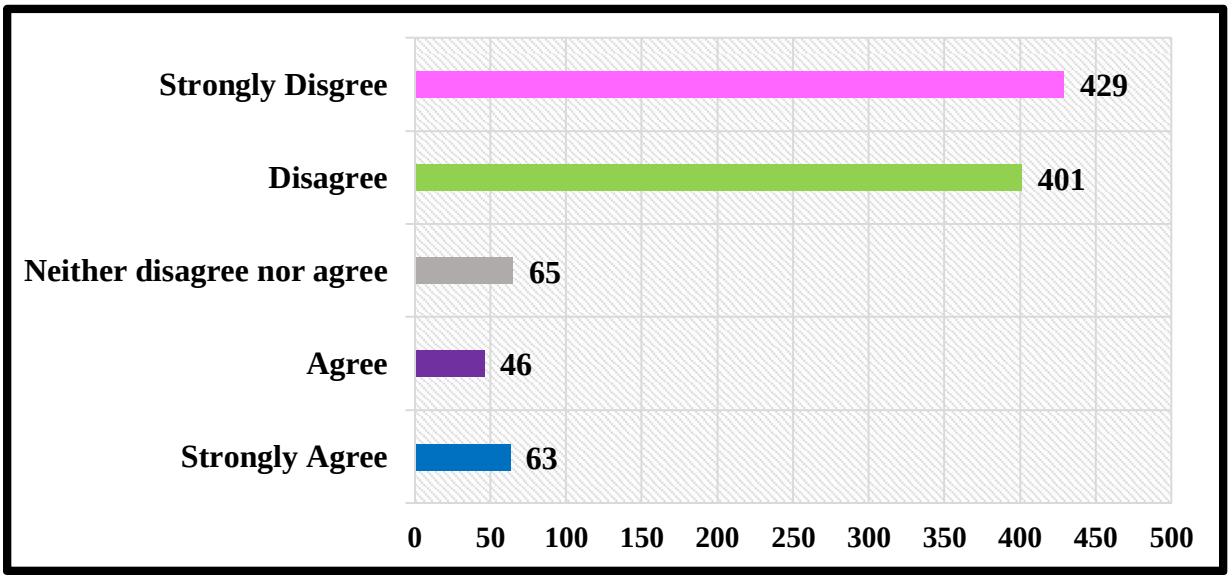
Table 4.2.5.2: Farmers' response to the statement, "FCI takes utmost care in procurement process".

	Frequency	Percent	Cumulative Percent
Strongly Disagree	429	42.7	42.7
Disagree	401	39.9	82.6
Neither Disagree nor agree	65	6.5	89.1
Agree	46	4.6	93.7

Strongly Agree	63	6.3	100.0
Total	1004	100.0	

Looking at the table-4.2.5.2, we can observe that, 82.6% of the total respondents Disagreed that FCI does not take the utmost care in procurement process while only 10.9% of the total respondents agreed that FCI takes the utmost care. Remaining 6.5% of the total respondents gave mixed opinion. Thus, based up on the opinion of majority respondents, it can be concluded that FCI does not take the utmost care in procurement process. It is also depicted in the following chart.

FCI takes utmost care in procurement process



4.2.5.3. Farmers' response to the statement, "FCI follows transparency in the procurement process."

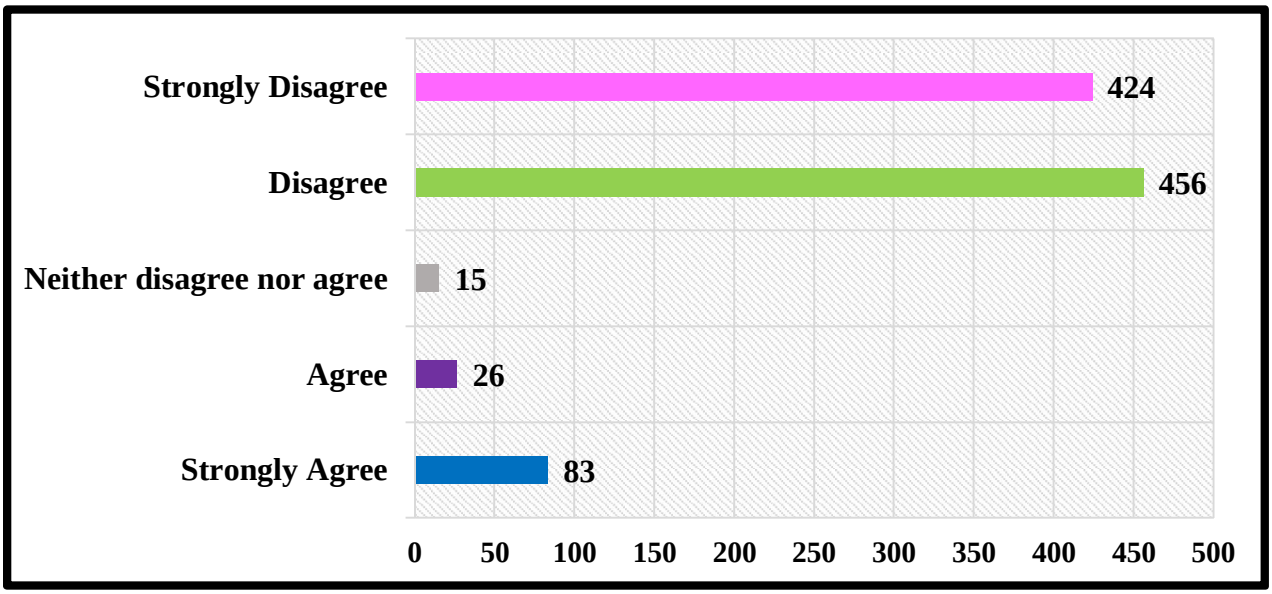
Researcher was interested to examine FCI's transparency in the procurement process by taking the response from farmers on the above statement. Based up on their responses, data was analysed by using cross-tabulation and results were presented in the following table-4.2.5.3 and the bar chart.

Table 4.2.5.3: Farmers' response to the statement, "FCI follows transparency in the procurement process."

	Frequency	Percent	Cumulative Percent
Strongly Disagree	424	42.2	42.2
Disagree	456	45.4	87.6
Neither Disagree nor agree	15	1.5	89.1
Agree	26	2.6	91.7
Strongly Agree	83	8.3	100.0
Total	1004	100.0	

Table-4.2.5.3 reveals that, 87.6% of the total respondents did not agree with the above statement. It means they feel that, FCI does not follow the transparency in the procurement process. On the contradiction to this only 11% of the total respondents agreed with the above statement. Remaining 1.5% of the total respondents gave mixed opinion. Thus, based up on the opinion of majority respondents, it can be concluded that FCI does not follow transparency in procurement process. It is also depicted in the following chart.

FCI follows transparency in the procurement process



4.3 <u>Objective-2:</u> To analyse the farmers' levels of satisfaction towards the rice procurement practice of the FCI

Farmers' levels of satisfaction towards the rice procurement practice of FCI

An attempt was made to know the satisfaction levels of the farmers towards procurement practice of FCI. To fulfil this objective, procurement performance was measured from four aspects. They were Price practice, Weighment practice, payment practice, and responsiveness. Let us discuss them one by one.

4.3.1 Farmers' levels of satisfaction towards price practice of FCI

Farmers have been asked to rate their levels of satisfaction towards the price practice of Food Corporation of India on 5-point Likert type scale, where, 1-stands for highly

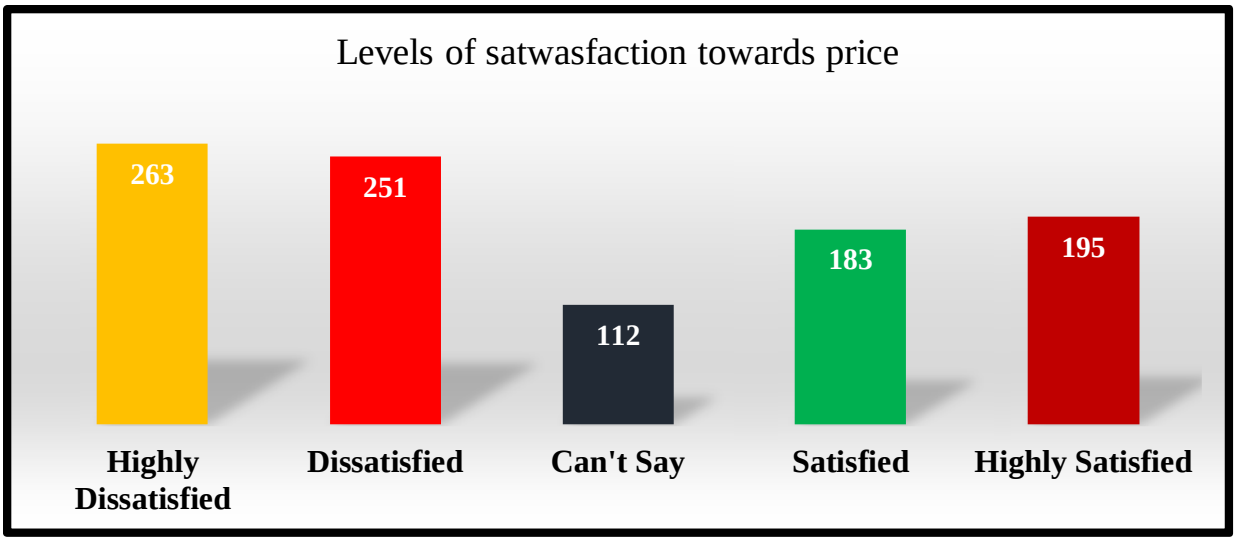
dissatisfied, 5-stands for highly satisfied and 3-satnds for can't say. Result of their responses were presented in the following table.

Table 4.3.1. : Farmers and their levels of satisfaction towards price practice

	Frequency	Percent	Cumulative Percent
Highly Dissatisfied	263	26.2	26.2
Dissatisfied	251	25.0	51.2
Can't Say	112	11.2	62.4
Satisfied	183	18.2	80.6
Highly Satisfied	195	19.4	100.0
Total	1004	100.0	

Looking at the table 4.3.1, we can find that, 51.2 % of the total respondents rated that they were not satisfied with price practice of FCI and among these, 26.2% were highly dissatisfied. On the other hand, 37.6% of the total respondents rated they were satisfied and among these, 19.4% rated as highly satisfied. About 11.2% of the total respondents rated that they were not in the position to decide, whether satisfied or not. By observing these results, we can say that, majority of the farmers were dissatisfied with the price practice of FCI. It could be due to their expectation for higher prices to be set for procuring the paddy.

Results are also depicted in form of following bar chart for the better and quicker understanding.



4.3.2 Hypotheses-5 testing related to farmers and their satisfaction levels towards price practice

Type of farmers and their satisfaction levels towards price practice

Subsequently, it has been examined that whether any difference exist between land-owned and tenant farmers with respect to their satisfaction towards price practice of FCI in procurement. Thus, following hypothesis was formulated to fulfil the objective of the study.

***H5a**: There is a significant difference between type of farmers and their satisfaction levels towards price practice of FCI in procurement.*

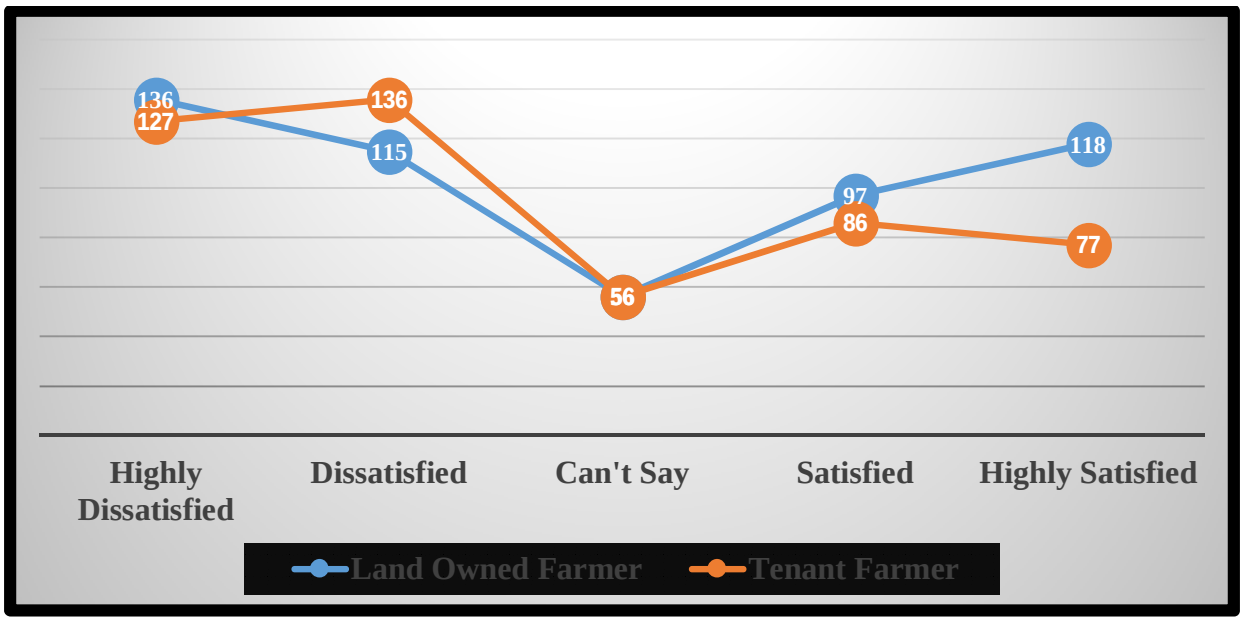
The responses of both land owned and tenant farmers towards their levels of satisfaction towards price were considered to examine their group difference. The results were cross tabulated in the following table.

Table 4.3.2: Cross-tabulation between type of farmers and their levels of satisfaction towards price

		Type of Farmers		Total
		Land Owned Farmer	Tenant Farmer	
Satisfaction towards Price	Highly Dissatisfied	136	127	263
	Dissatisfied	115	136	251
	Can't Say	56	56	112
	Satisfied	97	86	183
	Highly Satisfied	118	77	195
Total		522	482	1004

According to table 4.3.2, it was observed that 48.1% of the total land owned farmer respondents and 54.5% of the total tenant farmers respondents were dissatisfied with the price practice of FCI, while 41.2% of the total land owned farmer respondents and 33.8% of the total tenant farmer respondents were satisfied. On the other hand, 10.7% of the total land owned farmer respondents and 11.6% of the total tenant farmer respondents were unable to decide their levels of satisfaction with the price practice of FCI. It was also shown in the form of graph 4.3.2.

Graph 4.3.2.: Farmers' satisfaction levels towards price



Independent Samples t-test was used to analyse the difference between land owned and tenant farmers with respect to their levels of satisfaction towards the price practice of FCI to procure the paddy. The result of t-test was shown in the table 4.3.2(a) and table 4.3.2(b).

Table 4.3.2(a): Group statistics for type of farmers and levels of satisfaction towards price

	Type of Farmers	N	Mean	Std. Deviation	Std. Error Mean
Price	Land Owned Farmer	522	3.0015	1.17284	.05133
	Tenant Farmer	482	2.8933	1.22019	.05558

Levene's test was used to analyse the equality of variances, since it was insignificant, equal variances were assumed and considered the t-value as 1.433 which was insignificant (p= .152) at 1002 degrees of freedom.

4.3.2(b): Independent sample test for type of farmers and levels of satisfaction towards price

		Levene's Test for Equality of Variances		t-test for Equality of Means			
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference
Price	Equal variances assumed	1.756	.185	1.433	1002	.152	.10822
	Equal variances not assumed			1.430	987.942	.153	.10822

Hence, H5a can be rejected and concluded that land owned and tenant farmers do not differ significantly with regards to their levels of satisfaction with the price practice of FCI while procuring paddy from farmers.

4.3.2.1 Region wise farmers' levels of satisfaction towards price practice of FCI

Researcher made an attempt to examine, whether the farmers of all the three regions have same kind of levels of satisfaction or differ significantly with respect to price of FCI. To analyse this, following hypothesis was formulated,

H5b: There is a significant difference among all three regions of farmers with respect to their levels of satisfaction towards the price practice of FCI.

To test this hypothesis, one-way Analysis of Variance (ANOVA) was used .The result of ANOVA was shown in the following tables.

Table 4.3.2.1(a): Descriptive for region-wise farmers and levels of satisfaction towards price

	N	Mean	Std. Deviation	Std. Error
Telangana	402	2.64	1.430	.071
Andhra	401	2.84	1.482	.074
Rayalaseema	201	3.02	1.589	.112
Total	1004	2.80	1.489	.047

According to table 4.3.2.1(b), a significant F-value (F=4.722, P=0.009) was found at DF= (2, 1001). Hence, we can accept H5b and conclude that farmers belong three regions differed significantly with respect to their levels of satisfaction towards the price practice of FCI.

Table 4.3.2.2(b): Result of ANOVA for region-wise farmers and levels of satisfaction towards price

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	20.792	2	10.396	4.722	.009
Within Groups	2203.757	1001	2.202		
Total	2224.550	1003			

But to know further, which region of farmers differ significantly in satisfaction levels towards price practice, conducted and the results were presented in table 4.3.2.2(c)

From the results, it was found that, there was a significant difference exist between the farmers belong to Telangana and Rayalaseema regions (Mean Difference =-.383) with

regards to their satisfaction levels towards the price. It might be due to the effect of availability of water resources which leads to high yield of paddy.

Multiple Comparisons

Table 4.3.2.2(c): Post-hoc test for levels of satisfaction towards Price

	(I) Region	(J) Region	Mean Difference (I-J)	Std. Error	Sig.
Turkey HSD	Telangana	Andhra	-.196	.105	.147
		Rayalaseema	-.383*	.128	.008
	Andhra	Telangana	.196	.105	.147
		Rayalaseema	-.187	.128	.312
	Rayalaseema	Telangana	.383*	.128	.008
		Andhra	.187	.128	.312

4.3.3 Farmers' satisfaction levels towards weighment practice of FCI

Farmers have been asked to rate their levels of satisfaction towards the Weighment practice of Food Corporation of India on 5-point Likert type scale, where, 1-stands for highly dissatisfied, 5-stands for highly satisfied and 3-satnds for can't say. Result of their responses were presented in the following table.

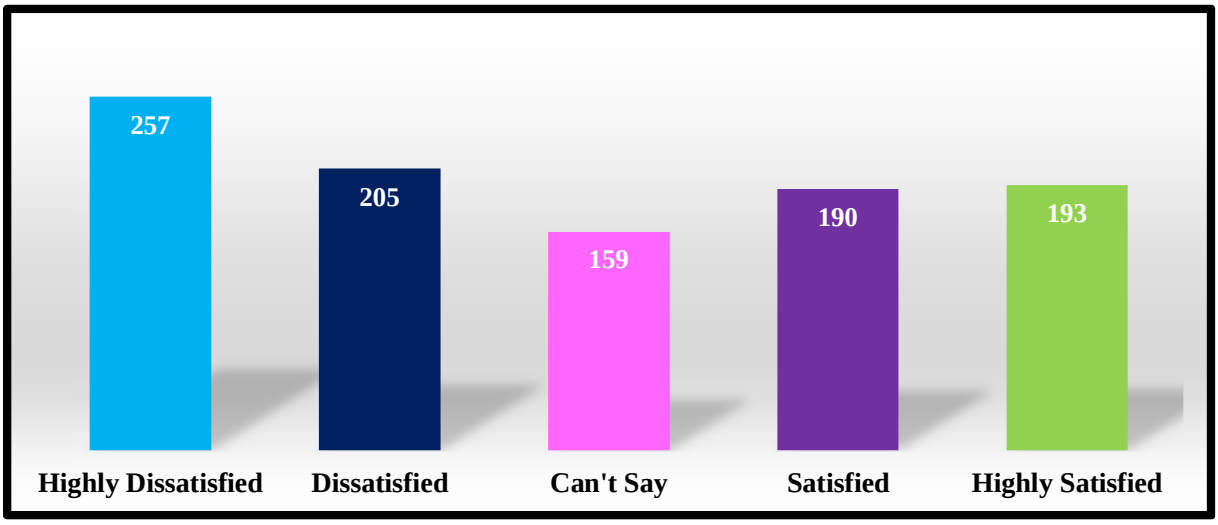
Table 4.3.3: Levels of satisfaction towards weighment

	Frequency	Percent	Cumulative Percent
Highly Dissatisfied	257	25.6	25.6
Dissatisfied	205	20.4	46.0
Can't Say	159	15.8	61.9
Satisfied	190	18.9	80.8
Highly Satisfied	193	19.2	100.0
Total	1004	100.0	

Looking at the table 4.3.3, we can find that, 46 % of the total respondents rated that they were not satisfied with Weighment practice of FCI, among these, 25.6% were highly dissatisfied. On the other hand, 38.1% of the total respondents rated they were satisfied and among these, 19.2% rated as highly satisfied. About 15.8% of the total respondents rated that they were not in the position to decide, whether satisfied or not. By observing these results, we can say that, majority of the farmers were dissatisfied with the Weighment practice of FCI. It could be due to farmers' bad experience with Weighment practices while procuring the paddy.

Results were also depicted in form of following bar chart for the better and quicker understanding.

Farmers' levels of satisfaction towards weighment



4.3.3.1 Hypothesis-6 testing related to farmers and their satisfaction levels towards weighment in procurement

Type of farmers and their level of satisfaction towards weighment in procurement

Subsequently, it has been examined that whether any difference exist between land-owned and tenant farmers with respect to their satisfaction towards Weighment practice of FCI in procurement process. To fulfil it, following hypothesis was formulated

H6a: ***There is a significant difference between type of farmers and their satisfaction levels towards weighment practice of FCI in procurement.***

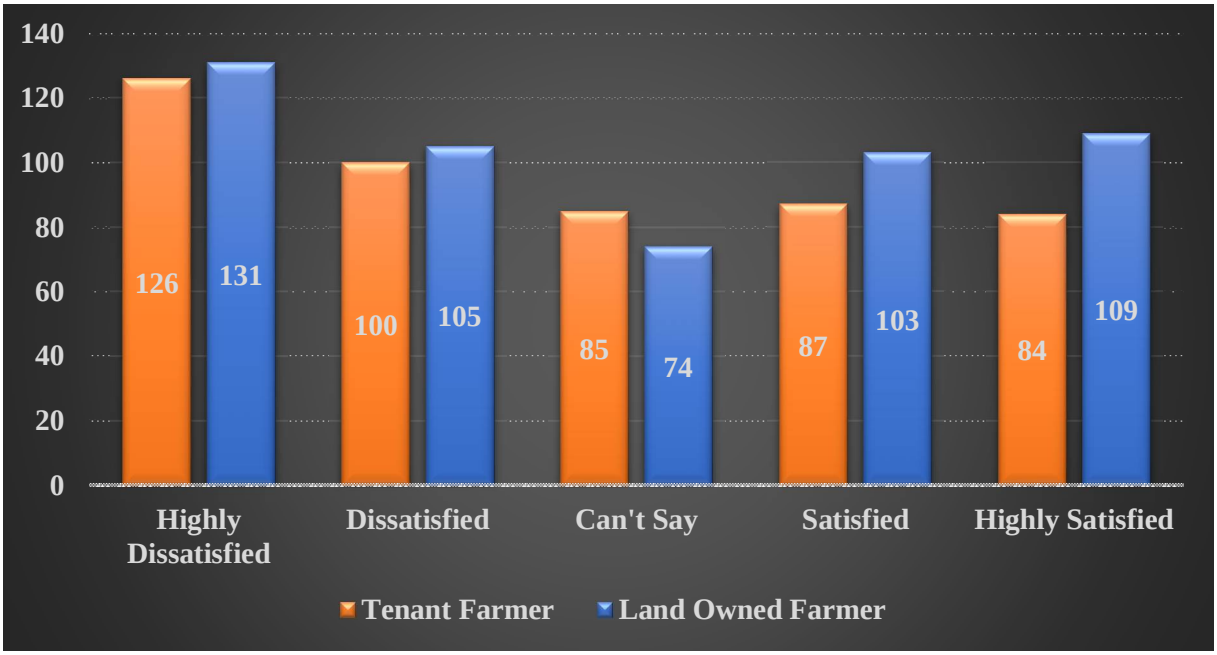
The responses of both land owned and tenant farmers towards their levels of satisfaction towards Weighment practice were considered to examine their group difference. The results were cross tabulated in the following table.

Table 4.3.3.1. Cross tabulation between type of farmers and their level of satisfaction towards weighment in procurement

		Type of Farmers		Total
		Land Owned Farmer	Tenant Farmer	
Satisfaction towards Weighment	Highly Dissatisfied	131	126	257
	Dissatisfied	105	100	205
	Can't Say	74	85	159
	Satisfied	103	87	190
	Highly Satisfied	109	84	193
Total		522	482	1004

According to table 4.3.3.1, it was observed that 45.2% of the total land owned farmer respondents and 46.8% of the total tenant farmers respondents mentioned that they were dissatisfied with the Weighment practice of FCI, while 40.6% of the total land owned farmer respondents and 35.4% of the total tenant farmer respondents were satisfied. On the other hand, 14.2% of the total land owned farmer respondents and 17.6% of the total tenant farmer respondents mentioned that they were unable to decide their levels of satisfaction with the Weighment practice of FCI. It was also shown in the form of bar chart.

"Satisfaction towards weighment in procurement"



Independent Samples t-test was used to analyse the difference between land owned and tenant farmers with respect to their levels of satisfaction towards the Weighment practice of FCI to procure the paddy. The result of t-test was shown in the table 4.3.3.1(a) and table 4.3.3.1(b).

Table 4.3.3.1(a): Group statistics for type of farmers and their level of satisfaction towards weighment

	Type of Farmers	N	Mean	Std. Deviation	Std. Error Mean
Weighment	Land Owned Farmer	522	2.8943	1.04940	.04593
	Tenant Farmer	482	2.8514	1.07347	.04890

Levene's test was used to analyse the equality of variances, since it was insignificant, equal variances were assumed and considered the t-value as .641 which was insignificant (p= .552) at 1002 degrees of freedom.

Table 4.3.3.1(b): Independent sample test for type of farmers and their level of satisfaction towards weighment

		Levene's Test for Equality of Variances		t-test for Equality of Means			
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference
Weighment	Equal variances assumed	.412	.521	.641	1002	.522	.04293
	Equal variances not assumed			.640	991.591	.522	.04293

Hence, H6a can be rejected and was concluded that land owned and tenant farmers do not differ significantly with regards to their levels of satisfaction with the Weighment practice of FCI. It means, land owned and tenant farmers have the same kind of satisfaction levels with respect to Weighment practice of FCI.

4.3.3.2 Farmers' satisfaction levels towards payment practice of FCI

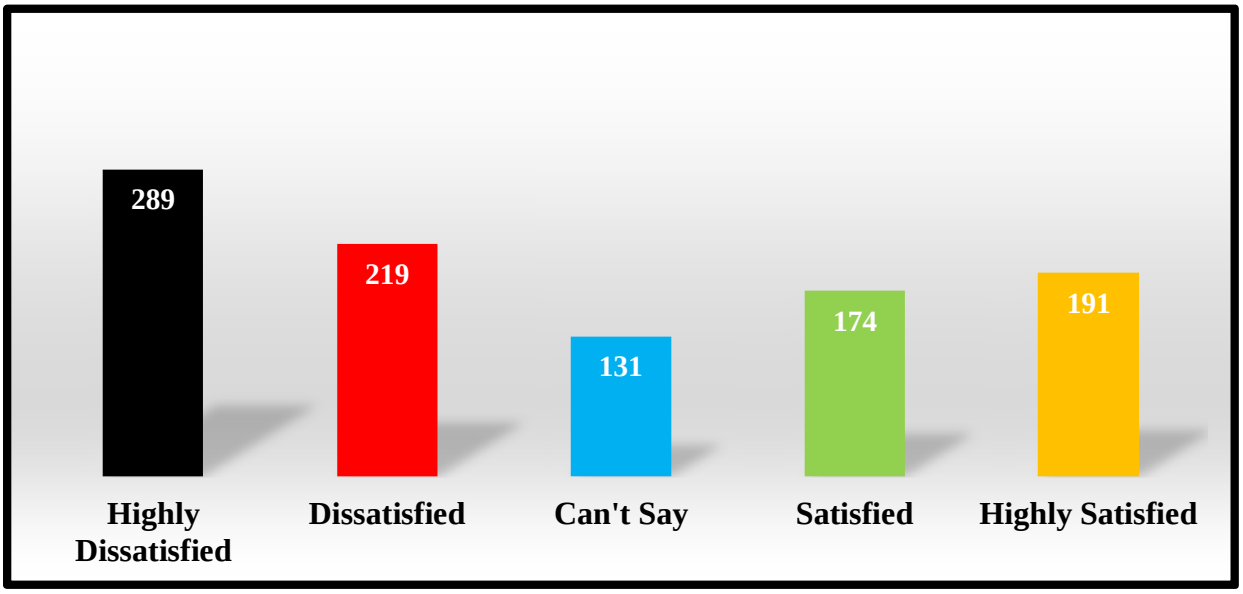
Farmers have been asked to rate their levels of satisfaction towards the payment practice of Food Corporation of India on 5-point Likert type scale, where, 1-stands for highly dissatisfied, 5-stands for highly satisfied and 3-satnds for can't say. Result of their responses were presented in the following table.

Table 4.3.3.2 Farmers' levels of satisfaction towards payment

	Frequency	Percent	Cumulative Percent
Highly Dissatisfied	289	28.8	28.8
Dissatisfied	219	21.8	50.6
Can't Say	131	13.0	63.6
Satisfied	174	17.3	81.0
Highly Satisfied	191	19.0	100.0
Total	1004	100.0	

Looking at the table 4.3.3.2, we can find that, 50.6% of the total respondents rated that they were not satisfied with payment practice of FCI and among these, 28.8% were highly dissatisfied. On the other hand, 36.3% of the total respondents rated they were satisfied and among these, 19.0% rated as highly satisfied. About 13% of the total respondents rated that they were not in the position to decide, whether satisfied or not. By observing these results, we can say that, majority of the farmers were dissatisfied with the payment practice of FCI. Results were also depicted in form of following bar chart for the better and quicker understanding.

Farmers' satisfaction levels towards payment



4.4.3.3 Hypothesis-7 testing related to farmers and their level of satisfaction towards payment in procurement

Type of farmers and their level of satisfaction towards payment in procurement

Subsequently, it has been examined that whether any difference exist between land-owned and tenant farmers with respect to their satisfaction towards payment practice of FCI in procurement. Thus, following hypothesis was formulated to fulfil the objective of the study.

H7a: There is a significant difference between type of farmers and their satisfaction levels towards payment practice of FCI in procurement.

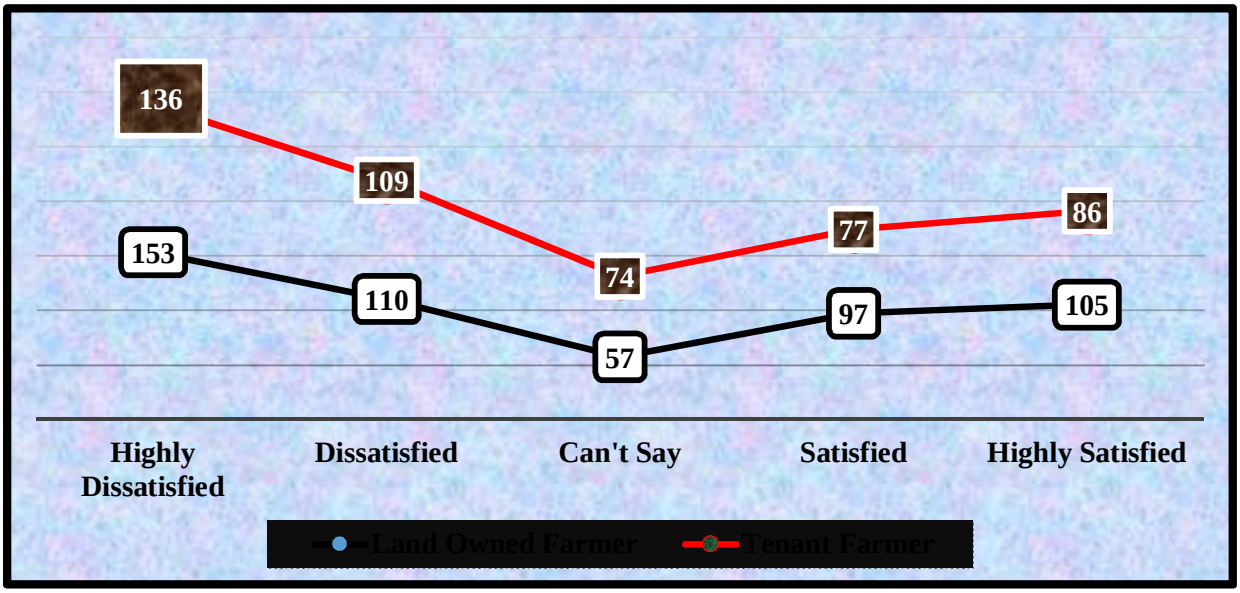
The responses of both land owned and tenant farmers towards their levels of satisfaction towards payment were considered to examine their group difference. The results were cross tabulated in the following table.

Table 4.3.3.3: Cross tabulation between type of farmers and their level of satisfaction towards payment in procurement

		Type of Farmers		Total
		Land Owned Farmer	Tenant Farmer	
Satisfaction towards Payment	Highly Dissatisfied	153	136	289
	Dissatisfied	110	109	219
	Can't Say	57	74	131
	Satisfied	97	77	174
	Highly Satisfied	105	86	191
Total		522	482	1004

According to table 4.3.3.3, it was observed that 50.4% of the total land owned farmer respondents and 50.8% of the total tenant farmers respondents mentioned that they were

dissatisfied with the payment practice of FCI, while 38.7% of the total land owned farmer respondents and 33.8% of the total tenant farmer respondents mentioned that they were satisfied. On the other hand, 10.9% of the total land owned farmer respondents and 15.4% of the total tenant farmer respondents mentioned that they were unable to decide their levels of satisfaction with the payment practice of FCI. It was also shown in the form of following graph.



Independent Sample t-test was used to analyse the difference between land owned and tenant farmers with respect to their levels of satisfaction towards the payment practice of FCI to procure the paddy. The result of t-test was shown in the table 4.4.3.1(a) and table 4.4.3.1(b).

Table 4.3.3.3(a): Group statistics for type of farmers and level of satisfaction towards payment

	Type of Farmers	N	Mean	Std. Deviation	Std. Error Mean
Payment	Land Owned Farmer	522	3.6843	.77136	.03376
	Tenant Farmer	482	3.7038	.77862	.03547

Levene's test was used to analyse the equality of variances, since it was insignificant, equal variances were assumed and considered the t-value as .398 which was insignificant (p= .691) at 1002 degrees of freedom.

Table 4.3.3.3(b): Independent sample test

		Levene's Test for Equality of Variances		t-test for Equality of Means			
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference
Payment	Equal variances assumed	.144	.704	-.398	1002	.691	-.01949
	Equal variances not assumed			-.398	994.095	.691	-.01949

Hence, H7a was rejected and concluded that land owned and tenant farmers do not differ significantly with regards to their levels of satisfaction with the payment practice of FCI while procuring paddy from farmers.

4.3.3.4 Farmers' satisfaction levels towards the responsiveness of FCI's staff.

Farmers have been asked to rate their levels of satisfaction towards the responsiveness of FCI's staff on 5-point Likert type scale, where, 1-stands for highly dissatisfied, 5-stands for highly satisfied and 3-satnds for can't say. Result of their responses were presented in the following table.

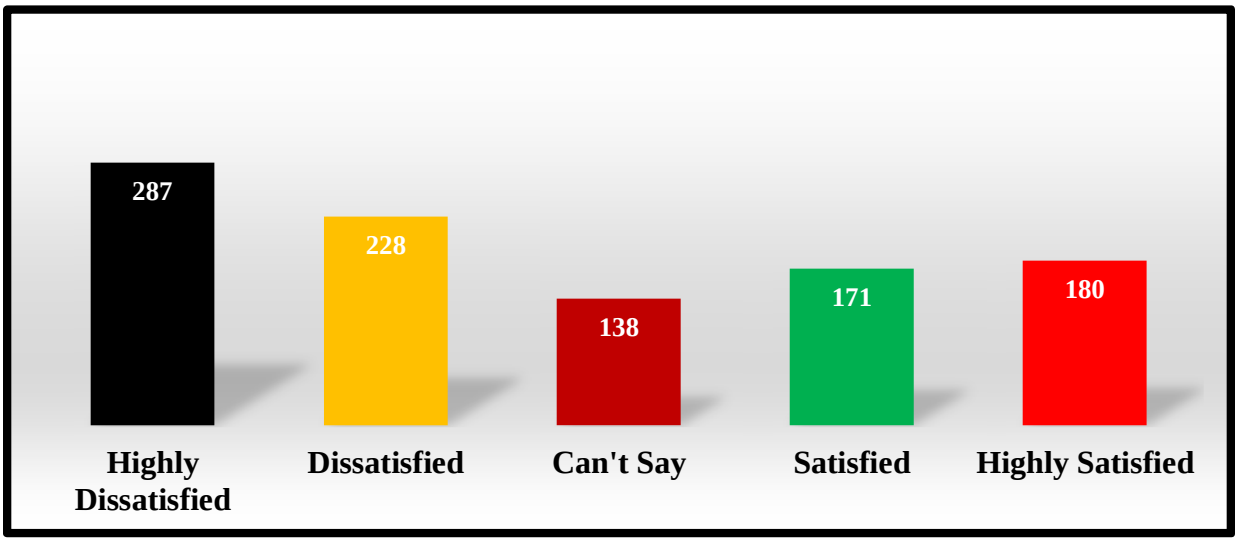
Table 4.3.3.4 Farmers' levels of satisfaction towards responsiveness

	Frequency	Percent	Cumulative Percent
Highly Dissatisfied	287	28.6	28.6
Dissatisfied	228	22.7	51.3
Can't Say	138	13.7	65.0
Satisfied	171	17.0	82.1
Highly Satisfied	180	17.9	100.0
Total	1004	100.0	

Looking at the table 4.3.3.4, we can find that, 51.3 % of the total respondents rated that they were not satisfied with responsiveness of FCI's staff and among these, 28.6% were highly dissatisfied. On the other hand, 35% of the total respondents rated that they were satisfied and among these, 18% rated as highly satisfied. About 13.7% of the total respondents rated that they were not in the position to decide, whether satisfied or not. By observing these results, we can say that, majority of the farmers were dissatisfied with the responsiveness of FCI's Staff. It could be due to their bad experience with the staff while

procuring the paddy. Results were also depicted in form of following bar chart for the better and quicker understanding.

Farmers levels of satisfaction towards responsiveness



4.3.3.5 Hypothesis-8 testing related to farmers and their satisfaction levels towards responsiveness of FCI staff

Type of farmers and their satisfaction levels towards responsiveness of FCI staff

Subsequently, it has been examined that whether any difference between land-owned and tenant farmers with respect to their satisfaction towards responsiveness of FCI staff. Thus, following hypothesis was formulated to fulfil the objective of the study.

H8a: ***There is a significant difference between type of farmers and their satisfaction levels towards responsiveness of FCI's staff.***

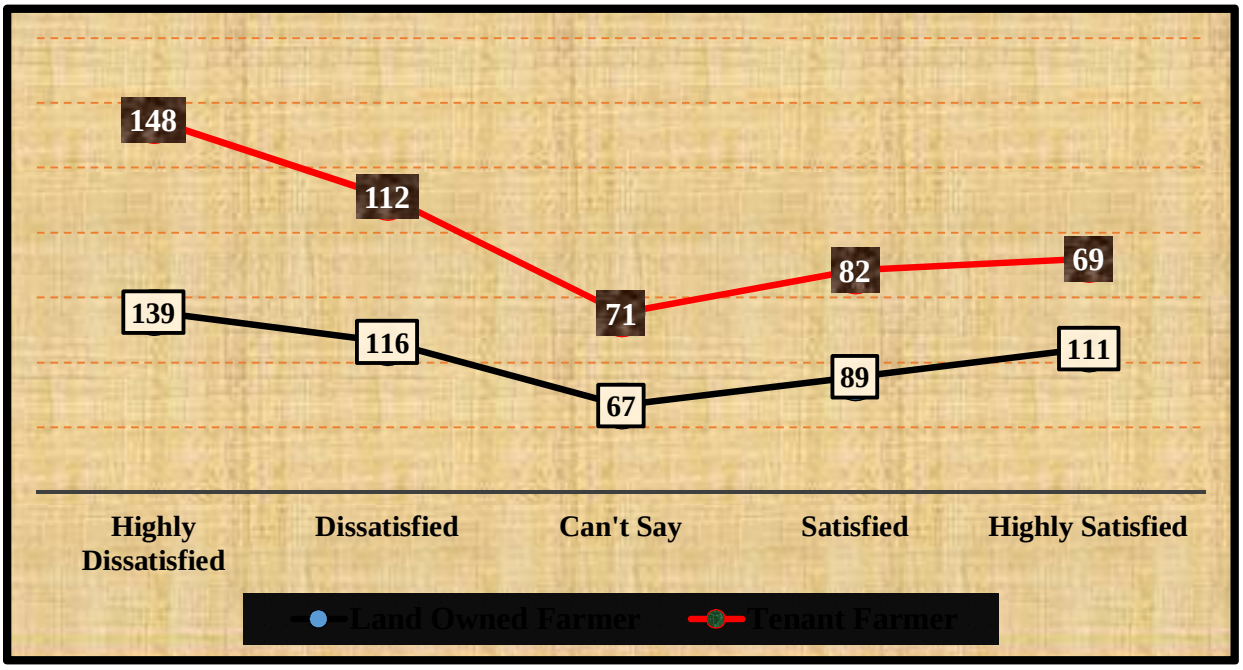
The responses of both land owned and tenant farmers towards their levels of satisfaction towards responsiveness were considered to examine their group difference. The results were cross tabulated in the following table.

Table 4.3.3.5. : Cross tabulation between type of farmers and their satisfaction levels towards responsiveness

		Type of Farmers		Total
		Land Owned Farmer	Tenant Farmer	
Satisfaction towards Responsiveness	Highly Dissatisfied	139	148	287
	Dissatisfied	116	112	228
	Can't Say	67	71	138
	Satisfied	89	82	171
	Highly Satisfied	111	69	180
Total		522	482	1004

According to table 4.3.3.5, it was observed that 48.8% of the total land owned farmer respondents and 53.9% of the total tenant farmers respondents agreed that they were dissatisfied with the responsiveness of FCI's staff, while 38.3% of the total land owned

farmer respondents and 31.3% of the total tenant farmer respondents mentioned that they were satisfied. On the other hand, 12.8% of the total land owned farmer respondents and 14.7% of the total tenant farmer respondents were unable to decide their levels of satisfaction with the responsiveness of FCI's staff. It was also shown in the form of following graph.



Independent Sample t-test was used to analyse the difference between land owned and tenant farmers with respect to their levels of satisfaction towards the responsiveness of FCI's staff. The result of t-test was shown in the table 4.3.3.5(a) and table 4.3.3.5(b).

Table 4.3.3.5(a): Group statistics for type of farmers and their satisfaction levels towards responsiveness

	Type of Farmers	N	Mean	Std. Deviation
Responsiveness	Land Owned Farmer	522	2.9411	.86326
	Tenant Farmer	482	2.9432	.87277

Levene's test was used to analyse the equality of variances, since it was insignificant, equal variances were assumed and considered the t-value as .038 which was insignificant *(P*= .970) at 1002 degrees of freedom.

Table 4.3.3.5(b): Independent sample test for type of farmers and their satisfaction levels towards responsiveness

		Levene's Test for Equality of Variances		t-test for Equality of Means			
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference
Responsiveness	Equal variances assumed	.007	.931	-.038	1002	.970	-.00209
	Equal variances not assumed			-.038	993.811	.970	-.00209

Hence, H8a can be rejected and was concluded that land owned and tenant farmers do not differ significantly with regards to their levels of satisfaction towards the responsiveness of FCI's staff.

4.3.3.6 Region wise farmers' levels of satisfaction towards the responsiveness of FCI's staff

Researcher made an attempt to examine, whether the farmers belong all the three regions have same kind of levels of satisfaction or differ significantly with respect to responsiveness of FCI's staff. To analyse this, following hypothesis was formulated and tested.

H8b: ***There is a significant difference among all three regions of farmers with respect to their levels of satisfaction towards responsiveness of FCI staff.***

To test this hypothesis, one-way Analysis of Variance (ANOVA) was used .The result of ANOVA was shown in the following tables.4.3.3.6 (a) and tables.4.3.3.6 (b).

Table 4.3.3.6(a): Descriptive for region wise levels of satisfaction towards responsiveness

	N	Mean	Std. Deviation	Std. Error
Telangana	402	2.69	1.513	.075
Andhra	401	2.80	1.478	.074
Rayalaseema	201	2.67	1.411	.100
Total	1004	2.73	1.479	.047

Looking at the table-4.3.3.6(a), we can find the mean and standard deviation values of farmers belong to Telangana region were (M=2.69, SD=1.513), for Andhra region were (M=2.80, SD=1.478) and for Rayalaseema were (M=2.67, SD=1.411). Thus, from the above table, we can observe that mean values of all the three regions were almost the same. Hence, we can conclude that the same kind of satisfaction levels among all the farmers of the three regions with respect to responsiveness of FCI' staff. Moreover, the result of ANOVA table shows an insignificant F value (F=.818, p =.442 at DF= 2, 1001).

Table 4.3.3.6(b): ANOVA results for region wise levels of satisfaction towards responsiveness

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3.579	2	1.790	.818	.442
Within Groups	2190.272	1001	2.188		
Total	2193.852	1003			

Hence, we can reject H8b and can be concluded that, there was no significant difference among the levels of satisfaction towards responsiveness of FCI's staff. It means farmers belong to three regions have the same kind of satisfaction levels.

4.4 Objective-3: To know the factors affecting the procurement performance of the FCI.

To fulfil this objective, exploratory factor analysis was applied. The purpose of factor analysis here was to explore the underlying variance structure of a set of items corresponding to each factors. Thus, factor analysis was useful for exploring and verifying patterns in a set of correlation coefficients (Brown, 2001, p. 184). Farmers' responses were recorded on 19 main statements, among which 3 items were considered to measure the overall procurement performance. Before moving into the main analysis, preliminary analyses were carried out, which includes reliability analysis and Sampling Adequacy.

4.4.1. Reliability Analysis

Reliability of the scale was checked by using reliability statistics. After deleting 1 item, Cronbach's alpha was found as 0.893 which was above the minimum threshold suggested by Nunnally (1978) i.e., 0.7. Finally 18 items were retained for the analysis. Hence scale was considered as reliable for analysis and it was shown in the following table-4.4.*1*

Table 4.4.1: Reliability statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.893	.886	18

4.4.2. Descriptive Statistics

Descriptive statistics were carried out for these 18 items to know the mean and standard deviation of each items. The mean and standard deviation of each item was presented in the following table-4.4.2.

Table 4.4.2: Descriptive statistics

Statements	Mean	Std. Deviation
FCI Keeps farmers informed as to when procurement will be performed	3.54	1.212
FCI's staff Provide prompt service to farmers	3.65	1.182
FCI is always ready to respond to farmers' requests.	3.65	1.228
FCI's Procurement price was reasonable.	3.16	1.371
FCI's Procurement price was more than market price.	3.23	1.422
I get good profits at FCI's procurement price.	3.28	1.353
I like to sell my produce at FCI's price.	3.17	1.376
FCI's Weighment process was transparent.	3.26	1.276
I trust the Weighmenting personnel of FCI.	3.23	1.256
FCI uses standard Weighment tools.	3.17	1.343
I understand the FCI's Weighment process.	3.19	1.296
I like the FCI's Weighment practice.	3.23	1.302
FCI pays payment timely.	3.98	.916

FCI's payment procedure was good.	3.98	.924
I am satisfied with the payment process of FCI.	4.04	.875
FCI takes utmost care in procurement process	3.96	1.213
I like the procurement practice of FCI.	4.08	1.111
FCI follows transparency in the procurement process.	4.11	1.129

4.4.3 Sampling Adequacy

Kaiser-Meyer-Olkin Measure of Sampling Adequacy test was carried out to know whether sample was adequate for running factor analysis. Generally, it varies between 0 and 1. A value of 0 indicates that the sum of partial correlations was large relative to the sum of correlations, indicating diffusion in the pattern of correlations (hence, factor analysis was likely to be inappropriate). A value close to 1 indicates that patterns of correlations were relatively compact and so factor analysis should yield distinct and reliable factors. Kaiser (1974) recommends accepting values greater than 0.5 as acceptable. Furthermore, values between 0.5 and 0.7 were mediocre, values between 0.7 and 0.8 were good, values between 0.8 and 0.9 were great and values above 0.9 were superb (Hutcheson and sofroniou, 1999). For this analysis the value was 0.855, which falls into the range of being great. Hence, the data was found appropriate to carry out factor analysis. The value of KMO statistics was shown in the following Table 4.4.3.

Table 4.4.3: KMO and Bartlett's test for sampling adequacy

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		**.855**
Bartlett's Test of Sphericity	Approx. Chi-Square	17876.855
	df	153
	Sig.	.000

Bartlett's measure tests the null hypothesis that the original correlation matrix was an identity matrix. For factor analysis to work, it needs some relationships between variables and if the correlation matrix were an identity matrix then all correlation coefficients would be zero. Therefore, it was to be significant (<0.05). A significant test tells us that correlation matrix was not an identity matrix; therefore, there were some relationships between the variables which were to be included in the analysis. For these data, Bartlett's test was highly significant (p< 0.001). Hence factor analysis was appropriate. The result of Bartlett's test was shown in above Table-4.2.3.

4.4.4 Communalities

Communalities refer to the common variance in the data structure. These communalities explains in terms of proportion of variance explained by the underlying factors. For instance, 78.3% of the variance associated with the item "FCI Keeps farmers informed as to when procurement will be performed" was common. Principal component analysis works on the initial assumption that all variance was common. Hence, initially, all the communalities were the value of 1. The amount of variance in each variable after extraction were presented in the table-4.4.4. According Kaiser's criteria, if the sample size exceeds

250 the average communality should be greater than 0.6. This criteria was met in this study as average communalities was equal to 0.845 (Sum=12.68, N = 15) hence, 12.68/15= 0.845.

Table 4.4.4: Communalities

	Initial	Extraction
FCI Keeps farmers informed as to when procurement will be performed	1.000	.783
FCI's staff Provide prompt service to farmers	1.000	.787
FCI is always ready to respond to farmers' requests.	1.000	.779
FCI's Procurement price was reasonable.	1.000	.899
FCI's Procurement price was more than market price.	1.000	.910
I get good profits at FCI's procurement price.	1.000	.853
I like to sell my produce at FCI's price.	1.000	.892
FCI's Weighment process was transparent.	1.000	.931
I trust the Weighing personnel of FCI.	1.000	.815
FCI uses standard Weighment tools.	1.000	.844
I understand the FCI's Weighment process.	1.000	.783
I like the FCI's Weighment practice.	1.000	.836
FCI pays payment timely.	1.000	.877
FCI's payment procedure was good.	1.000	.883
I am satisfied with the payment process of FCI.	1.000	.808

Extraction Method: Principal Component Analysis.

4.4.5 Factors Extractions

Total 15 linear components were identified within the data set. The eigenvalues associated with each factor represents the variance explained by that particular linear component and it was also displayed the eigenvalues in terms of the percentage of variance explained. The linear component which has eigenvalue more than 1 was considered as a factor. On the basis of this rule, 4 factors were extracted and they explain 84.5% of total variance, which was considered as an excellent percentage of variance. The results were shown in the following Table-4.4.5.

Table 4.4.5: Total variance explained

Component	Initial Eigenvalues			Rotation Sums of Squared Loadings		
	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %
1	5.582	37.216	37.216	4.215	28.100	28.100
2	2.986	19.904	57.119	3.551	23.673	51.772
3	2.477	16.516	73.635	2.572	17.150	68.922
4	1.634	10.896	84.531	2.341	15.610	84.531
5	.364	2.429	86.960			
6	.345	2.302	89.262			
7	.316	2.109	91.371			
8	.248	1.656	93.027			
9	.241	1.605	94.632			
10	.201	1.341	95.972			

11	.181	1.210	97.182			
12	.144	.959	98.141			
13	.123	.819	98.960			
14	.096	.639	99.599			
15	.060	.401	100.000			

Extraction Method: Principal Component Analysis.

According to the above Table-4.4.5, all the 15 components were extracted into 4 major factors. Based up on the items fell in the individual group, names were given. The first factor has five items and each explains about the Weighment practice hence its termed as **Weighment practice.** The second factor comprises 4 items and these explain about the price related statement, hence factor-2 was termed as **price practice**. Factor-3 comprises 3 statement and these explain about the payment related statements, hence it was termed as **payment practice**. Factor-4 has 3 statements and these were related to responsiveness of the staff, hence it was termed as **responsiveness.** Initially**,** factor-1(Weighment practice) explains 37.216% of total variance, Factor-2 (price practice) explains the 19.9% of the total variance, factor-3 (Brand Personality) explains the 6.93% of total variance and factor-4 (payment practice) explains 16.5% of total variance, and the factor-4 (Responsiveness) explains 10.89% of total variance in procurement performance. After orthogonal rotation by applying varimax rotation, all the four factors account for 28.1%, 23.6%, 17.1% and 15.6 % of total variance in procurement performance respectively.

4.4.6 Factors and its loadings

Items with loading more than .40 were retained in the study for the purpose of analysis. Loadings of each variable with respect to particulars factor were presented in the table 4.4.6.

Table 4.4.6: Result of rotated component matrix and factor loadings

Items	Component			
	1	2	3	4
FCI's Weighment process was transparent.	.950			
I trust the Weighing personnel of FCI.	.902			
FCI uses standard Weighment tools.	.902			
I understand the FCI's Weighment process.	.889			
I like the FCI's Weighment practice.	.863			
FCI's Procurement price was reasonable.		.935		
FCI's Procurement price was more than market price.		.930		
I get good profits at FCI's procurement price.		.929		
I like to sell my produce at FCI's price.		.900		
FCI pays payment timely.			.938	
FCI's payment procedure was good.			.935	
I am satisfied with the payment process of FCI.			.899	

FCI Keeps farmers informed as to when procurement will be performed				.860
FCI's staff Provide prompt service to farmers				.851
FCI was always ready to respond to farmers' requests.				.841

Thus, further analyses were carried out by using scores of these four factor.ie. 1. Price practice, 2. Weighment practice, 3.payment and 4.Responsiveness of FCI staff.

4.5 <u>Objective-4:</u> To analyse the effect of identified factors on the overall performance of the FCI

Structural Equation Modelling was used to test the hypotheses corresponding to objective-4 such as H9, H10, H11 and H12.

The two-step structural equation modelling (SEM) was used, wherein, the first step involved confirmatory factor analysis (CFA) to validate the scales for the measurement of specific constructs proposed in the research model (Hair, Anderson, Tatham, & Black, 1998) and in the second step structural model examined through SEM in order to evaluate the validity of the proposed model. The maximum likelihood procedure was used to estimate the measurement model and structural model (Namkung & Jang, 2007) in Amos 20.0v.

4.5.1 Step-1: Measurement model (Confirmatory Factor Analysis)

In the first step, confirmatory factor analysis (CFA) was used in order to examine the convergent and discriminant validity of respective constructs by employing AMOS 21v. It was a powerful statistical tool for examining the nature of and relations among latent constructs. CFA was part of the larger family of methods known as structural equation modeling (SEM) and it plays an essential role in measurement model validation in path or structural analyses (Brown, 2006; MacCallum & Austin, 2000). When conducting SEM, researchers often first evaluate the measurement model (whether the measured variables accurately reflect the desired constructs or factors) before assessing the structural model. The result of measurement model was presented in the fig 1.

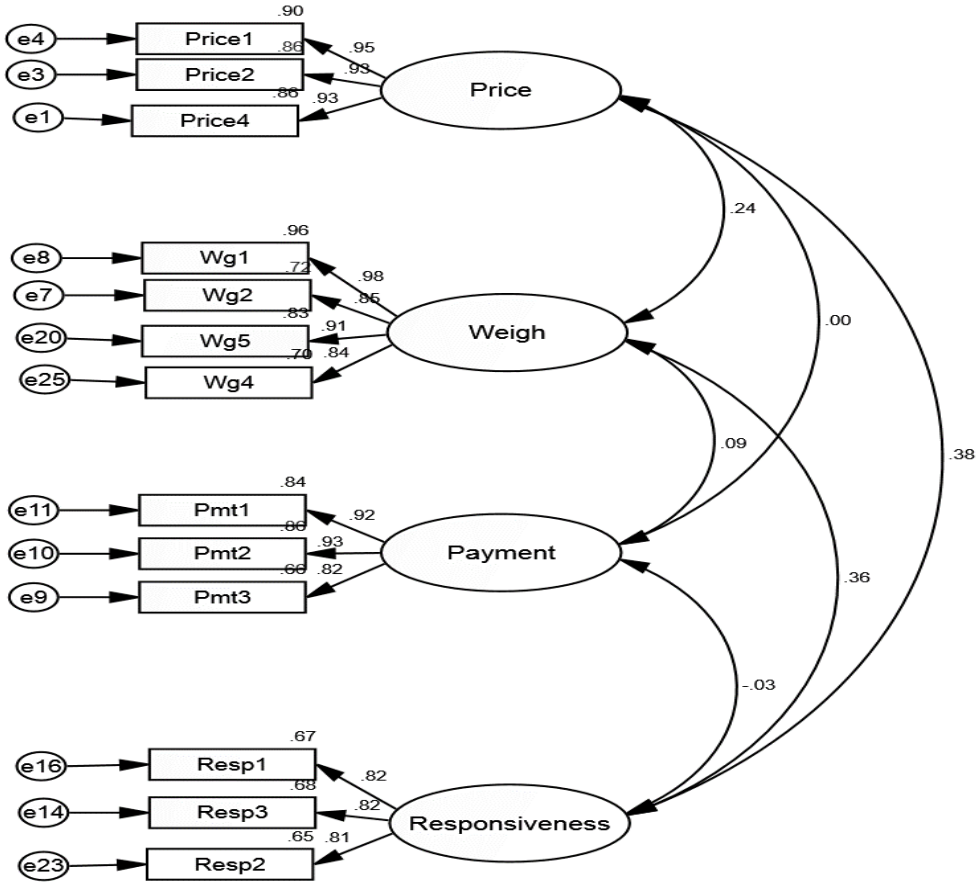


Figure 1: Measurement Model

4.5.2 Results of Confirmatory Factor Analysis

From the results of confirmatory factor analysis, it was noticed that the factor loadings corresponding to each item was found statistically significant at 0.05 level of significance and all the loading were in the range between .80 and .98 which were considered as good loadings. These were shown in the table- 4.8 and table -. It shows the unstandardized regression Weighments which were significant at 5% level of significance.

Table- 4.5.2(a): Regression weights (Unstandardized estimates)

			Estimate	S.E.	C.R.	P	Remark
Price4	<---	Price	1.000				
Price2	<---	Price	1.033	.020	52.453	***	Significant
Price1	<---	Price	1.017	.018	55.645	***	Significant
Wg2	<---	Weighment	1.000				
Wg1	<---	Weighment	1.180	.026	45.788	***	Significant
Pmt3	<---	Payment	1.000				
Pmt2	<---	Payment	1.199	.034	35.463	***	Significant
Pmt1	<---	Payment	1.175	.033	35.150	***	Significant
Resp3	<---	Responsiveness	1.017	.038	26.724	***	Significant
Resp1	<---	Responsiveness	1.000				
Wg5	<---	Weighment	1.117	.028	40.169	***	Significant
Resp2	<---	Responsiveness	.956	.036	26.289	***	Significant
Wg4	<---	Weighment	1.021	.030	34.326	***	Significant

The standardized regression Weights corresponding to each items were presented in the table.

Table 4.5.2(b): Standardized regression weights

		Path	Estimate
Price4	<---	Price	.927
Price2	<---	Price	.927
Price1	<---	Price	.946
Wg2	<---	Weighment	.846
Wg1	<---	Weighment	.982
Pmt3	<---	Payment	.815
Pmt2	<---	Payment	.927
Pmt1	<---	Payment	.915
Resp3	<---	Responsiveness	.824
Resp1	<---	Responsiveness	.821
Wg5	<---	Weighment	.911
Resp2	<---	Responsiveness	.805
Wg4	<---	Weighment	.837

4.5.3 Convergent and discriminant validity analysis

4.5.3.1 Convergent Validity

Convergent validity was used to test the internal consistency of items corresponding to each factor. It was noticed that, there were a strong correlation between items and corresponding factors and weak correlation with the others. It was assessed by composite reliability (CR) and the average variance extracted (AVE). A convergent validity was said

to be established when it follows two criteria. Firstly, the composite reliability of each factor should be greater than the average variance extracted by that factor (CR > AVE); secondly, the value of composite reliability of each factor should be more than 0.70 and the average variance extracted by that factor should be more than 0.50 (AVE > 0.50). The composite reliability of all the four factors were between the range of 0.81 to 0.89 and the AVE of each constructs were between 0.57 and 0.655 which were above the acceptable limit. Hence, all the four factors followed convergent validity. It was shown in the table.

Table 4.5.3.(a): Convergent Validity

Criteria: (CR > AVE and AVE > 0.50)

Factors	**Composite Reliability**	**AVE**	**Remark**
Payment	0.813	0.590	Fulfilled
Price	0.858	0.655	
Weighment	0.891	0.650	
Responsiveness	0.841	0.575	

Note: AVE = Average Variance Extracted,

4.5.3.2 Discriminant Validity

The discriminant validity of the scale can be evaluated by two methods, either inter-construct correlation matrix or based up on variance extracted method. In the first method, there should be weak correlation with other constructs and highest correlation with the same construct. This criteria was met for this study. It was shown in the table.

Table 4.5.3(b): Inter-constructs correlation

Constructs	Payment	Price	Weighment	Responsiveness
Payment	**0.768**			
Price	0.002	**0.810**		
Weighment	0.095	0.238	**0.806**	
Responsiveness	0.027	0.375	0.366	**0.758**

In an another method, Maximum Shared Squared Variance (MSV) of each construct should be lesser than Average Variance Extracted (AVE) of corresponding construct and similarly, Average Shared Squared Variance (ASV) should be lesser than Average Variance Extracted (AVE). This criteria was also met in this study. It was shown in the table-.

Table 4.5.3(c): Discriminant validity

Factors	AVE	MSV	ASV	Remark
Payment	0.590	0.009	0.003	Fulfilled
Price	0.655	0.141	0.066	Fulfilled
Weighment	0.650	0.134	0.067	Fulfilled
Responsiveness	0.575	0.141	0.092	Fulfilled

Note: AVE = Average Variance Extracted, MSV = Maximum Shared Squared Variance and ASV = Average Shared Squared Variance. [Criteria: (MSV < AVE and ASV < AVE)].

4.5.4 Model fit Indices

The values of absolute fit measures indices of measurement model were found in the acceptable limit. Where $\chi 2/df = 2.670$, Goodness of Fit Index (GFI) = .943 and Root Mean Square Error of Approx. (RMSEA) = .06. Similarly, the values of incremental fit measures were also found in the limit of acceptance. Where, Adjusted Goodness of Fit Index (AGFI) =.918, Normed Fit Index (NFI) =.966, Tucker–Lewis Index (TLI) =.965 and RFI =.957. Thus, the values of the model fit indices were found within the acceptance limits suggested by Hu, L. T., & Bentler, P. M.,(1999); Knile, (2005); Lia et al., (2007); Hair et al., (2010) ; Awwad and Agti ,(2011).It was shown in the table.

4.5.5 Structural Model

In the next step of 2-step structural equation modelling approach, structural relationship among the independent variables and dependent variable was analysed by testing the structural model. The hypothesized relationships of conceptual model were analysed by employing structural equation modelling. It was noticed that all the four dimensions constitute for 48 percent of total variance in overall procurement performance of FCI. It was shown in the figure-2.

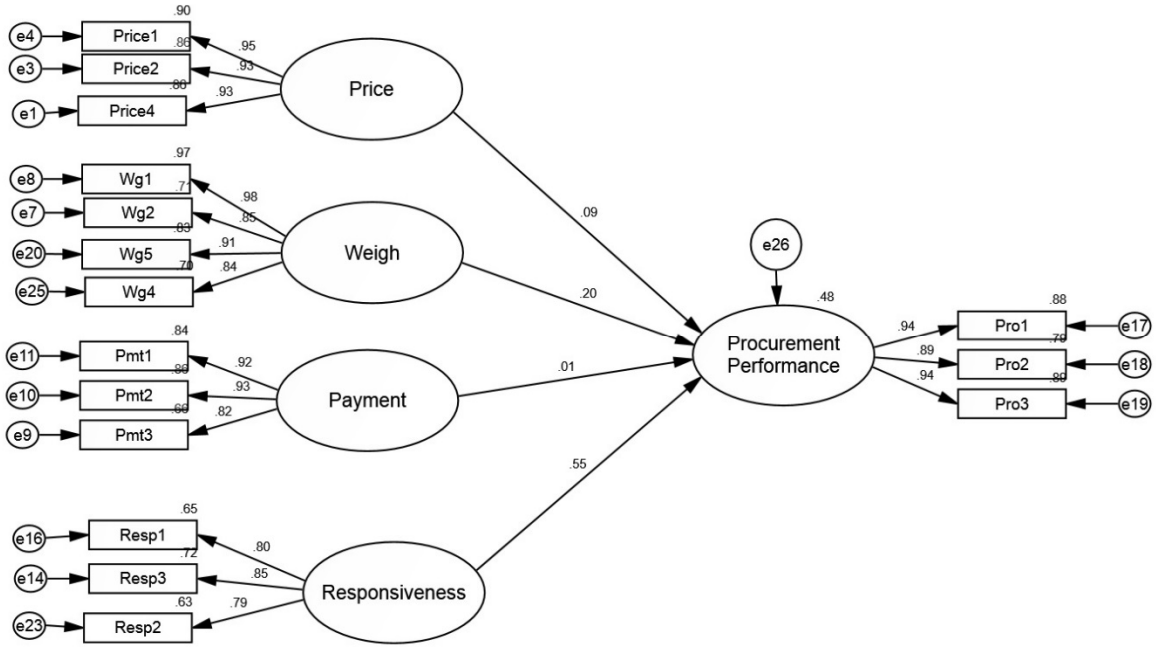


Figure 2: Structural Equation Model

Table 4.5.4: Model Fit Indices

Fit indices	$\chi 2/df$	GFI	AGFI	RMR	NFI	RFI	TLI	RMSEA
Values	2.670	.943	.918	.042	.966	.957	.965	.060
Recommended Values	≤ 3	≥ .90	≥ .90	≤ .05	≥ .90	≥ .90	≥ .90	≤ .06

4.5.6 Hypotheses testing

The hypotheses pertaining to objective-4 were tested by using SEM. The results of structural model were able to support the statistically significant effect of four independent

factors .i.e., price, Weighment, payment and responsiveness on overall procurement performance at 0.05 level of significance. It was shown in the table

Table 4.5.5: Hypotheses testing

Hypothetical Path	**Estimate**	**S.E.**	**C.R.**	**P**	**Result**
H9: Price → Procurement Performance	.075	.024	3.188	.001	Accepted
H10: Weighment → Procurement Performance	.204	.028	7.178	***	Accepted
H11: Payment → Procurement Performance	.020	.039	.511	.609	Rejected
H12:Responsiveness → Procurement Performance	.599	.038	15.597	***	Accepted

Table 4.5.6: Standardized estimates of factors

Hypothetical Path	**Estimate**
H9: Price → Procurement Performance	.090
H10: Weighment → Procurement Performance	.204
H11: Payment → Procurement Performance	.013
H12:Responsiveness → Procurement Performance	.550

Based up on the results of SEM, It was noticed that price has significant effect ($\beta = .09$, $t = 3.188$, $p=.001$) on procurement performance of FCI and thus H9 was accepted. Similarly,

another factor, Weighment has also significant effect (β = .204, t = 7.178, p=.000) on procurement performance of FCI and hence H10 was accepted. But, Payment does not have significant effect on procurement performance since β = .013, t = .559, p=.609. Hence, H11 was rejected. Finally, Responsiveness has significant effect (β = .55, t = 15.597, p=.000) on procurement performance. In the nutshell, among all the four hypotheses, three were accepted and one was rejected at 5 percent level of significance.

4.6 Objective-5: To identify the most important factors which affect the procurement performance of the FCI.

To fulfil the objective-5, standardized regression Weights of each factors were taken into consideration and ranked them accordingly. Based up on these values, responsiveness was given 1st rank, Weighment was given 2nd rank, 3rd rank has been assigned to price and 4th rank was given to payment. Responsiveness was considered as the most important factor among all these four since it was assigned 1st rank based up on its regression Weight. It was shown in the table.

Table 4.6: Ranking of the factors

Factors	Standardized Regression Weights	Rank
Price	0.09	3
Weighment	0.204	2
Payment	0.013	4
Responsiveness	0.55	1

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Chapter-5

Findings, Conclusions and Recommendations

This chapter presents the implications and conclusions arising from the findings of the study. It also suggests recommendations for action and future research. The chapter also includes the limitations of the study.

5.0 Introduction

The purpose of this study was to analyse the procurement performance of the Food Corporation of India (FCI) from farmers' perspectives. There has been no such studies undertaken in the past to analyse the procurement performance of public sector units from farmers' perspectives. Hence, it became the challenging task for the researcher to take an appropriate methodology to evaluate the procurement performance of the FCI. A lot of efforts have been put to consider the parameters to evaluate the performance. This study is from the farmers' perspective, focused group discussions have been conducted to know the major parameters which measures the procurement performance. After several deliberations with the farmers' community, a set of 19 parameters were taken into consideration to assess the procurement performance. Then exploratory factor analysis was applied to explore the major factors out of it. Four factors were extracted from the results of factor analysis. These were named based up on the nature and meanings of the parameters grouped under respective factors.

These include;

1. Price practice
2. Weighment practice
3. Payment practice and
4. Responsiveness of the FCI staff

This study evaluates the procurement performance of the FCI based on these four parameters majorly. Based up on the results and findings, this study suggests possible recommendations for positive changes for improving the procurement performance levels of FCI.

Thus, procurement performance of FCI was evaluated and compared between and among the various demographic characteristics of farmers, with respect to these four factors and tested the corresponding hypotheses by using appropriate statistical data analysis techniques.

5.1. The Design and Methodology of the Study

The present study is an empirical one, based on both secondary and primary data. The study was conducted in two stages.

In the first stage, all available secondary data related to the research area were collected from the published sources like articles published in refereed and non-refereed journals, web source, published and unpublished theses.

In the second stage, pilot study was conducted. Primary data were collected by a field survey. A structured questionnaire was used for this purpose. A total of 250 farmers were contacted but only 196 farmers have been responded and filled the questionnaires. Which

yields 78% of response rate. Finally, 196 samples were included for the analysis of pilot study. Questionnaire has been finalised after making necessary corrections. The population of the study consists of all the farmers involved in paddy crop in united Andhra Pradesh state, which was now divided as the states of Telangana and Andhra Pradesh.

Keeping the pilot study response rate in mind, A total of 1200 questionnaires were distributed to the farmers belong to the three regions- Telangana, Andhra and Rayalaseema. But only 1020 of them have filled the questionnaires. It shows only 93% of response rate. From these, again 116 questionnaires were excluded because of incomplete responses. Hence, finally 1004 samples were included for the analysis, which comprises 522 samples from land owned farmers and 482 samples from tenant farmers.

The data were analysed with the help of data analysis tools; SPSS 21v. Keeping in view of the objectives of the study, appropriate mathematical and statistical tools have been used, such as descriptive statistics, graphs, bar charts, Independent sample t-test and analysis of variance (ANOVA).

In the preceding chapters an attempt has been made to analyse the farmers' perception towards the procurement performance of the FCI and compared between and among their demographical characteristics. This chapter is devoted to summarise the findings of those chapters, draw conclusions and make recommendations on the basis of the finding of the study. This chapter is divided into four sections. Section-A provides a summary of the entire study. Section-B deals with findings drawn from the data analysis, Section-C deals with the conclusions drawn based up on the findings and Section-D contains the recommendations based on the findings and conclusion of the study.

Section-A

5.2. Summary of Chapters

This study has been organised in five chapter, each chapter discusses each part of the study in such a manner research follow in systematic order. They are;

The **first chapter** is introductory chapter. It deals with an overview, Role, functions, Uniform Specification of rice procurement practice of Food Corporation of India (FCI).

The **second chapter** covers a brief review of the earlier studies conducted on procurement performance. This chapter is divided into two parts. The first part gives a review of the earlier studies in general. The second part is devoted for presenting a review of earlier studies in relation to procurement performance.

In the third chapter, the broad and specific objectives, hypotheses, a brief research design, research methods and methodology have been presented. Data collection tools and techniques, data analysis were also presented. The measures and items of the scale, reliability and validity analysis for the study have also been discussed in this chapter.

Chapter four gives a detailed data analysis of the study. It comprises demographical characteristics of the respondents and their responses on the measures of procurement performance, comparative analyses between and among the demographical characteristics of the farmers towards the measures of the procurement performance.

Chapter five deals with findings, conclusions, recommendations, limitations and scope for further study.

Section B

Findings of the study

5.3.1. Demographical Characteristics of Respondents

Demographical Characteristics of respondents are summarized and presented below.

- Of the 1004 sample respondents, 52% (i.e. 522) were land owned farmers and 48 % (i.e. 482) were tenant farmers.
- Of the 1004 sample respondents, 40% (i.e. 402) were from the Telangana region and 60% (i.e, 602) were from Andhra and Rayalaseema region. Thus, majority of the sample respondents belong to Andhra and Rayalaseema region.
- Of the1004 sample respondents, 53 % (i.e. 529) of the total respondents are literates and 47% (i.e. 475) were the illiterates.
- In the total sample, 26 % (i.e. 263) of the total respondents hold land less than an acre, 25% of the total respondents hold land between 1-3 acres, 24 % of the total respondents hold land between 3-6 acres and remaining 25% of the total respondents hold land more than 6 acres.
- 14% of the total respondents have grown paddy in area of less than an acre, 45% of the total respondents have grown paddy in area between1-3 acre, 26% of the total respondents have grown paddy in area between 3-6 acre and remaining 15% of the total respondents have grown paddy in area more than 6 acre.

- 32% of the total respondents have grown paddy under the water source of bore wells, 33% of the total respondents have grown paddy under the water source of canals, 35% of the total respondents have grown paddy under the water source of ponds.

5.3.2. Farmers' responses towards the measures of procurement and Hypotheses testing

Farmers' responses towards the measures of procurement performance were summarized under each measures.

5.3.2.1. Price practice of FCI

- It was observed that 46% of the total respondents agreed that FCI's procurement price is reasonable, 19% of the total respondents gave mixed opinion and remaining 35% of total respondents complained that FCI's procurement price is not reasonable.

- 47% of the total respondents agreed that FCI's procurement price is more than market price, 20% of the total respondents gave mixed opinion and rest 33% of total respondents complained that FCI's Procurement price is lesser than the market price.

- 50% of the total respondents agreed that farmers get good profits at FCI's procurement price. 20% of the total respondents gave mixed opinion and rest 30% of total respondents complained that farmers do not get good profits at FCI's procurement price.

- 45% of the total respondents agreed that they like to sell their produce at FCI's price. 20% of the total respondents gave mixed opinion and rest 35% of total respondents complained that they do not like to sell their produce at FCI's price.

- The hypothesis (H1a) was framed to know whether any differences existed between perceptions of the land owned and tenant farmers towards the price practice of FCI. An independent sample t-test was applied to compare the group difference. Since, an insignificant t-value was found, H1a was rejected and concluded that there is no significant difference exist between the land owned and tenant with respect to the price practice of FCI.

- The hypothesis (H1b) was framed to know whether any differences exist among perceptions of the farmers belong to all the three regions towards the price practice of FCI. The statistical test Analysis of Variance (ANOVA) was applied to test this hypothesis. Since, an insignificant F-value was found, H1b was rejected and concluded that there is no significant difference exist among the three regions of farmers with respect to the price practice of FCI.

- The hypothesis (H1c) was framed to know whether any differences exist between perceptions of the literate and illiterate farmers towards the price practice of FCI. An independent sample t-test was applied to compare the group difference. Since, an insignificant t-value was found, H1c was rejected and concluded that there is no significant difference exist between the perceptions of the literate and illiterate farmers with respect to the price practice of FCI.

5.3.2.2. Weighment practices of FCI

- 48% of the total respondents agreed that FCI's Weighment process is transparent. 23% of the total respondents gave mixed opinion and rest 29% of total respondents complained that FCI's Weighment process is not transparent.

- 46% of the total respondents agreed that they trust the Weighmenting personnel of FCI. 26% of the total respondents gave mixed opinion and rest 28% of total respondents complained that they do not trust the Weighmenting personnel of FCI.

- 46% of the total respondents agreed that FCI uses standard Weighment tools. 24% of the total respondents gave mixed opinion and rest 30% of total respondents complained that FCI does not use standard Weighment tools.

- 46% of the total respondents agreed that they understand the FCI's Weighment process. 24% of the total respondents gave mixed opinion and rest 30% of total respondents complained that they do not understand the FCI's Weighment process.

- 47% of the total respondents agreed that they like FCI's Weighment practice. 24% of the total respondents gave mixed opinion and rest 29% of total respondents complained that they do not like FCI's Weighment practice.

- The hypothesis (H2a) was framed to know whether any differences exist between perceptions of the land owned and tenant farmers towards the Weighment practice of FCI. An independent sample t-test was applied to compare the group difference. Since, an

insignificant t-value was found, H2b was rejected and concluded that there is no significant difference exist between the land owned and tenant with respect to the Weighment practice of FCI.

- The hypothesis (H2b) was framed to know whether any differences exist among perceptions of the farmers belong to the three regions towards the Weighment practice of FCI. The statistical test Analysis of Variance (ANOVA) was applied to test this hypothesis. Since, an insignificant F-value was found, H2a was rejected and concluded that there is no significant difference exist among the three regions of farmers with respect to the Weighment practice of FCI.

- The hypothesis (H2c) was framed to know whether any differences exist between perceptions of the literate and illiterate farmers towards the Weighment practice of FCI. An independent sample t-test was applied to compare the group difference. Since, an insignificant t-value was found, H2c was rejected and concluded that there is no significant difference exist between the perceptions of the literate and illiterate farmers with respect to the Weighment practice of FCI.

5.3.2.3. Payment practices

- 66% of the total respondents revealed that FCI' does not release payment on time. On the other hand, 31% of the respondents gave mixed response and rest only 3% of total respondents agreed that, FCI' pays payment in time.

- 65% of the total respondents agreed that FCI's payment procedure is fair , on the other hand , 33% of the total respondents gave mixed opinion and rest 2% of total respondents complained that FCI's payment procedure is not fair.

- 67% of the total respondents did not agree with the statement "I am satisfied with the payment process of FCI". It means they were not satisfied with FCI's payment process. On the other hand only 8% of the total respondents agreed that they were satisfied. The rest of 32% of the total respondents gave mixed response.

- 80% of the total respondents mentioned that, they do not like the procurement practice of FCI. On the other hand, 15% of the total respondents agreed that they like the procurement practice. Only 5% of the total respondents gave mixed response.

- 83% of the total respondents disagreed that FCI does not take the utmost care in procurement process while only 11% of the total respondents agreed that FCI takes the utmost care. Remaining 6% of the total respondents gave mixed opinion.

- 88% of the total respondents revealed that, FCI does not follow the transparency in the procurement process. On the contradiction to this only 11% of the total respondents agreed with the above statement. Remaining 1% of the total respondents gave mixed opinion.

- The hypothesis (H3a) was framed to know whether any differences exist between perceptions of the land owned and tenant farmers towards the payment practice of FCI. An independent sample t-test was applied to compare the group difference. Since, an insignificant t-value was found, H3a was rejected and concluded that there is no significant difference exist between the land owned and tenant with respect to the payment practice of FCI.

- The hypothesis (H3b) was framed to know whether any differences exist among perceptions of the farmers belong to the three regions towards the payment practice of FCI. The statistical test Analysis of Variance (ANOVA) was applied to test this hypothesis. Since, an insignificant F-value was found, H3b was rejected and concluded that there is no significant difference exist among the three regions of farmers with respect to the payment practice of FCI.

- The hypothesis (H3c) was framed to know whether any differences exist between perceptions of the literate and illiterate farmers towards the payment practice of FCI. An independent sample t-test was applied to compare the group difference. Since, an insignificant t-value was found, H3c was rejected and concluded that there is no significant difference exist between the perceptions of the literate and illiterate farmers with respect to the payment practice of FCI.

5.3.2.4. Responsiveness of staff

- 58% of the total respondents agreed that FCI keeps informed farmers about as and when FCI go for procurement. 24% of the total respondents gave mixed opinion and rest 19% of total respondents complained that FCI does not inform farmers as to when procurement will be performed.

- 62% of the total respondents agreed that FCI's staff provide prompt services to farmers while procurement process. 22% of the total respondents gave mixed opinion and rest 16% of total respondents complained that FCI's staff does not provide prompt services to farmers while procurement process.

- 60% of the total respondents agreed that FCI is always ready to respond to farmers' requests. 27% of the total respondents gave mixed opinion and rest 13% of total respondents complained that FCI is always ready to respond to farmers' requests.

- The hypothesis (H4a) was framed to know whether any differences exist between perceptions of the land owned and tenant farmers towards the responsiveness of FCI staff. An independent sample t-test was applied to compare the group difference. Since, an insignificant t-value was found, H4a was rejected and concluded that there is no significant difference exist between the land owned and tenant with respect to the responsiveness of FCI staff.

- The hypothesis (H4b) was framed to know whether any differences exist among perceptions of the farmers belong to the three regions towards the responsiveness of FCI staff. The statistical test Analysis of Variance (ANOVA) was applied to test this hypothesis. Since, an insignificant F-value was found, H4b was rejected and concluded that there is no significant difference exist among the three regions of farmers with respect to the responsiveness of FCI staff.

- The hypothesis (H4c) was framed to know whether any differences exist between perceptions of the literate and illiterate farmers towards the responsiveness of FCI staff. An independent sample t-test was applied to compare the group difference. Since, an insignificant t-value was found, H4c was rejected and concluded that there is no significant difference exist between the perceptions of the literate and illiterate farmers with respect to the responsiveness of FCI staff.

5.3.3. Farmers' levels of Satisfaction towards procurement performance of FCI

Farmers' levels of satisfaction towards the procurement practice was examined based on the four measures- price practice, Weighment practice, payment practice and staff responsiveness.

5.3.3.1. Satisfaction towards the price practice of FCI

- 51 % of the total respondents rated that they are not satisfied with price practice of FCI and among these, 26% are highly dissatisfied. On the other hand, 38% of the total respondents rated they are satisfied and among these, 19% rated as highly satisfied. About 11% of the total respondents rated that they were neither satisfied nor dissatisfied.

- 48% of the total land owned farmer respondents and 54% of the total tenant farmers respondents are dissatisfied with the price practice adopted by FCI, while 41% of the total land owned farmer respondents and 34% of the total tenant farmer respondents are satisfied. On the other hand, 11% of the total land owned farmer respondents and 11% of the total tenant farmer respondents are unable to decide their levels of satisfaction with the price practice adopted by FCI.

- The hypothesis (H5a) was framed to know whether any differences exist between satisfaction levels of the land owned and tenant farmers towards the price practice of FCI. An independent sample t-test was applied to compare the group difference. Since, an insignificant t-value was found, H5a was rejected and concluded that there is no significant difference exist between the land owned and tenant with respect to their satisfaction levels towards the price practice of FCI.

- The hypothesis (H5b) was framed to know whether any differences exist among satisfaction levels of the farmers belong to the three regions towards the price practice of FCI. The statistical test Analysis of Variance (ANOVA) was applied to test this hypothesis. Since, an insignificant F-value was found, H5b was rejected and concluded that there is no significant difference exist among 3three regions of farmers with respect to their satisfaction levels towards the price practice of FCI.

5.3.3.2. Satisfaction towards the Weighment practice of FCI

- 46 % of the total respondents rated that they are not satisfied with Weighment practice adopted by FCI, among these, 25.6% are highly dissatisfied. On the other hand, 38.1% of the total respondents rated they are satisfied and among these, 19.2% rated as highly satisfied. About 15.8% of the total respondents rated that they are not in the position to decide, whether satisfied or not. By observing these results, we can say that, majority of the farmers are dissatisfied with the Weighment practice adopted by FCI.

- 45.2% of the total land owned farmer respondents and 46.8% of the total tenant farmers respondents mentioned that they are dissatisfied with the Weighment practice adopted by FCI, while 40.6% of the total land owned farmer respondents and 35.4% of the total tenant farmer respondents are satisfied. On the other hand, 14.2% of the total land owned farmer respondents and 17.6% of the total tenant farmer respondents mentioned that they are unable to decide their levels of satisfaction with the Weighment practice adopted by FCI.

- The hypothesis (H6) was framed to know whether any differences exist between the satisfaction levels of the land owned and tenant farmers towards the Weighment practice of FCI. An independent sample t-test was applied to compare the group difference. Since,

an insignificant t-value was found, H6a was rejected and concluded that there is no significant difference exist between the land owned and tenant with respect to their satisfactions levels towards the Weighment practice of FCI.

5.3.3.3. Satisfaction towards the payment practice of FCI

- 51% of the total respondents rated that they are not satisfied with payment practice adopted by FCI and among these, 29% are highly dissatisfied. On the other hand, 36% of the total respondents rated they are satisfied and among these, 19% rated as highly satisfied. About 13% of the total respondents rated that they are not in the position to decide, whether satisfied or not. By observing these results, we can say that, majority of the farmers are dissatisfied with the payment practice adopted by FCI. It could be due to their bad had with FCI regarding the payments.

- 50% of the total land owned farmer respondents and 51% of the total tenant farmers respondents mentioned that they are dissatisfied with the payment practice adopted by FCI, while 39% of the total land owned farmer respondents and 34% of the total tenant farmer respondents mentioned that they are satisfied. On the other hand, 11% of the total land owned farmer respondents and 15% of the total tenant farmer respondents mentioned that they are unable to decide their levels of satisfaction with the payment practice adopted by FCI.

- The hypothesis (H7) was framed to know whether any differences exist between the satisfaction levels of the land owned and tenant farmers towards the payment practice of FCI. An independent sample t-test was applied to compare the group difference. Since, an insignificant t-value was found, H7a was rejected and concluded that there is no significant

difference exist between the land owned and tenant with respect to their satisfaction levels towards the payment practice of FCI.

5.3.3.4. Satisfaction towards the staff responsiveness of FCI

- A 51 % of the total respondents rated that they were not satisfied with responsiveness of FCI's staff and among these, 29% are highly dissatisfied. On the other hand, 35% of the total respondents rated that they are satisfied and among these, 18% rated as highly satisfied. About 14% of the total respondents rated that they were neither satisfied nor dissatisfied. By observing these results, we can say that, majority of the farmers are dissatisfied with the responsiveness of FCI's Staff.

- An aggregate of 49% of the total land owned farmer respondents and 54% of the total tenant farmers respondents agreed that they are dissatisfied with the responsiveness of FCI's staff. On the other hand, 38% of the total land owned farmer respondents and 31% of the total tenant farmer respondents mentioned that they are satisfied. On the other hand, 13% of the total land owned farmer respondents and 15% of the total tenant farmer respondents are unable to decide their levels of satisfaction with the responsiveness of FCI's staff.

- The hypothesis (H8a) was framed to know whether any differences exist between the satisfaction levels of the land owned and tenant farmers towards the responsiveness of FCI staff. An independent sample t-test was applied to compare the group difference. Since, an insignificant t-value was found, H8a was rejected and concluded that there is no significant difference exist between the satisfaction levels of land owned and tenant with respect to the responsiveness of FCI staff.

- The hypothesis (H8b) was framed to know whether any differences exist among satisfaction levels of the farmers belong to the three regions towards the responsiveness of FCI staff. The statistical test Analysis of Variance (ANOVA) was applied to test this hypothesis. Since, an insignificant F-value was found, H8b was rejected and concluded that there was no significant difference exist among the satisfaction levels of three regions of farmers with respect to the responsiveness of FCI staff.

5.3.4. Effect of identified factors on overall procurement performance

A 2-step structural equation modelling (SEM) was used to analyse the effect of identified factors (i.e., price, Weighment, payment and responsiveness) on procurement performance. In the 1st step, confirmatory factor analysis (CFA) was applied to ensure the validity and reliability of respective factors. All the factors have achieved necessary validity thresholds and then structural equation modelling was carried out to analyse the effect of identified factors on the procurement performance. Hypotheses were tested at 5 percent level of significance. The result of SEM proved that price, Weighment and responsiveness have the positive effect on procurement performance while payment does not have. Thus, Hypotheses, H9, H10 and H12 were accepted but H11 was rejected due to its insignificant effect.

5.3.5. Most important factor

An attempt was made to identify the most important factor mong the four major factors, their regression Weighmentts were (β) considered to assign ranks. Responsiveness was assigned 1st rank as it has the highest β value (.550). Weighment was assigned 2nd rank, Price and payment were assigned 3rd and 4th ranks respectively.

Thus, Responsiveness was considered as the most important factor which effects the procurement performance.

Section C

5.4. Conclusions of the Study

The following are the major conclusions based on the findings of the study.

1. Majority of the farmers perceive that price practice of Food Corporation India (FCI) is not adequate and they expect it should be more than the present procurement price.

2. Both the land owned and tenant farmers have similar perception is procurement price is not adequate enough to realize the investment on harvesting paddy.

3. Similarly, the farmers of three regions- Andhra, Telangana and Rayalaseema are of the same opinion that price practice FCI is not adequate and it was also the same case with both the literate and illiterate farmers.

4. Majority of the farmers were of opinion that Weighment practice of FCI is not fair. Farmers complained that FCI staff were adopting unfair practice while Weighment the paddy at procurement centers. It was also noticed that, farmers were unable to understand the Weighment practice of FCI since, it does not follow a transparency while Weighment the paddy.

5. Farmers belong to all the three regions- Andhra, Telangana and Rayalaseema were of the same opinion that Weighment practice FCI is not fair and it was also the same case with both the literate and illiterate farmers.

6. More than a half of the total respondents complained that, FCI delays in making payment for procured goods. It does not release the payment in time. Respondents from Telangana region mentioned that, they were asked for high rate of commission for getting the payment for their produce.
7. Farmers of all the three regions- Andhra, Telangana and Rayalaseema were of the same opinion that payment practice of FCI is not fair and it was also the same case with both the literate and illiterate farmers.

8. Similarly, farmers do not perceive positive towards the staff responsiveness of FCI.

9. Farmers belong to Telangana region complained that, they were unaware of the schedule of the procurement and were not informed even. They also mentioned that, sometimes they give rude responses for their queries.

10. Even the farmers belong to Andhra and Rayalaseema region were also facing the problem with the FCI's procurement schedule. They complained that, sometimes they incur losses as FCI delays in procuring the produce.

11. Majority of the farmers were not satisfied with the procurement practice of FCI. It might be due to their bad experience with FCI and its authorized agencies previously.

12. Thus, the overall procurement performance of FCI is not up to the expectations of the farmers.

13. Price practice, Weighment practice and responsiveness of FCI have the significant effect on procurement performance. On the other hand, payment do not have any effect on the Procurement Performance of FCI.

14. Responsiveness of FCI staff was considered as the most important factor among the all four factors.
15.

Section-D

5.5. Recommendations

1. The Food Corporation of India (FCI) should change the procurement schedule.

2. Minimum Support Price should be revised according to the increasing cost of investment is from inputs to harvest the paddy to support the financial burdens of the farmers.

3. FCI should take steps to ensure transparency in Weighment process, so that malpractices by staff are eliminated and farmers will be the net beneficiary.

4. FCI should concentrate on making timely payments to farmers.

5. FCI should focus on responsiveness on training staff, so that they are responsive to farmers.

6. FCI should monitor the authorized agencies which are involved in the procurement process and where the possible scope is there for exploiting the farmers.

7. To increase the geographical coverage of procurement operations.

Limitations and scope for further research

The limitations of the present study are:

1. Responses are collected from respondents belonging to three regions spreads over 5 districts. Hence further studies can include other states.

2. Procurement performance is measured from farmers' perspective by considering only four dimensions, is price, Weighment, payment and responsiveness. But further studies can focus on including other dimensions like accessibility.

3. This study considered responses of only paddy farmers, hence further studies can include other crops like wheat.

4. Further, research can be made on wheat and sugarcane.

SYNOPSIS

Farmers' Perspective of FCI Rice Procurement Performance – A Study in Andhra Pradesh

A synopsis submitted to the University of Hyderabad in partial fulfillment
For the award of the degree of

DOCTOR OF PHILOSOPHY

In

MANAGEMENT

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Abstract

The perception of farmers about the procurement process is Indian agriculture systems differs. This variation in the perceptions is due to the availability of infrastructure and marketing facilities along with the existing agriculture policies of government.

According to the high level committees (HLC), Food Corporation of India (FCI) procurement has out lived utility .Government has a policy to allow private parties to procure food grains for central pool, however, they are not actually engaged at the moment, as Food Corporation of India (FCI) and State Government agencies are already providing adequate procurement coverage to the farmers in various states.

Indian farmer, anticipates handsome gains when he sows the paddy crop, year-after-year. In practice the middle men erodes this quest for profits. The only savior being Food Corporation of India (FCI). Which procures his output at the MSP fixed by government. It is therefore, important to look at the perceptions of farmers towards procurement practice of FCI.

Food Corporation of India (FCI) is the key agency of central government which procure rice from farmers in India. It plays a pivotal role in ensuring food security in India. In consultation with state governments, it establishes a large number of purchase agencies at various key points in respective mandals and villages. India's food security greatly depends on the procurement performance of FCI. Hence, a periodical evaluation of procurement performance of FCI is essential for policy formulation. The researcher was motivated to undertake a study to evaluate the procurement performance of FCI. Since farmers are the key source of food grains, it is indeed necessary and relevant to assess the procurement performance from farmers' perspective.

The objectives of this study are 1. To identify the factors for evaluation of the procurement performance of FCI, 2. To examine the farmers' perception towards the procurement performance, 3. To examine the farmers' levels of satisfaction towards the procurement performance, 4. To analyze the effect of identified factors on overall procurement performance and 5. To identify the most important factors responsible for procurement performance. Hypotheses were set in line with these objectives and tested by using appropriate statistical techniques.

A questionnaire was designed after consultation with experts and FCI officials Data was collected from 1004 farmers spreading over three regions of undivided Andhra Pradesh i.e., Telangana, Andhra and Rayalaseema. The data analysis techniques- Exploratory Factor

Analysis, Independent sample t-test, Analysis of Variance (ANOVA), Confirmatory Factor Analysis, Structural Equation modelling were used to analyze the data.

Based upon the result of the study, four major factors were identified viz. price practice, weigh practice, payment practice and responsiveness of FCI staff. Thus, procurement performance was evaluated based up on these four factors. Interestingly, Farmers had negative perceptions towards the price practice, weighment practice, payment practice and staff responsiveness. Similarly, farmers had low levels of satisfaction towards procurement performance of FCI. It was found that, price practice, weigh practice and responsiveness of FCI staff have significant effect on procurement performance of the FCI. Among these factors, responsiveness of FCI staff and weigh practice were found to be most important for procurement performance.

Thus, it is recommended that the management of Food Corporation India should focus on these factors to ensure the better procurement performance.

1.0 INTRODUCTION

Food Corporation of India (FCI) is the central agency responsible for several activity like procurement, carriage and storage operations in India. Along with other State Supports it agrees to procurement of wheat, paddy and grainy particles Minimum Support Price (MSP) scheme and rice under constitutional levy scheme Price Support is taken up mainly to ensure remunerative costs to the farmers for their crop which works as an incentive for attaining better production. To facilitate procurement of food grains, FCI and various State Agencies in discussion with the State Govt and managed by Food Corporation of India, establish a large number of purchase centers at various mandis and key points. The Food Corporation of India (FCI) and State Government Agencies under current dispensation first procure paddy and then get it custom-milled from rice millers by paying fixed tolling custodies. Currently, all official agencies procure about 49-53 million tonnes of non-basmati paddy, equivalent to 32-35 million tonnes of milled rice every year.

But cost of rice is increasing due to rise in cost of production occurring through rise in demand of energy for operating water lifting devices in irrigated areas. Added to this, fluctuations in yield per acre and cost per unit of output are noticed. In this context, to safeguard the interests of rice growers, the government started adopting the measure of procurement of rice from the farmers. Hence, an attempt is made to examine the level of procurement at all India level and across the major producing states of India. Procurement of rice has been made to ensure adequate stock of rice for Public Distribution System (PDS). The PDS is the channel through which rice and other grains are supplied to the Below Poverty Line (BPL) and other beneficiaries under the food security scheme at subsidised rates. The aim of food security scheme is to "provide food and nutrition security, in human life cycle approach by ensuring access to adequate quantity and quality of food at affordable costs for people to live a life with dignity" Basu, Kaushik (2011). This scheme of food security assumes greater significance since rice is consumed by majority of people in the country. The paradox of high economic growth and slow reduction in the number of food insecure persons needs to be understood in proper perspective.

2.0 REVIEW OF LITERATURE

Kensuke Kubo (2011) has identified that the Indian government's food policy, which is mainly focused on rice and wheat, consists of two pillars: government procurement of farmers' output, and public distribution of procured output.

S. Mahendra Dev,N. Chandrasekhara Rao (2010) have identified in their study that the various problems faced by the food sector in Andhra Pradesh the food security system and worth policy basically consists of three instruments: procurement costs/least possible support worths (MSPs),buffer stocks and public distribution system (PDS).

Currently, FCI officials make payment to farmers for the procurement of paddy at minimum support price (MSP), while stocks are put in storage with rice millers under Custom Milling of Rice (CMR) agreement. As of April, 2014 millers held about 15 million tonnes of paddy alone, costing ₹20,000 crore at a MSP of ₹13,450 a tonnes

M.Ragavan (2004), in his study identified that the Food Corporation of India enters the primary market place and undertakes support purchases of wheat and rice for the central pool. The inverse relationship between food grain procurement and distribution in India is reflected in stocks rising to unmanageable levels.

Madhura Swaminathan (1999), in his study identified the data from FCI performance budgets show clearly that the increase in procurement worth was a critical factor in the increase in economic costs of rice and wheat. The procurement worth, however, is a variable over which the FCI has a control as the central government sets the procurement worth based on the recommendations of the Commission on Agricultural Costs and Worths. Despite the absolute increase in many constituents of costs, there was an improvement in the operational good organization of the FCI during the 1990s. The FCI compared favorably with private traders in the distribution of rice in a large number of states.

Under the current system, the Food Corporation of India (FCI) and other government organizations procure paddy from farmer's at least possible support worth and get this paddy milled from registered millers under Custom Milling of Rice (CMR) agreement. This system is leading to increased stock with millers. As of April, 2015, 15 million tons of paddy worth ₹20,000 Crore (around $ 3.4 billion) was held by miller. **(Tejinder.N, 2014; Oryza, 2014.)**

Gulati and Sharma (1990), have examined the issues related to procurement worth's of wheat and paddy and their impact on open market place worth's etc. The authors have

explored these issues in an empirical frame work. The authors have found from their study that procurement worth's are largely influenced by movements in cost of production and logged open market place worth's with occasional bonanza emanating from non-economic considerations. It is found from their study that procurement worth's have decisive influence on current market place worth formation with other factors like stocks with government and zoning playing only marginal roles. The authors have found from their study that the volume of procurement is significantly affected by level of output and difference between procurement and open market place worth's weekly supported by administrative measures. The authors further conclude that the supply of wheat and rice is influenced by their open market place worth's, suitably deflated and non-worth variables like irrigation. The elasticity with respect to shifter variables is much greater than worth elasticity. The authors conclude that results reveal greater diversity. The authors have suggested a supportive role for worth's which becomes critical when non-worth factors are in place.

Hideki Imaoka (1992), in his study has observed that Asia is the major rice distributing and trade region in the world. About 4 million metric tonnes of milled rice, about 50 per cent of the world total is annually traded by the Asian nation state. On the other hand the Asian distributing countries annually supply about 4.3 million metric tonne in milled to the world market place. The author has observed that the Asian market place is an independent market place with US export, and exogenous factor in the sense that a unique international worth is determined solely by the condition that the Asian importing demand for Asian exports is equal to the Asian export to Asia. The author considers that the Asian rice market place is in perfect competition in the sense that every exporter and importer is too small to affect the determination of international worth; consequently there is unique international worth for the commodity bundle rice. The Asian rice market place highly distorted by fluctuations in domestic production. The author feels that in order to stabilize the Asian rice market place, priority should be given in each country to control the fluctuations in domestic rice production.

Gail L Cramer et al (1993), have estimated the impact of trade liberalisation in twelve distributing and forty six importing countries and regions. The authors have used global rice spatial equilibrium structural model to account for 1986 and 1987 rice trade flows in Japonica, high quality indicia and low quality indicia. The study has revealed that (i) world rice trade expanded by about 104 per cent (ii) world trade volume as a percentage of world consumption increased from 5.4 to 11.1 per cent (iii) world welfare increased $ 5.03 billion (iv) US rice exports increased 51.1 per cent, while total gross revenue rose 109 per cent (v) exports

increased for all exporters (vi) major exporters were, Japan, South Korea, EU, Philippines, Taiwan and Brazil and (vii) movement to free trade in Japan has important effects on world and US trade volumes, structure and worthy.

3.0 RESEARCH QUESTIONS

1. What according to the farmers are the factors influencing the procurement performance?
2. How do the farmers perceive rice procurement practice of Food Corporation of India?
3. Are the farmers satisfied with the rice procurement practice of Food Corporation of India?

4.0 OBJECTIVES OF THE STUDY

1. To study the factors affecting the procurement performance of FCI.
2. To study the farmers' perception towards the rice procurement practice of FCI.
3. To analyse the farmers' levels of satisfaction towards the rice procurement practice of FCI.
4. To analyse the effect of identified factors on the overall performance of FCI.
5. To identify the most important factors which affect the procurement performance of FCI.

5.0 Hypotheses of the study

H1a: There is a significant difference between the land owned and tenant farmers with respect to their perception towards price practice of FCI.

H1b: There is a significant difference between the three regions of farmers with respect to the price practice of FCI.

H1c: There is a significant difference between literate and illiterate farmers with respect to their perception towards price practice of FCI in procurement of rice

H2a: There is a significant difference between the land owned and tenant farmers with respect to their perception towards weigh practice of FCI.

H2b: There is a significant difference between the three regions of farmers with respect to the weigh practice of FCI.

H2c: There is a significant difference between the literate and illiterate farmers with respect to their perception towards weigh practice of FCI.

H3a: There is a significant difference between the land owned and tenant farmers with respect to their perception towards payment practice of FCI for procurement of rice.

H3b: There is a significant difference among the farmers of three regions with respect to the payment practice of FCI.

H3c: There is a significant difference between literate and illiterate farmers with respect to their perception towards payment practice of FCI for procurement of rice.

H4a: There is a significant difference between the land owned and tenant farmers with respect to their perception towards responsiveness of FCI staff while procurement of rice.

H4b: There is a significant difference among the farmers of three regions with respect to the responsiveness of FCI's staff.

H4c: There is a significant difference between literate and illiterate farmers with respect to responsiveness of FCI's staff while procurement of rice.

H5a: There is a significant difference between type of farmers and their satisfaction levels towards price practice of FCI in procurement.

H5b: There is a significant difference in the three regions of farmers with respect to their levels of satisfaction towards the price practice of FCI.

H6: There is a significant difference between type of farmers and their satisfaction levels towards weigh practice of FCI in procurement.

H7: There is a significant difference between type of farmers and their satisfaction levels towards payment practice of FCI in procurement.

H8a: There is a significant difference between type of farmers and their satisfaction levels towards responsiveness of FCI's staff.

H8b: There is a significant difference between the three regions of farmers with respect to their levels of satisfaction towards responsiveness of FCI staff.

H9: Price practice has significant effect on procurement performance.

H10: Weighing practice has significant effect on procurement performance.

H11: Payment practice has significant effect on procurement performance.

H12: Staff Responsiveness has significant effect on procurement performance.

6.0 RESEARCH METHODOLOGY

The study is descriptive in nature both primary and secondary data sources are used for this study. Primary data was collected using structured questionnaires designed for study from farmers of Telangana, Andhra Pradesh and Rayalaseema regions. The questionnaire was designed in three parts where, Part-A comprises of demographical related questions with nominal and categorical scales, Part-B comprises of perceptions and satisfaction related questions with Likert's 5 point scale and Part-C comprises of 22 statements related to the factors (Price, Weighment, Payment and Responsiveness) which influence procurement performance with 5-point Likert rating scale where, 1 stands for strongly disagree, 3 stands for neither disagree nor agree and 5 stands for strongly agree .Secondary data is collected from various sources like books, journals, and FCI annual records.

Sample Size

Table 1.1 Sampling method and sample size

Population	**Regions**	**Districts in regions**	**Popular Paddy growing districts**	**Sampling districts**	**Sample Size**
Andhra pradesh	**Telangana (10)**	Adilabad	Karimnagar Nizamabad	Karimnagar	202
		Hyderabad			
		Karimnagar			
		Nizamabad			
		Mahaboobnagar			
		Medak	Nalgonda Warangal	Nalgonda	200
		Nalgonda			
		Khammam			
		Rangareddy			
		Warangal			
	Andhra (9)	Guntur	Krishna East Godavari	East Godavari	201
		Krishna			
		East Godavari			

		West Godavari			
		Prakasham	Guntur West Godavari	West Godavari	200
		Nellore			
		Vijayanagaram Srikakulam			
		Vishakapattanam			
	Rayalaseema (4)	Anantapur	Chitthoor Kurnol	Chitthoor	201
		Chitthoor			
		Kadapa			
		Kurnool			
Total sample size					**1004**

7.0 DATA ANALYSIS

7.1 Data Analysis Tools

The data is analysed using the data analysis software platforms - Microsoft Excel, IBM SPSS 21version and IBM AMOS 21versions.

7.2 Data Analysis Techniques

Data was analysed under two parts. Part – one consist of respondents demographical characteristics, which are analysed with the help of descriptive, cross tabulations and graphs. Part-two consists of respondent's perceptions, satisfaction levels and group differences which are analysed and examined with the help of cross tabulations, independent sample t-test and ANOVA.

For this Exploratory Factor Analysis (EFA), a data reduction technique is used to extract the factors and confirmed the validity with the help of Confirmatory Factor Analysis (CFA). After achieving acceptable model fit indices, Structural Equation modelling (SEM) is used to estimate structural relationship between the dependent and independent factors. It has been chosen to measure the causation among the observed and the unobserved variables. Finally, hypotheses are tested with the help of output of structural equation modelling.

Table 1.2 Constructs and Items of the study

Construct	Measurement items
Procurement Performance	1. FCI takes utmost care in procurement process 2. FCI follows transparency in the procurement process. 3. I like the procurement practice of FCI.
Price	1. I like to sell my produce at FCI's price. 2. FCI's Procurement price is reasonable. 3. FCI's Procurement price is more than market price. 4. FCI's procurement price gives me good profits.
Weighment	1. FCI's weighment process are understood by me. 2. FCI uses standard weighment tools 3. Weighment practices of FCI personnel are trust worthy. 4. FCI's weigh process is transparent. 5. 5. I like the FCI's weighment practice
Payment	1. FCI's payment procedure is good. 2. FCI payments are timely. 3. I am satisfied with the payment process of FCI.
Responsiveness	1. FCI's staff Provide prompt service to farmers. 2. FCI Keeps farmers informed as to when procurement will be happen 3. FCI is always ready to respond to farmers' requests. 4. FCI is willing to help farmers.

Table 1.3 Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.893	.886	18

Hair et al.(2007) suggested that, a scale with the Cronbachs' alpha value of .70 and higher gives the good reliability. For this study the value of Cronbachs' alpha was found .893 which

is higher than the suggested value. Hence, the reliability of the scale used in this study found reliable for analysing the data and give authentic results.

8.0 Measurement model (Confirmatory Factor Analysis)

In the first step, confirmatory factor analysis (CFA) was used in order to examine the convergent and discriminant validity of respective constructs by employing AMOS 21v. It is a powerful statistical tool for examining the nature of and relations among latent constructs. CFA was part of the larger family of methods known as structural equation modeling (SEM) and it plays an essential role in measurement model validation in path or structural analyses (Brown, 2006; MacCallum & Austin, 2000). When conducting SEM, researchers often first evaluate the measurement model (whether the measured variables accurately reflect the desired constructs or factors) before assessing the structural model. The result of measurement model is presented in the Figure 1.

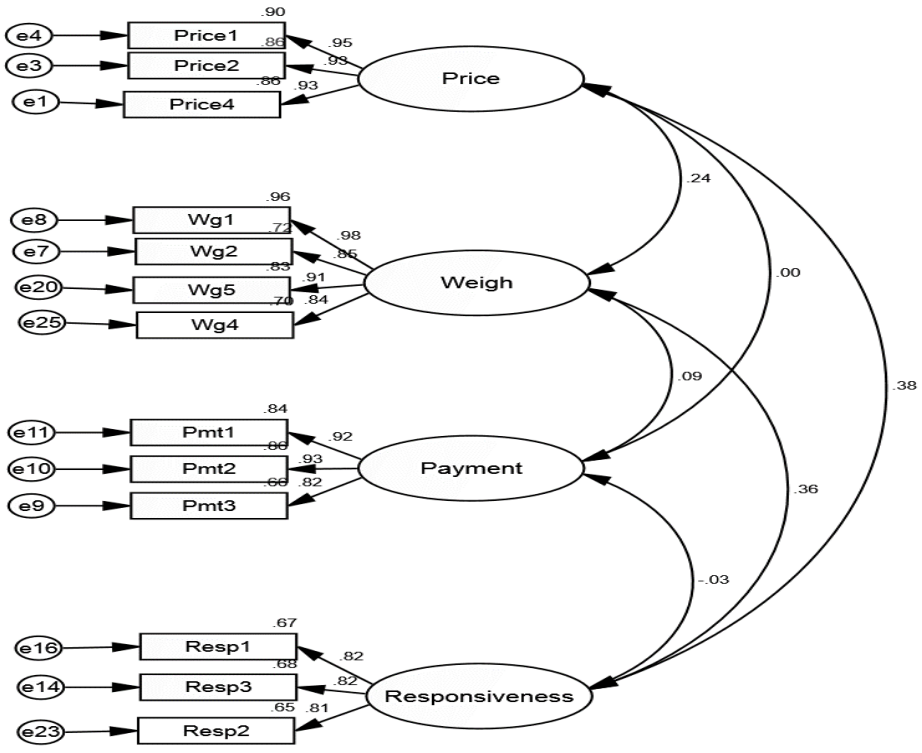

Figure 1: Measurement Model

9.0 Results of Confirmatory Factor Analysis

From the results of confirmatory factor analysis, it was noticed that the factor loadings corresponding to each item was found statistically significant at 0.05 level of significance and all the loading were in the range between .80 and .98 which were considered as good loadings.

Table- 1.4(a): Regression Weights (Unstandardized estimates)

	Estimate	S.E.	C.R.	P	Remark
Price4 <--- Price	1.000				
Price2 <--- Price	1.033	.020	52.453	***	Significant
Price1 <--- Price	1.017	.018	55.645	***	Significant
Wg2 <--- Weigh	1.000				
Wg1 <--- Weigh	1.180	.026	45.788	***	Significant
Pmt3 <--- Payment	1.000				
Pmt2 <--- Payment	1.199	.034	35.463	***	Significant
Pmt1 <--- Payment	1.175	.033	35.150	***	Significant
Resp3 <--- Responsiveness	1.017	.038	26.724	***	Significant
Resp1 <--- Responsiveness	1.000				
Wg5 <--- Weigh	1.117	.028	40.169	***	Significant
Resp2 <--- Responsiveness	.956	.036	26.289	***	Significant
Wg4 <--- Weigh	1.021	.030	34.326	***	Significant

The standardized regression weights corresponding to each items were presented in the table.

Table 1.4(b): Standardized Regression Weights

		Path	Estimate
Price4	<---	Price	.927
Price2	<---	Price	.927
Price1	<---	Price	.946
Wg2	<---	Weigh	.846
Wg1	<---	Weigh	.982
Pmt3	<---	Payment	.815
Pmt2	<---	Payment	.927
Pmt1	<---	Payment	.915
Resp3	<---	Responsiveness	.824
Resp1	<---	Responsiveness	.821
Wg5	<---	Weigh	.911
Resp2	<---	Responsiveness	.805
Wg4	<---	Weigh	.837

9.1.1 Convergent and discriminant validity analysis

9.1.1.1 Convergent Validity

Convergent validity was used to test the internal consistency of items corresponding to each factor. It was noticed that, there were a strong correlation between items and corresponding factors and weak correlation with the others. It was assessed by composite reliability (CR) and the average variance extracted (AVE). A convergent validity was said to be established when it follows two criteria. Firstly, the composite reliability of each factor should be greater than the average variance extracted by that factor (CR > AVE); secondly, the value of composite reliability of each factor should be more than 0.70 and the average variance extracted by that

factor should be more than 0.50 (AVE > 0.50). The composite reliability of all the four factors were between the range of 0.81 to 0.89 and the AVE of each constructs were between 0.57 and 0.655 which were above the acceptable limit. Hence, all the four factors followed convergent validity. It was shown in the table 1.5(a).

Table 1.5(a): Convergent Validity

Criteria: (CR > AVE and AVE > 0.50)

Factors	**Composite Reliability**	**AVE**	**Remark**
Payment	0.813	0.590	Fulfilled
Price	0.858	0.655	
Weigh	0.891	0.650	
Responsiveness	0.841	0.575	

Note: AVE = Average Variance Extracted,

9.1.1.2 Discriminant Validity

The discriminant validity of the scale can be evaluated by two methods, either inter-construct correlation matrix or based up on variance extracted method. In the first method, there should be weak correlation with other constructs and highest correlation with the same construct. This criteria was met for this study. It was shown in the table 1.5(b)..

Table 1.5(b): Inter-constructs Correlation

Constructs	**Payment**	**Price**	**Weigh**	**Responsiveness**
Payment	**0.768**			
Price	0.002	**0.810**		
Weigh	0.095	0.238	**0.806**	
Responsiveness	0.027	0.375	0.366	**0.758**

In an another method, Maximum Shared Squared Variance (MSV) of each construct should be lesser than Average Variance Extracted (AVE) of corresponding construct and similarly, Average Shared Squared Variance (ASV) should be lesser than Average Variance Extracted (AVE). This criteria was also met in this study. It was shown in the table 1.5(c).

Table 1.5(c): Discriminant Validity

Factors	AVE	MSV	ASV	Remark
Payment	0.590	0.009	0.003	Fulfilled
Price	0.655	0.141	0.066	Fulfilled
Weigh	0.650	0.134	0.067	Fulfilled
Responsiveness	0.575	0.141	0.092	Fulfilled

Note: AVE = Average Variance Extracted, MSV = Maximum Shared Squared Variance and ASV = Average Shared Squared Variance. [Criteria: (MSV < AVE and ASV < AVE)].

9.1.2 Model Fit Indices

The values of absolute fit measures indices of measurement model were found in the acceptable limit. Where $\chi 2/df = 2.670$, Goodness of Fit Index (GFI) = .943 and Root Mean Square Error of Approx. (RMSEA) = .06. Similarly, the values of incremental fit measures were also found in the limit of acceptance. Where, Adjusted Goodness of Fit Index (AGFI) =.918, Normed Fit Index (NFI) =.966, Tucker–Lewis Index (TLI) =.965 and RFI =.957. Thus, the values of the model fit indices were found within the acceptance limits suggested by Hu, L. T., & Bentler, P. M.,(1999); Knile, (2005); Lia et al., (2007); Hair et al., (2010) ; Awwad and Agti ,(2011). Model Fit Indices shown in the table 1.6.

9.1.3 Structural Model

In the next step of 2-step Structural Equation Modelling approach, structural relationship among the independent variables and dependent variable was analysed by testing the structural model. The hypothesized relationships of conceptual model were analysed by employing structural equation modelling. It was noticed that all the four dimensions constitute for 48 percent of total variance in overall procurement performance of FCI. The Structural Equation Model for measuring the relationship is shown in the Figure-2.

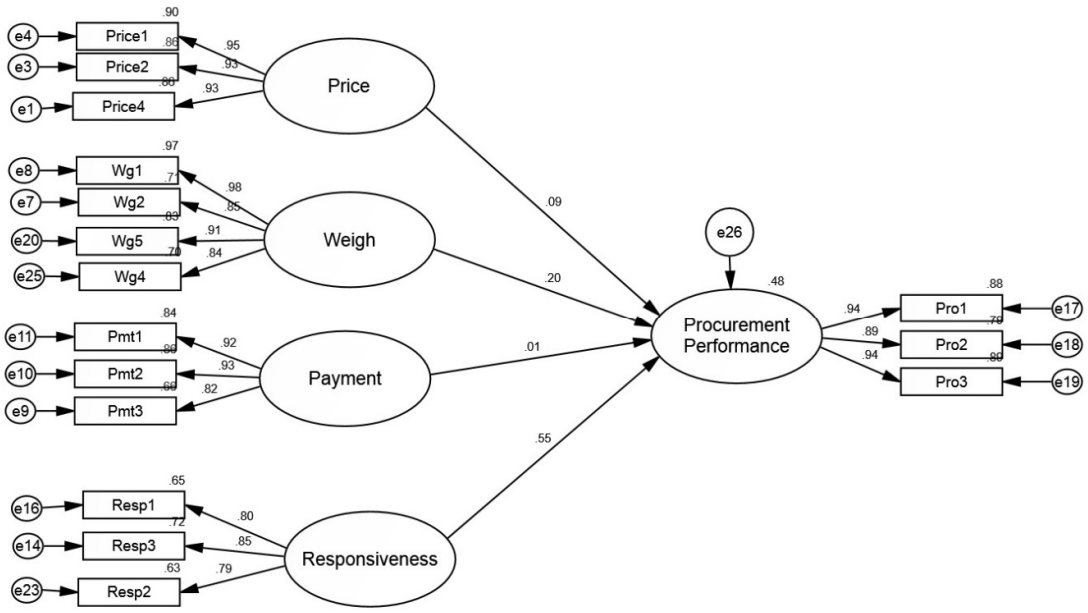

Figure 2: Structural Equation Model

Table 1.6: Model Fit Indices

Fit indices	$\chi 2/df$	GFI	AGFI	RMR	NFI	RFI	TLI	RMSEA
Values	2.670	.943	.918	.042	.966	.957	.965	.060
Recommended Values	≤ 3	$\geq .90$	$\geq .90$	$\leq .05$	$\geq .90$	$\geq .90$	$\geq .90$	$\leq .06$

10.0 Hypotheses testing

The hypotheses pertaining to the fourth objective was tested by using SEM. The results of structural model were able to support the statistically significant effect of four independent factors .i.e., price, weigh, payment and responsiveness on overall procurement performance at 0.05 level of significance. The results are shown in the table 1.

Table 1.7: Hypotheses testing

Hypothetical Path	Estimate	S.E.	C.R.	P	Result
H9: Price ⟶ Procurement Performance	.075	.024	3.188	.001	Accepted
H10: Weigh ⟶ Procurement Performance	.204	.028	7.178	***	Accepted
H11: Payment ⟶ Procurement Performance	.020	.039	.511	.609	Rejected
H12:Responsiveness ⟶ Procurement Performance	.599	.038	15.597	***	Accepted

*****;** significant at 5% level of significance.

Table 1.8: Standardized estimates of factors

Hypothetical Path	Estimate
H9: Price ⟶ Procurement Performance	.090
H10: Weigh ⟶ Procurement Performance	.204
H11: Payment ⟶ Procurement Performance	.013
H12:Responsiveness ⟶ Procurement Performance	.550

Based up on the results of SEM, It was noticed that price has significant effect (β = .09, t = 3.188, p=.001) on procurement performance of FCI and thus H9 is accepted. Similarly, another factor, weigh has also significant effect (β = .204, t = 7.178, p=.000) on procurement performance of FCI and hence H10 is accepted. But, Payment does not have significant effect on procurement performance since β = .013, t = .559, p=.609. Hence, H11 is rejected. Finally, responsiveness has significant effect (β = .55, t = 15.597, p=.000) on procurement performance. In the nutshell, among all the four hypotheses, three are accepted and one is rejected at 5 percent level of significance.

Table 1.9: Ranking of the factors

Factors	Standardized Regression weights	Rank
Price	0.09	3
Weigh	0.204	2
Payment	0.013	4
Responsiveness	0.55	1

Findings of the study

Demographical Characteristics of Respondents

Demographical Characteristics of respondents are summarized and presented below.

- Of the 1004 sample respondents, 52% (i.e. 522) were land owned farmers and 48 % (i.e. 482) were tenant farmers.
- Of the 1004 sample respondents, 40% (i.e. 402) were from the Telangana region and 60% (i.e, 602) were from Andhra and Rayalaseema region. Thus, majority of the sample respondents belong to Andhra and Rayalaseema region.
- Of the1004 sample respondents, 53 % (i.e. 529) of the total respondents are literates and 47% (i.e. 475) were the illiterates.
- In the total sample, 26 % (i.e. 263) of the total respondents hold land less than an acre, 25% of the total respondents hold land between 1-3 acres, 24 % of the total respondents hold land between 3-6 acres and remaining 25% of the total respondents hold land more than 6 acres.
- 14% of the total respondents have grown paddy in area of less than an acre, 45% of the total respondents have grown paddy in area between1-3 acre, 26% of the total respondents have grown paddy in area between 3-6 acre and remaining 15% of the total respondents have grown paddy in area more than 6 acre.

- 32% of the total respondents have grown paddy under the water source of bore wells, 33% of the total respondents have grown paddy under the water source of canals, 35% of the total respondents have grown paddy under the water source of ponds.
- The hypothesis (H1a) was framed to know whether any differences exist between perceptions of the land owned and tenant farmers towards the price practice of FCI. An independent sample t-test was applied to compare the group difference. Since, an insignificant t-value was found, H1a was rejected and concluded that there is no significant difference exist between the land owned and tenant with respect to the price practice of FCI.
- The hypothesis (H1b) was framed to know whether any differences exist among perceptions of the farmers belonging to all the three regions towards the price practice of FCI. The statistical test Analysis of Variance (ANOVA) was applied to test this hypothesis. Since, an insignificant F-value was found, H1b was rejected and concluded that there is no significant difference exist among the three regions of farmers with respect to the price practice of FCI.
- The hypothesis (H1c) was framed to know whether any differences exist between perception of the literate and illiterate farmers towards the price practice of FCI. An independent sample t-test was applied to compare the group difference. Since, an insignificant t-value was found, H1c was rejected and concluded that there is no significant difference exist between the perception of the literate and illiterate farmers with respect to the price practice of FCI.
- The hypothesis (H2a) was framed to know whether any differences exist between perception of the land owned and tenant farmers towards the weigh practice of FCI. An independent sample t-test was applied to compare the group difference. Since, an insignificant t-value was found, H2b was rejected and concluded that there is no significant difference exist between the land owned and tenant with respect to the weigh practice of FCI.
- The hypothesis (H2b) was framed to know whether any difference exist among perceptions of the farmers belong to the three regions towards the weigh practice of FCI. The statistical test Analysis of Variance (ANOVA) was applied to test this hypothesis. Since, an insignificant F-value was found, H2a was rejected and concluded that there is no significant difference exist among the three regions of farmers with respect to the weigh practice of FCI.

- The hypothesis (H2c) was framed to know whether any difference exist between perceptions of the literate and illiterate farmers towards the weigh practice of FCI. An independent sample t-test was applied to compare the group difference. Since, an insignificant t-value was found, H2c was rejected and concluded that there is no significant difference exist between the perceptions of the literate and illiterate farmers with respect to the weigh practice of FCI.
- The hypothesis (H3a) was framed to know whether any difference exist between perceptions of the land owned and tenant farmers towards the payment practice of FCI. An independent sample t-test was applied to compare the group difference. Since, an insignificant t-value was found, H3a was rejected and concluded that there is no significant difference exist between the land owned and tenant with respect to the payment practice of FCI.
- The hypothesis (H3b) was framed to know whether any difference exist among perceptions of the farmers belong to the three regions towards the payment practice of FCI. The statistical test Analysis of Variance (ANOVA) was applied to test this hypothesis. Since, an insignificant F-value was found, H3b was rejected and concluded that there is no significant difference exist among the three regions of farmers with respect to the payment practice of FCI.
- The hypothesis (H3c) was framed to know whether any difference exist between perceptions of the literate and illiterate farmers towards the payment practice of FCI. An independent sample t-test was applied to compare the group difference. Since, an insignificant t-value was found, H3c was rejected and concluded that there is no significant difference exist between the perceptions of the literate and illiterate farmers with respect to the payment practice of FCI.
- The hypothesis (H4a) was framed to know whether any difference exist between perceptions of the land owned and tenant farmers towards the responsiveness of FCI staff. An independent sample t-test was applied to compare the group difference. Since, an insignificant t-value was found, H4a was rejected and concluded that there is no significant difference exist between the land owned and tenant with respect to the responsiveness of FCI staff.
- The hypothesis (H4b) was framed to know whether any difference exist among perceptions of the farmers belong to the three regions towards the responsiveness of FCI staff. The statistical test Analysis of Variance (ANOVA) was applied to test this hypothesis. Since, an insignificant F-value was found, H4b was rejected and concluded

that there is no significant difference exist among the three regions of farmers with respect to the responsiveness of FCI staff.

- The hypothesis (H4c) was framed to know whether any difference exist between perceptions of the literate and illiterate farmers towards the responsiveness of FCI staff. An independent sample t-test was applied to compare the group difference. Since, an insignificant t-value was found, H4c was rejected and concluded that there is no significant difference exist between the perceptions of the literate and illiterate farmers with respect to the responsiveness of FCI staff.
- The hypothesis (H5a) was framed to know whether any difference exist between satisfaction levels of the land owned and tenant farmers towards the price practice of FCI. An independent sample t-test was applied to compare the group difference. Since, an insignificant t-value was found, H5a was rejected and concluded that there is no significant difference exist between the land owned and tenant with respect to their satisfaction levels towards the price practice of FCI.
- The hypothesis (H5b) was framed to know whether any difference exist among satisfaction levels of the farmers belong to the three regions towards the price practice of FCI. The statistical test Analysis of Variance (ANOVA) was applied to test this hypothesis. Since, an insignificant F-value was found, H5b was rejected and concluded that there is no significant difference exist among 3three regions of farmers with respect to their satisfaction levels towards the price practice of FCI.
- The hypothesis (H6) was framed to know whether any difference exist between the satisfaction levels of the land owned and tenant farmers towards the weigh practice of FCI. An independent sample t-test was applied to compare the group difference. Since, an insignificant t-value was found, H6a was rejected and concluded that there is no significant difference exist between the land owned and tenant with respect to their satisfactions levels towards the weigh practice of FCI.
- The hypothesis (H7) was framed to know whether any difference exist between the satisfaction levels of the land owned and tenant farmers towards the payment practice of FCI. An independent sample t-test was applied to compare the group difference. Since, an insignificant t-value was found, H7a was rejected and concluded that there is no significant difference exist between the land owned and tenant with respect to their satisfaction levels towards the payment practice of FCI.
- The hypothesis (H8a) was framed to know whether any difference exist between the satisfaction levels of the land owned and tenant farmers towards the responsiveness of

FCI staff. An independent sample t-test was applied to compare the group difference. Since, an insignificant t-value was found, H8a was rejected and concluded that there is no significant difference exist between the satisfaction levels of land owned and tenant with respect to the responsiveness of FCI staff.

- The hypothesis (H8b) was framed to know whether any differences exist among satisfaction levels of the farmers belong to the three regions towards the responsiveness of FCI staff. The statistical test Analysis of Variance (ANOVA) was applied to test this hypothesis. Since, an insignificant F-value was found, H8b was rejected and concluded that there was no significant difference exist among the satisfaction levels of three regions of farmers with respect to the responsiveness of FCI staff.

Effect of identified factors on overall procurement performance

- A 2-step structural equation modelling (SEM) was used to analyse the effect of identified factors (i.e., price, weigh, payment and responsiveness) on procurement performance. In the 1st step, confirmatory factor analysis (CFA) was applied to ensure the validity and reliability of respective factors. All the factors have achieved necessary validity thresholds and then structural equation modelling was carried out to analyse the effect of identified factors on the procurement performance. Hypotheses were tested at 5 percent level of significance. The result of SEM proved that price, weigh and responsiveness have the positive effect on procurement performance while payment does not have. Thus, Hypotheses, H9, H10 and H12 were accepted but H11 was rejected due to its insignificant effect.

Conclusions of the Study

The following are the major conclusions based on the findings of the study.

1. Majority of the farmers perceive that price practice of Food Corporation India (FCI) is not adequate and they expect it should be more than the present procurement price.
2. Both the land owned and tenant farmers have similar perception is procurement price is not sufficient to realize the investment on harvesting paddy.
3. Similarly, the farmers of three regions- Andhra, Telangana and Rayalaseema are of the same opinion that price practice FCI is not adequate and it was also the same case with both the literate and illiterate farmers.
4. Majority of the farmers were of opinion that weigh practice of FCI is not fair. Farmers complained that FCI staff were adopting unfair practice while weighing the paddy at procurement centers. It was also noticed that, farmers were unable to understand the weigh practice of FCI since, it does not follow a transparency while weighing the paddy.
5. Farmers belong to all the three regions- Andhra, Telangana and Rayalaseema were of the same opinion that weigh practice of FCI is not fair and it was also the same case with both the literate and illiterate farmers.
6. More than a half of the total respondents complained that, FCI delays in making payment for procured goods. It does not release the payment in time. Respondents from Telangana region mentioned that, they were asked for high rate of commission for getting the payment for their produce.
7. Farmers of the three regions- Andhra, Telangana and Rayalaseema were of the same opinion that payment practice of FCI is not fair and it was also the same case with both the literate and illiterate farmers.
8. Similarly, farmers do not perceive positive towards the staff responsiveness of FCI.
9. Farmers belong to Telangana region complained that, they were unaware of the schedule of the procurement and were not informed even. They also mentioned that, sometimes they give rude responses for their queries.
10. Even the farmers belong to Andhra and Rayalaseema region were also facing the problem with the FCI's procurement schedule. They complained that, sometimes they incur losses as FCI delays in procuring the produce.
11. Majority of the farmers were not satisfied with the procurement practice of FCI. It might be due to their bad experience with FCI and its authorized agencies previously.

12. Thus, the overall procurement performance of FCI is not up to the expectations of the farmers.
13. Price practice, weigh practice and responsiveness of FCI have the significant effect on procurement performance. On the other hand, payment do not have any effect on the Procurement Performance of FCI.
14. Responsiveness of FCI staff was considered as the most important factor among the all four factors.

Recommendations

1. The Food Corporation of India (FCI) should change the procurement schedule.
2. Minimum Support Price should be revised according to the increasing cost of investment is for inputs to harvest the paddy in order to support the financial burdens of the farmers.
3. FCI should take steps to ensure transparency in weighing process, so that malpractices by staff are eliminated and farmers will be the net beneficiary.
4. FCI should concentrate on making timely payments to farmers.
5. FCI should focus on responsiveness on training staff, so that they are responsive to farmers.
6. FCI should monitor the authorized agencies which are involved in the procurement process and where the possible scope is there for exploiting the farmers.
7. To increase the geographical coverage of procurement operations.

Limitations and scope for further research

The limitations of the present study are:

1. Responses are collected from respondents belonging to three regions spreads over 5 districts. Hence further studies can include other states.

2. Procurement performance is measured from farmers' perspective by considering only four dimensions, i.e., price, weigh, payment and responsiveness. But further studies can focus on including other dimensions like accessibility.

3. This study considered responses of only paddy farmers, hence further studies can include other crops like wheat.

4. Further, research can be made on wheat and sugarcane.

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