CHAPTER II

Food Security and the Role of Public Distribution System (PDS): A brief review of the existing literature and the Research Gap:

II.1 Review of Literature

Introduction:

Food security is one of the important social issues which have been recognized by almost every nation of the world. From years onward various studies have been conducted to analyse the problem of food insecurity as well as to find out the various factors which influence the food security status of individuals. So it is quite evident that various studies are available both as international as well as national level in regard to the issue of food security. It is very much necessary to review these existing literatures of both national as well as international standard to find out the research gap for which the present study deals with. This chapter attempts to present a brief review of literature on the works of various authors, agencies as well as commissions with reference to the broad concept of food security. The reviews are arranged in following modules

(A) Food security status of households as well as individuals

(B) Determinants of Food Security status

(C) Role of Public Distribution System on Food Security

II.1. (A) Food Security Status:

This module would focus on studies related to household and individual food security status of both international as well as national standard

II.1.(A)(i) International Standard:

Monde (2003) in her study analyses the household food security in rural areas of Central Eastern Cape of South Africa. To determine the food security strategies employed by rural households are the main objectives of the study. The study reveals that in the poor families basically the ultra-poor families 75% of the income is spent to food and, the relationship between household income and the proportion of income

spent on food was curvilinear and negative. The study also reveals that sample households facing nutritional deficiencies in terms of energy protein and fat and only 3 out of 16 case studies are food secure and adult equivalent income of the household, family size, education and occupation of the household members are the factors responsible for nutritional differences among households. The study found that ownership of and access to resources, the historical, political and social processes under which food security took place and opportunities available at village level are the main factors that affected household food security

Gulliford et.al. (2003) in their study evaluate whether food insecurity and obesity are associated in the sample area. The findings of the study reveal that 25 percent sample population are food insecure. Food insecurity was associated with lower household incomes and physical disability. Food insecurity is associated with lower consumption of fruit and vegetables and underweight but not with present obesity.

Martin et.al. (2004), in their study, examined whether food security is associated with social capital, both at the household and at the community level. The study reveals that food insecurity and hunger negatively impact one's physical, mental and emotional health. The study uses the US Household Food Security Module to measure food insecurity and hunger. The study reveals that, it is important to consider the aspects of social capital when schemes are implemented to build food security and prevent hunger. It also reveals that households may have limited financial or food resources but households with higher levels of social capital are less likely to experience hunger. The study concludes that the use of social capital could be a powerful for informing policy makers, practioners and community leaders about community-level-approaches which could strengthen the food security of families.

Applanaidu et.al (2004) reveal that although Malayasia is a middle income country, it has been a net food importer in the last four decades specially it imported rice continuously. The study analyses the dynamic relationship between selected macro economic variables viz. bio diesel production, exchange rate, government expenditure on rural development, GDP, food price index, population and food security in Malaysia using Vector Autoregressive Approach (VAR). The result of the analysis reveals that biodiesel production, exchange rate and government expenditure on rural development gives the highest shock of food security. The study reveals that vector

autoregressive model is a useful tool and reacts as an effort to better understand how food security reacts and is affected by the integration of domestic and global markets. It recommends that policy makers should spent more on government expenditure and rural development which will enhance and promote agriculture development, specially on food production.

Falcon and Naylor (2005) in their study examined why concerns about food security have diminished compared to earlier period. The study reveals that more people were killed by machetes than bombs. This picture is worst in Africa (60 percent) and Asia (25 percent). It also reveals that about 20000 persons per day die globally as a result of food insecurity, majority in Africa and Asia. That number is approximately seven times the number killed in 9/11 attacks. But still concerns were much more for that attack than the havoc caused by hunger. The study reveals that improved germplasm involving trans genesis, genomics and a focus on crops produced and consumed by those who are food insecure are among the best food security investments for institutions such as World bank, USAID etc.

Kaloi et.al (2005) in their study assessed the household food security status in the Food for work (FfW) programme area in Mwingi District in the eastern province of Kenya. By using the daily household calorie acquisition the study found that 62 percent of sample household are food secure and 38 percent are food insecure. Using the multiple regression model the study determines the various socio economic factors which influence the food security in the area and found that participation in the FFW program, household size, on farm income, marital status of the household head and their education level were significant determinant of household food security status. The study reveals that social safety programmes like FFW are effective mechanism for food security of the households.

Mwaniki (2005) in her study analysed the challenges and issues of achieving food security in Africa. The study reveals that food security situation in the continent of Africa is very poor. Out of the total food insecure population seventy percent population in Africa lives in the rural areas, It reveals that underdeveloped Agricultural sector, barriers to market access, effects of globalization, disease and infection and handicapping policies are the challenges of food security in Africa. It also argued that strategies like nutritional intervention, facilitating market access,

capacity, building, gender sensitive development, building coping strategies, creating off farm opportunities and good governance can be considered as good means for substantially alleviating food security in Africa.

Gerristen (2005) in her study analyses the link between poverty and food insecurity among children in the Wellington region of New Zealand. The study confirms that a small but significant number of primary school children in the Wellington region are food insecure and that food insecurity is strongly correlated with poverty. Two thirds of children estimated to be regularly hungry in low socio- economic areas and nearly three quarters of children that regularly do not have lunch come from these schools. The study also reveals that the small numbers of schools where detailed policy and procedures were developed to respond to hungry children were able to be successful in limiting stigmatization of children and their families. The study suggests that responses to food insecure children must consider the causes of food insecurity and in order to prevent stigmatization, should be founded on the principle of social justice rather than charity.

In his study **Scaramozzino (2006)** develops an approach to the analysis of vulnerability in the context of food security. By considering the existing theoretical development and reviewing existing literature on measuring vulnerability to food insecurity, the study develops a new methodology termed as Value-at-Risk (VaR) analysis, which is widely used for the measurement of the specific risks faced by financial banking institutions. It reveals that the main difficulty with most existing approaches to the analysis of food insecurity, both theoretically and empirically, are that they are not sufficiently distinct from a static analysis of inadequate nutritional outcomes. The study analyses that the proposed methodology can be applied to estimate the probability that a household or a community might face below a critical food security threshold at some time in the future. It also recommends that the methodology also aim to identify the risk management strategies which are most effective in reducing the livelihood of the occurrence of food insecurity or the severity of its effects.

In their study, **Lisa et.al. (2007)** tried to guide for measuring food security using the food data collected as part of household expenditure surveys. The study reveals that Food and Agricultural Organizations (FAO) indicators of food security are so

conventional and the methods of collecting food consumption data are too costly on a national basis. So, Household Expenditure Survey (HES) based estimates are less costly third option. Although it is less precise than that of food consumption surveys, it is reasonably accurate. The study draws on data processing and analysis expenditure of 12 Sub- Saharan Africa and 8 Asian countries. The study tries to analyse the state of food security of these surveyed countries in different criteria i.e. where are the food insecurity, what is the nature of the food insecurity problem, how does food food insecurity change over time, what are the causes of food insecurity, which are the most important food in diets of different socio demographic groups etc. by considering HES methods.

Lawel et.al (2008) in their study attempted to analyse the household food security among the Agropastorials in North Central Zone in Nigeria. To measure the food security, a household food security index was constituted by defining a minimum level of nutrition which is necessary to maintain a healthy living which indicates the food security line. The household above this line is measured by the daily recommended level of calorie and protein intake which are 2260 kcal and 65gm respectively. The study reveals that majority of the sample households are food secured and 34.48 percent of sample households are food insecure. It also reveals that the food insecurity among the sample households is not as a result of low output level of crops but as a result of the urgency to meet household cash needs from a single economic activity. To identify the determinants of food security among the Agropastorialists, the Logit regression model is used which finds that small families are more food secured than large ones. It also implies that those sample households are able to diversify their crop enterprise combinations stand a better chance of being food secured as compared to those aiming at specialisation in crop production.

Gabrehiwot (2008) in his study analyses the effectiveness of food security policy in ensuring rural food security and poverty in Tigary region and also analyses the government policy interventions carried out to address the problem. The study reveals that various natural predisposing factors such as drought, environmental degradation, crop past as well as socio economic constraints such as lack of infrastructural services, population pressure and lack of productive assets are the factors contributing to the problem of food insecurity. Moreover the study shows that food insecurity is spatially clustered and factors such as variation in land holding, per capita production

and rainfall matter for the spatial clustering of food insecurity. The findings of the study also reveals that government policy intervention and local leadership significantly contributes to the food security status of households and the households covered by food security programs have higher income and better food security status than those households who have not been covered by food security programs.

The Report of Food Insecurity Assessment in Kenya,(2008) reveals that although the country's economy has improved significantly during the years, food insecurity is still quite widespread among its population. In 2005 the overall food deprivation of Kenya was 51 percent, whereas 57 percent in rural areas, which is much higher than 39 percent in the urban areas. It also reveals that food dietary energy consumption at national level in Kenya is also low than the standard consumption of calorie intake i.e. 2100 kcal per day, where again rural population are worst sufferers. The country acquires only 15 percent of their food consumption from its own production. This pattern is far higher in rural areas at 23 percent, compared to 3 percent in the urban areas. Overall the report depicts a gloomy picture of food security of Kenya. The report is based on the 2005/06 Kenya Integrated Household Budget Survey.

Park et.al (2009) in their study examined the relationships of household food security status with Fe deficiency (ID) and Fe-deficiency anemia (IDA) among children. The findings of the study reveals that children from households with VLFS were almost twice more likely to have fe-deficiency anemia than were children from households with high or marginal food security. The study also finds that Asian, Hispanic and African-American children have elevated prevalence of ID and IDA. The study recommends to provide supplied special nutrition program for women, infants and children for controlling Fe deficiency.

Kite (2009) in her study analyses the food security and resource endowment of rural households in Dirashe Special,Woreda. The study reveals that female headed households play an important role in food security of the household as producers, purchasers, providers and processors of food than male heads do. Male and females have equally participated in farm production activities, planting weeding threshing transporting and storing. The study also reveals that collecting fire woods, fetching water and grinding grains were the important means of ensuring food security for the female headed households. It is also found that due to limited role of females in the

ownership rights, in productive resources, their purchasing power is limited, which affects the access to food or cash income. The study also reveals that poor soil fertility, shortage of rain and crop diseases and pests are the factors causing household food insecurity. The study suggests to give more weightage for women headed households for policy formulation point of view. It also reveals to improve agricultural production, productivity through the promotion of ecologically appropriate technological packages to ensure household food security.

Kyaw (2009) in her study analyses the food security situation in Myanmar by focusing on food availability at the national level and by analysing farm and non farm rural households food security status and their coping strategies for food security. The findings of the study reveals that the land less and small farm households constitute 74 percent of the total food insecure household of Myanmar, but their contribution to th total sample household is 53 percent. It also reveals that land asset, consumption of oil, fish and mat and using improved sanitation significantly affect per capita adult equivalent food expenditure. The study recommends to sustainable increase in rice production for achieving food and nutritional security and implement sound macro economic policies to grain effectiveness in reduction of the rural households food insecurity.

Basu & Sanyal, (2009) in their book try to analyse results of different developing policy alternatives through a series of statistical methods applied to real food insecurity, malnutrition and poverty problem. This study is organised into three broad sections. The first section deals with food security policy analysis, the second addresses nutrition policy analysis and the third section covers the special and advanced topics on food and nutrition policy analysis including measurement and determinants of poverty. The main issue of the study is related to the policy changes that affect food security through different markets (i.e. labour market, capital market, input market, food market etc.). It reveals that Infrastructure comprises the economic, social as well as physical infrastructure; institutions are also affected by policy changes and affect household food security. The study also reveals that changes induced by policies on different markets and on infrastructural factors affect household incomes, assets, human capital and household behavioural changes. Household food security is achieved if subsistence production and household food purchases are sufficient to meet the household food requirements. Nutrition security

on the other hand is determined by a complex set of interactions between food and non- food determinants.

Hacket et.al (2009) in their study assessed the criterion validity of a household food security scale through its association with child health status in Antiquia, Colombia. It reveals that household food insecurity has the significant association with diagnoses of children's diarrhea, respiratory infections and parasitosis. As food insecurity became more severe, the risk for child stunting and underweight increased in a dose response way. The study recommends that household food security has to be ascertained for minimizing the stunting and underweight among preschool children.

Osei et.al (2010) in their study analysed the relationship between household food insecurity and malnutrition among children aged 6 to 23 months. By drawing multivariate logistic regression model, the study reveals that there was no significant association between household food insecurity and malnutrition among children. The study emphasizes an integrated approach not just access to food, which improves the overall socio economic wellbeing of families, maternal education and knowledge of optimal nutrition practices together with adequate maternal nutrition is needed to address malnutrition among young children

Sharafkhani et.al (2010) in their study examined the role of household composition on the household food security. The findings of the study reveal that there is a significant relationship between family structure and size and food security status. It also reveals that existing of young children (under five) in the family might increase the risk of household food insecurity. The study recommends to provide financial support for new households, proper nutritional education programs especially for households with young children's for reducing the risk of food insecurity in the community.

Demeke and Zeller (2010) in their study analysed the effect of rainfall shocks rural households food security and vulnerability over time. The findings of the study reveal that male and literate headed households are comparatively more food secure than its counterparts. It also finds that rainfall variability in an important factor of household food security. Household size, participation in local savings groups and livestock ownership positively affects food security. The study suggests the need for efficient

risk reducing and mitigation programs to improve risk exposure and coping ability of rural households.

Bannerjee and Kohler (2011) in their study analysed the various policy measures of South Asian Region to tackle the problem of food and nutritional insecurity. The findings of the study confirms that these right based policy measures can cohere to address food and nutritional insecurity, provide minimum incomes and move towards a right based agenda. The study also reveals that these policy interventions have serious gaps. They do not tackle the structural changes which are necessary for food and nutrition security, because of missing land reform or the lack of proactive policies for decent work on a legal scale.

Austin et.al (2011) in their study, while evaluating the manifestation of food insecurity in households in Abiba State, Nigeria found that the domestic food production is increasing but demand remained above the production in Nigeria which continuously increases the composite consumer price index for food. The study also reveals that income and household size were important determinants of food security. Children were more exposed to the incidence of stunting. The study also recommends family planning education to stern the over bloated population.

In their study **Oni et.al. (2011)** tried to access the contribution of irrigation to household food security in comparison to dry land farming. The study carries in the Vhembe District of Limpopo province of South Africa. The study reveals that irrigation and per capita aggregate production were found to have a positive influence on the probability of households being food secure. The likelihood of food security increases when farmers increase agricultural output and have access to a piece of land on the irrigation project. The study also reveals that household size and farm size are also important factors which influence the household food security, which have negative and significant effects on household food security. The study suggests that the households with large families, without access to irrigation water, families with few assets and those without access to agricultural land and implements need to be targeted food aid.

Souza and Chmielewska (2011) in their study analysed the public support to food security in India, Brazil and South Africa. The findings of the study reveal that in India and South Africa, food security concept is based on th 1996 World Food

Summit, whereas in Brazil, a nationally developed concept coherent with the 1996 World Food Summit has been adopted. National food security strategy has been implemented in Brazil and South Africa. But in India no formal food security strategy has been implemented yet. All the three countries have recognized the right to food in national law and supported by legal instruments. No formal multi stakeholder body constituted to overall food security policy decision making in India where as in Brazil and South Africa these are present. All the countries still grope with high level of inequality.

Uraguchi (2011) in her study analyses the impacts of food price hikes on the level of children's food security in households. The findings of the study reveal that almost 60 percent of the sample households were in chronic food insecurity. Stunting and wasting of children are the highest during the peak of the food price hikes. It also reveals that child malnutrition is highly concentrated among low income households. The dietary diversity score is low and most households heavily relied on few food items such as grains and oil. The study finds that food price hikes are statistically significant accounting children's vulnerability to food insecurity in households.

Austin et.al (2011) in their study analysed the rising trend of food insecurity in households in Nigeria. It reveals that the composite consumer price index for food has continued to rise over the years. The study also reveals that income level significantly reduced exposure to food insecurity, while household size is an important determinant of food security. As the size of the household increases, children are the worst sufferer. As more children come into the family there is increasing marginalization of the subsequent ones. The study finds that food security is a development challenge and recommends family planning education to stern the over bloated population.

Gebre (2012) in his study argues that food insecurity is not only the problem of rural areas but also it is quite common in urban areas. By using both descriptive statistics and econometric analysis the study found that more than 58 percent sample households were below the food insecurity line in Addis Ababa city of Ethiopia. The study reveals that household size, age of household head, household head education, and access to credit, household asset possession and employment are significant determinants of food insecurity status. The study suggests improving income earning capacity of households, their education level, reducing household size and access to

credit to the needy and trained people needs to be provided for achieving food security status.

Sharma and Gulati (2012) in their study analysed the food security situation of six countries viz. Brazil, China, India, Malaysia, Mexico and Nigeria, where approximately 46 percent of the undernourished people in the world live. The study find that there is diversity of experiences among the countries in terms of timing pace and forms of agricultural reforms as well as the major public policies and programmes, which are adopted for improving social and economic access to food and nutrition security to the people. The study also finds that Brazil and China performs very well, whereas Malaysia and Nigeria have also done well in last decade so far as increasing availability, access and utilization of food. The outcomes of the reforms which are taken in the Mexico were performs below than its expectation. The study confirms that India emerges as the Country which faces greatest challenge to achieve the goal of food security.

Ndhleve et.al (2012) in their study analysed the risk of inadequate access to food among households in a coastal rural community, The findings of the study reveal that in the study area 9% of the households experience severe inadequate access to food, while 78% have moderate access to food and 13 % have access to adequate food. The study finds that, purchasing food from the market, accessing food from the environment, income level, receiving social grants, having a professional job, owning a business and practicing farmers emerged as the major predictors of adequate access to food. The study recommends to the promotion of small business, farming and continued support of rural education for improving food access in the sample region

Bazezew (2012) in his study identifies the food secure and food insecure households in drought prone areas of the Amhora region of Ethiopia by using the income, expenditure, dietary diversity, coping strategy and dietary energy variables. The study reveals that around 80 percent of the sample households are food insecure and were severely constrained in dietary diversity and were highly dependent on only two food groups. The study propagates the strong needs of enhancing crop production through the application of agricultural inputs and give top priority in the non-farm activities which supplement the agricultural income.

Greenwell C (2012) in his study examines food insecurity in Malawi and also estimates the effects of constraints on food security. By using Quartile logistic and OLS regressions it reveals that food security is a function of a farm level incomes, age and sex of the household head, access to the markets, extension information, radio ownership, asset ownership and adoption of a cash crop. It also reveals that factors with a positive effect on food security have a greater impact on food insecure households than on households that are better off. It recommends that policies that back to enhance market access, improve market opportunities, enhance extension services, enhance informal education, encourage cash cropping and support household level consolidation of assets would be useful for enhancing household level food security.

Cox and Wallace (2013) in their study analysed the impact of Incarceration on food insecurity among households with children. The findings of the study reveal that incarceration adversely affects children and families in terms of food insecurity. Food insecurity for adults and households with children is affected by parental incarceration under most specifications. The study suggests that policies to mitigate the impact could be addressed through the court system whereby children are provided with court-sanctioned support to address food needs.

Fisseha (2014) in his study examines the relative importance of various physical, natural, financial as well as human assets to obtain food security for poor rural households of southern Ethiopia. The study reveals that 70 percent of the sample households are foods insecure with hunger, 17 percent are food insecure without hunger and remaining 13 percent are food secure. The study also find that assets like, farm land as natural asset and livestock as financial assets are important determinant to improve household food security

II.1. (A) (ii) National Standard:

Kannan (2000) in his study examines the question of food security viz-a-viz food availability and self-sufficiency in the production in Kerala. The study finds that due to the existing cropping pattern in Kerala, food self-sufficiency is unrealistic in Kerala. However, through a pro-poor public policy regime, Kerala has been able to enhance food security considerably. The study reveals that as a result of implementing TPDS as a replacement of universal PDS by the Central Government of India, the

food security situation of Kerala is being challenged, which raised a question mark about the sustainability of Kerala's PDS as chief social safety nets for achieving universal food security.

Bhattacharyya (2000) reveals in his study that food security provided by agricultural outputs is more for non- vulnerable households than the vulnerable households. It provides 6-7 months food security to the non-vulnerable households compared to the 3 to 4 months food security for the vulnerable households. It defines land less or marginal farmers as vulnerable households and large and medium farmers as non-vulnerable households. Here the study area signifies an agrian economy where land is identified as the most important asset and households are primarily dependent on agriculture. The main aim of the study has targeted issues of the various food assistance programmes which is a crucial factor for success and failure of such schemes. The study depicts that the performance of the village level government representatives are not satisfactory. It argues that food assistance schemes and employment generation schemes should be institutionalised in order to achieve maximum accuracy.

While analysing the prevalence of food insecurity and dietary pattern among households with and without children in Coimbatore, India, **Nnakwe and Yegammia (2002)** fiound that 56 percent of the households without children were food secure compare to 43 percent of the households with children are food secure. All the sample households consume lower than the national dietary recommendations, the frequency of fruits, vegetables, dairy and meat product consumption are lower than the national standard even without the presence of food insecurity. The study recommends to policy makers to give effort to reduce food insecurity and malnutrition with immediate effect.

Ramaswami & Balakrishnan (2002) in their study examined whether and how the inefficiency of state institutions matters to good prices. The findings of the study reveal that as a result of reduction in food subsidies, food prices increases and hurt the poor even when they are not major recipients of the subsidy. This is basically happens due to inefficiency of public intervention. The study also reveals that the outcome will be different if the reduction in food subsidy is to be accompanied by reforms in the associated state agencies.

Sagar (2004) in his study analyzes the food security scenario in India and found that the most significant factors contributing to the achievements on food security include development of its agriculture through self sufficiency in food grain production on the one hand and through a public distribution system on the other. Although the problem of hunger has been eliminated but still malnutrition is a big problem in large parts of rural India. The causes of widespread malnutrition include inadequacy of food intake but more prominently environmental factors, such as health, availability safe drinking water, sanitation and personal hygiene which recommends for strengthening of social sector investments in health and education. The study also reveals that although direct programs have succeeded in reducing poverty and securing food security, costs associated with these programs are found to be proportionately higher than the gains from these programs. Resource depletion such as depletion of ground water, deterioration of soil quality pose as the potential threat to sustainable food security.

Chakravarty et.al (2005) in their study explored the causes of widespread food insecurity that prevails in India by using the existing scholarly work as well as conventional data sources. The study finds that even though food insecure people increased by about 1 percent in the nineties in India, their absolute number increased by about 18 million. The study observes that the main determinants of food insecurity in India today are the shrinking of agrarian and informal sector incomes and failures of support led measures to combat poverty. The study reveals that the main cause of food insecurity in India today is decrease of purchasing power among the poor and vulnerable population in rural and urban centres of the country, coupled with the inefficient functioning of the TPDS and a slowdown of policy initiatives to step up support led security measures.

Sinha & Lakra (2006) in their study assess the household food security of Santhal farm families, one of the major tribes of West Bengal in two tribal dominated districts of the state. Household food security is measured in terms of food grains storage and food grain consumption. The study reveals that 44 percent of the household has food grains storage throughout the year since past five years nd 62 percent of them had inadequate grain production in the previous year. Except cereal, the diet of Santhal were inadequate and far below the recommended amount. The study recommends that to improve the food security status of the households, consistent income of the households should be assured by dissemination of sustainable agricultural

technologies long with increasing employment opportunities of the family members mainly through developmental schemes of the panchayat.

To show how the levels and quality of food consumption and nutrition for the poorer section have connection to what is happening to agriculture, where policies pursued as well as neglect of needed intervention have created the present malaise for women **(Krishnaraj 2006)** in his study finds that despite there being produced domestically as well as in the imports of food grains India has been unable to achieve food security. The section most adversely affected by this is women. In agriculture, their contribution to farm labour is hardly recognised; they are remunerated poorly and suffer from chronic energy deficiency.

Cheriyan (2006) in his study examines the food security situation in India and reviews the obligations and initiatives by the government to ensure food security. The study mainly gives due attention on the aspect of corruption as one of the reasons for failure of the programmes meant for the poor. It examines the possible role of civil society in making the food support schemes worktables for the poor. The study reveals that presence of vast number of people living below poverty line and failure of various food subsidy schemes clearly needs India to work up. The government needs to review the policy time to time and take deliberate corrective measures for effective implementation of these schemes and also establish mechanism for the concern authorities to be accountable if any loopholes happen in regard to ensure the right to food for all.

The role of women is highly acknowledge in household food security. The absence of a suitable methodology of assessment means that not only does their contribution remain vague but there is also a lack of solid data to draw policy intervenes in terms of operationalization of food security and women empowerment. In their study, **Choudhary and Parthasarathy (2007)** seek to quantify women's contribution to household food security by conducting a research work in two villages in Wanded, Maharashtra. The study affirms that in term of simultaneity and multiplicity of tasks, household women fair comparatively better than household men. Overall household women's total time work exceeds men's and more than 75 percent of women's total work time diverse but remains unpaid. Women's are responsible for more than 70 percent of their families food security requirements that too if value is assessed at

female wage rate. The study recommends that the policy intervention vis-à-vis food security ought to be women centric and must recognize women's indispensible role in household food security.

Dohrmann and Thorat (2007) in their study analysed how India has accepted the concept of a right to food through its constitution, its legislation and court decisions that give the broadest legal meaning to this indispensible human right. The findings of the study reveal that although India has achieved independence regarding its food supply while at the same time most of the undernourished in the world live in India. The study also highlights the specific discrimination. Dalit's have to face when trying to avail themselves of government schemes such as PDS. The study recommends that political and social will of various stakeholders urgently requires in order to give the right to food in real terms.

Food security Atlas of Rural Bihar (2009) report analyses the district level food security status of rural Bihar by considering three dimension of food security viz. availability of food, access to it through market and absorption of food by the body. It reveals that due to the highest degree of year –to-year fluctuation in the agriculture production due to frequent floods causes' severely negative impact on the food security in Bihar both at macro as well as micro level access to food. Although the overall food availability in rural Bihar has improved over the years, the per capita availability of food grains in Bihar is among the lowest in the country. The composite Food Security Input index (FSI) of the present study reveals that out of the total 37 districts of Bihar, 12 districts are identified as food insecure. The report recommends state intervention in regard to the effective implementation of schemes such as PDS, MDM, NREGS etc. for achieving the goal of rural security.

Panda and Kumar (2009) in their study analysed the impact of trade liberalization on growth, poverty and food security in India. The findings of the study reveal that the growth of gross domestic product (GDP) due to trade liberalization does not necessarily improve the food security and/or nutritional status of the poor. The bottom 30 percent of the population in both rural and urban areas would suffer a decline in calorie and protein intake. The food security depends critically as movements in relative prices of different commodities along with changes in income level. The

study recommends that trade policy analysis should consider indicators of food security in addition to the overall growth and poverty measures.

Agarwal et.al (2009) conduct their study to access the experienced Household food insecurity (HFI) in a Delhi slum. The findings of the study reveal that 51 % slum households are food insecure. Monthly per capita expenditure (MPCI) on food is low among urban poor and significantly associated with HFI. The study also reveals that employment strongly influences HFI. The study strongly recommends to provide resource based likelihood and skill upgradation to the poor and linkage to employment schemes and employers for improving their food security status.

Nanda Kumar et.al (2010) in their study analysed the food and nutrition security status in India. The findings of the study reveal that ensuring food and nutritional security is a challenge for India, given its huge population and high level of poverty and malnutrition. It also reveals that food availability is threatened by the effects of climate change and declining water resources on agriculture output. Despite impressive economic growth in the recent years, still economic access to food by about a fourth of the population living below the poverty line is problematic. In India still 44 percent of children under the age of five are underweight, around half of pregnant women are anaemic and majority of women do not have access to toilet facilities and safe drinking water. The study suggests to play an important and meaningful role by the multilateral agencies, the private sector and civil society organizations to overcome these hurdles.

Parasuraman & Rajaretnam, (2011) based their study as an assessment of agricultural practices and livelihoods of the people in Viderva. This study aims to access the relationships between agriculture, food security and nutrition for children and adolescents and married women of reproductive age. The study reveals that higher the food crops production, lower are under nutrition level. It also reveals that the Public Distribution System (PDS) contributes significantly to the food security of poor families. So PDS must be extended to include families above the poverty line also.

Ramsundar et.al (2011) in their study reveal that due to over exploitation of land, excessive use of chemical fertilizers, insecticides and pesticides, fertility of land has been reduced. Natural calamities like droughts, floods, cyclones, global warming, melting glaciers, raising sea level etc. creates environment degradation, which results

the decrease of food grain production and made food crisis at a global level. The study reveals that in India food crisis arises not due to food shortage, but due to some failure of public distribution system. The crisis is not the food crisis; it is the policy crisis of the government. The study also argues that for achieving food security in India, pollution of air, water and land, use of chemical fertiliser, insecticides and pesticides, forestation, plantation, bio diversity etc. must be controlled to protect common property resources not only for the present but also for the future generations.

Piya et.al (2011) in their study analysed the role of plant resources in the food security of indigenous people. The findings of the study reveal that collection of forest products for consumption and sale firms an important coping strategy to overcome food self sufficiency. Wild tubers act as stable food of the indigenous people during the period of food shortages, and these plays an important role in bridging the hunger gap when the stored food grains are depleted and new harvest are not yet available. Forests play an important role not only in the food security of the indigenous people but also in the fulfilment of their food diversity and nutritional requirements.

Mukharjee (2011) in his study analyses the food insecurity issues in urban India at both state and household levels. The findings of the study reveal that from the state level point of view degree of food insecurity differs in urban areas. Some states in the country are less food insecure whereas urban population on the other states are disadvantaged and vulnerable. Findings from household level analyses that an urban households not only needs to provide with better livelihood to maintain healthy nutritional status but also need to minimize the household size and birth rates. The study suggests that a sustainable approach in urbanization process, there is a serious need to include all dimensions that relate to food insecurity scenarios in urban India.

In the study of food security and anthropometric failure among tribal children in Bankura, West Bengal **Mukhopadhayay &Biswas (2011)** assess the nutritional status of tribal children and its relation with household food security. It reveals that tribal households with severe grades of food insecurity, multiple anthropometric failures of children were more. It further emphasized that regular utilization of supplementary nutrition was a protective factor against under nutrition. It recommends that the supplementary nutrition programmes under ICDS set to ameliorate the effects of low household food security and should focus attention to all

children from resource poor households rather than depend solely on the finding of severe underweight of the children.

Rukshana (2011) in her study analysed the dimension of food security in Uttar Pradesh by considering the database related to food security for the western Uttar Pradesh region of India taking indices such as food availability, food stability and food accessibility to classify the region. The study reveals that the southern portion of the western Uttar Pradesh is highest food security region and the northern portion as low food security region due to lack of fair price shops, low level of purchasing power, lack of storage capacity and lack of food grain production. The study confirms that food security is positively correlated to food availability, stability and accessibility. Food availability and stability are interdependent. But food availability is reducing mainly due to the transformation of cereal crop cultivation into commercial cropping. Food availability may be reduced due to changing land use pattern associated with industrialization, commercialization and globalization.

Rammohan et.al (2012) in their study empirically analysed the determinants of food insecurity in rural India by collecting primary data selected border districts across 8 states of India. By using Probit model, the study found that household wealth is statistically significant in influencing food security outcome. Relative to a household who belong to the poorest wealth quintile, households in each of the highest wealth quintiles have a significantly higher probability of being in the chronically food insecure category and households in the higher probability of being food secure category. The result also shows a positive and significant coefficient for the variables income and having an APL card. The study reveals that the targeted PDS is working well in the study areas. The study interestingly finds that household who rely on the family enterprises and farming for their main income source are significantly more likely to be food secure category, compared to households that have than one income source. The study also finds strong evidence that poverty income from agriculture, religion and district heterogeneity influence the food security status.

Suryanarayana (2012) in his study analyses the poverty alleviation measures of India in the context of Indian food security approach. The findings of the study reveal that India has achieved some success in realizing reduction in deprivation with reference to food security dimension due to a comprehensive approach to

development with reference to food, education and health. It also reveals that food consumption and calorie intake of the bottom three decile groups have generally improve in both rural and urban India. The study recommends that for effective implementation of various poverty alleviation schemes of the government of India depends upon institutional adequacy, capability to appreciate issues in an integrated perspective and respond with appropriate measures.

Ali et.al (2012) in their study tried to analyse the status of food insecurity at household level in rural India. By considering calorie intake as a threshold level to measure the food security at the household level, the study finds that in the study area about 25 percent households accounts as food insecure households. The study also reveals that although having BPL and APL cards, 20 percent card holders do not get any food commodity from PDS. Majority of the households belong to backward and Schedule castes and landless or marginal category of farmers and have low income with poor purchasing that leads to improper accessibility, stability and absorption of food, which results poor health and this vicious circle continue from one generation to another. The study feels the need of investments in vital agricultural infrastructure, credit linkages and encouraging the use of latest techniques, motivates each district to achieve local self-sufficiency in food grain production.

Shakeel et.al (2012) in their study analysed the food security condition in the Bundelkhand region of Uttar Pradesh, which is one of the poorest region of the state. The findings of the study reveal that the condition of food security in the study area is not good. Except one district all the other districts of the region are either moderate or low food secure due to low food grain availability, low purchasing power of the people, poor irrigation facility, low employment rate etc. The study also reveals that due to low storage capacity and less number of fair price shops, the food security situation is pitiable in this region. The study recommends to implement better employment guarantee schemes, food subsidy schemes as well as literacy programmes for the capacity enhancement of the people of the region.

Gangupadhyay et.al (2012) in their study examined whether cash transfer in lieu of PDS allotment to the BPL households are better off or not by a randomized intervention in Delhi, India. The findings of the study reveal that the unconditional cash transfer does not decline the food security status of BPL households rather it

provides opportunities for households to shift other nutrition's options in the non cereal segment. The study confirms that with cash transfer, food security is not compromised as well as nor do they induce households to increase wasteful expenses. The study suggests that households should get the opportunity to choose between an unconditional cash transfer or the PDS system.

Brahmanand et.al (2013) in their study critically analyzed various challenges to food security in India. The study reveals that by giving more attention to the issues like climate change, integrated water management. Agricultural pricing and crop insurance the food security in India can be achieved. The impact of globalisation has both positive and negative impacts on the food security in India. In this regard the study argues for a strong need to regulate the policies related to globalisation to reduce the negative effects on food security in India.

Begum and Ahmed (2013) in their study analysed the household food security in terms of recommended dietary allocation (RDA), the affinity of consumer behaviour with the household food security of the households in Jorhat district of Assam. The study reveals that the percentage of meeting RDA cost is higher than the percentages of households having both RDA and non-food basic cost accessibility. Highest number of food secure household goes to Muslim and lowest to SC/ST subgroup as per RDA cost cut off. But as per RDA threshold, the highest number of Food secure household goes to Above Poverty Line (APL) and lowest no of non-APL sub group. The study also reveals that as per the RDA threshold there is significant difference in food security between APL and non APL households. The study reveals that in the study area the consumption is not as per the balanced diet norms or it is not conducive to nutritional security irrespective to caste, religion, PDS categorization and income levels. The study suggests that income elasticity of demand in its pre-defined scope can be used as proper indicator of nutritional security both at community and household level.

Buechler and Devi (2013) in their study assessed the household food security and wastewater dependent livelihood activities. The findings of the study reveal that in the peri-urban and urban areas, the income generated by labour on wastewater irrigated fields and by the sale of produce contributes to the household food security of the wastewater users. In the rural area, the study finds that waste water irrigated paddy

contributes almost 43 percent of household food consumption and they can grow vegetables for household use on part of their land. The study suggests to the policy makers to give special emphasis on the integral connection between household incomes, wastewater related livelihood activities and household food security.

Kumar et.al (2014) in their study examined the status of food security and its associated concerns that India has especially in the post reform period. The findings of the study reveal that though India is one of the fastest growing developing economy, the pace of reduction of hunger and under nourishment has remained very slow and well below the fastest developed countries. There are tremendous challenges both at domestic as well as international level, which requires more effort on development of agriculture infrastructure, fiscal consideration, efficient public distribution of food and effective bargaining at international trade forms so that long term benefits for food security can be achieved.

II.1. (B) Determinants of Food Security:

This module would focus on the studies relating to find out the various socio economic as well as demographic factors which influence the food security status of individuals

Haile et.al, (2005) in their study examined the causes of seasonal food insecurity among members of Koredegaga Peasant Association in the Eastern Oromia region of Ethiopia. The study reveals that farmland size, per capita aggregate production, fertilizer application, household size and educational attainment level of farm household heads etc. have significant influence on food security. Results from the study also indicate that a unit change in farmer's access to fertilizer or educational level of households head or farmers access to land or farmers access to family planning improves the probability of food security in the study area and have the potential to increase the food secure households. So, the study recommends to introduce agricultural research and extension, family planning programmes, efficient use of land and opening up schools to achieve good results in achieving food security.

Omotesho et.al (2006) carried out their study on the determinants of food security among the rural households in Kwara state of Nigeria. This study measures the household food security index which involved two steps i.e. identification and

aggregation. In the process of identification food security line is drawn, which defines a minimum level of nutrition necessary to maintain healthy living. Aggregation on the other hand derived food security statistics for the households. Daily per capita calorie consumption is the way of measuring food security index. The study finds that about two thirds of the households are food insecure with an average daily per capita calorie consumption of 1504.29 kcal, which is about 33% less than the minimum daily requirement. To determine the determinants of food security the logistic regression model is used which reveals that farm size of the households, gross farm income, total non-farm income and household, size are the significant determinants of rural household food security. The food security index constructed by the study is considered in the present study for measuring food security status.

Babatunde et.al (2007) in their study examined the factors influencing the food security status of rural farming households in Kwara state of Nigeria. The study found that almost 64 percent sample households were food insecure. The food insecurity gap showed that the food insecure households fell short of the recommended calorie intake by 38 percent while the food secure households exceeded the recommended calorie intake by 42 percent. Logistic regression model was drawn to determine the determinants of food security which reveals that total annual income, household size, educational status of the households head and quantity of food obtained from owned production were significant determinant of food security status. The study also reveals that multi-dimensional strategies should be taken to address the food insecurity problem.

Babatunde et.al (2008) in their study examined the determinants of vulnerability to food insecurity among male and female headed farm households, The findings of the study reveal that there is gender biased in terms of resources available in the study area, where male headed households possess more resources than the female headed households. The study also find that female headed households were more vulnerable to food insecurity than its counterparts. The anthropometric measurement reveals that children from female headed households show more stunting as compared to those from male headed households. The study recommends to implement specific policies to the female headed households to increase access to education, level and off farm activities as well as conscious effort to increase women nutrition education and provision of opportunity for employment and income.

Agarwal et.al (2009) in their study analysed the levels and determinants of household food insecurity in an urban undeserved slum. A four item scale was adopted from the US six items short form food security scale to assess the household food insecurity and multiple logistic regression model was used to determine the socio economic factors which influence the household food insecurity. The study finds that 51 percent of urban slum dwellers of the study area are food insecure. It also reveals that household food insecurity is directly or indirectly related to low income. It recommends that an urgent need for re positioning and added focus on nutrition and food security programs for the urban poor. It also reveals that the chance of food insecurity have increased with hunger prone condition which needs to promote community awareness of the governments existing livelihood generation programs and to link the urban poor community with the government departments implementing these schemes.

Arene & Anyaiji (2010) in their study attempted to estimate the food security status and identify the determinants of food security among the households in Nsukka metropolis of Enugu State, Nigeria. This study uses the expenditure methods put forwarded by Omonona et.al (2007) to estimate the food security status and found that in the study area 60 percent of the households are food insecure. To identify the determinants of food security, the said study use the binary logistic regression method and identifies that income and age of household head are the important determinants of food security, implying that household having higher income level and older household heads tend to be food secure.

Tsegaye and Bekele (2010), in their study examined the farmers perceptions of land degradation, assessing the food security status and identifying its determinants . Using Household Food Security Module (HFSM) the study finds that about 73 percent and 23 percent of the sample households were food insecure and food secure respectively in Southern Ethiopia and extent of food insecurity ranges from moderate to very severe. The results of the study also indicate that variables such as gender, family size, education, adoption of soil conservation techniques, livestock ownership, farm income and land degradation perception index were found to be significant factors influencing household food security status. The study suggests that policy makers should give due attention in improving farmers perception level that enables them to

maintain land productivity through conserving both their farm and commercial land that can have significant contribution in improving food security status of households.

Faridi & Wadood (2010) in their study investigated the determinants of household food security situation in Bangladesh. It reveals that various socio economic and demographic factors such as education of the household head, type of house, price of rice, self-employed workers, salary wage employment, received safety net etc. are highly correlated with food security. It is also found that food security indicator is also highly sensitive to price changes. It reveals that wage earners both daily wage and salary wage earners are worse off in terms of food security status compared to self-employed both in agriculture and non -agriculture sector.

Carter et.al (2010) in their study examined the various determinants of food security in New Zealand and whether these determinants vary between males and females. The findings of the study reveals that over 15% of the sample population in New Zealand were food insecure, where the prevalence of food insecurity was greater in females (19%) than males (12%). The study finds that sole parenthood, unmarried status, worse self-rated health status, unemployment, income are the significant determinant of food security. The study also reveals that determinants of food security do not differ from male and females.

Rammohan et.al (2011) in their study analysed the determinants of food insecurity in rural India. The findings of the study reveal that 21 percent of the sample rural households are food insecure. It also reveals that poverty, income from agriculture, religion and district heterogeneity influence food insecurity. Food based safety nets such as public distribution system, NREGS appear to be implemented differently. The food security scenario is better where these foods based schemes implemented properly and vice-versa.

In their study, **Oni et.al. (2011)** tries to assess the contribution of irrigation to household food security in comparison to dry land farming. The study carries in the Vhembe District of Limpopo province of South Africa. The study reveals that irrigation and per capita aggregate production were found to have a positive influence on the probability of households being food secure. The likelihood of food security increases when farmers increase agricultural output and have access to a piece of land on the irrigation project. The study also reveals that household size and farm size are

also important factors which influence the household food security, which have negative and significant effects on household food security. The study suggests that the households with large families, without access to irrigation water, families with few assets and those without access to agricultural land and implements need to be targeted food aid.

In their study on factors influencing on the household food insecurity status, **Rahim et.al (2011)** find that severity of household food insecurity increased with increasing distance from the city and it decreased with increasing centres that provides food, residential infrastructure family size and the presence of both parents in comparison the presence of single parent at home. The study also reveals that mean per capita had a significant inverse correlation with household food insecurity status. Socio economic factors were affecting the household food insecurity status. The study suggests more studies are essential to provide practical solutions to reduce the severity of food insecurity.

Bashir (2012) in their study examines the food security trends in Pakistan in general and to find out the household food security and its key determinants in the rural area of the Punjab province in particular. The study reveals that Pakistan is food sufficient as well as food secure at the national level. But at the household level 23 percent of the sample households were measured to be food insecure. Econometric analysis of the study revealed that socio economic factors like monthly income, livestock assets, education level, household heads age, types of family and family size are significant determinants of household food security status. The study suggests to create income generating opportunities along with improvements in secondary and technical education systems and family planning programs to alleviate food insecurity in household level.

Olagunju et.al (2012) in their study emphasised the study on urban food security and insecurity and location specific socio economic factors which influence the food insecurity of the households in urban areas. By using head count ratio the study reveals that about 60 percent sample households are food insecure. The logistic regression model was in the study, which reveals that family size, annual income, amount of credit received, age of household head, farm size and livestock owned are significant determinants of household food security. The study also reveals that there

is a need for a policy that provides adequately trained and equipped extensive workers for disseminating improved agricultural technologies so that efficiency of food crop production rose, which ultimately enhances food security.

Bedeke (2012) in his study measures food security of farming households and find out the factors determining the household food security status. By considering food or calorie acquisition per adult per day as a threshold measurement of food security, it reveals that 70 percent of respondent household were food insecure and rest 30 percent were food secure. It also reveals that age of the household head, sex of the household head, household size, total cropping land, oxen owned and remittances acquired are significant determinant of household food security. To cope up with food insecurity, sale of livestock, selling of firewood and charcoal and seasonal migration were found to be more frequently used by the household as a cropping strategy. The study recommends to limit population size and giving priority to gender main streaming, provision of water harvesting technologies, strengthening the institutional and organizational capacity as well as creating conducive environment for socio economic and demographic factors to improve the food security situation.

Bashir et.al.(2012) in their study investigated the factors affecting rural household food security in three different regions of the Punjab province of Pakistan by using Binary Logistic Regression model. The study reveals that central Punjab was the most food insecure region where about 31 percent of the sample household were food insecure followed by north and south Punjab, where 15 percent and 13 percent sample households were food insecure respectively. It also reveals that monthly income and livestock assets improve and family size deteriorates household food security across all the three regions. The study advocates to target the neediest households in regard of providing social safety measures for improving the household food security status.

Bedeke (2012) in his study measures the food security status, determinants of rural households, food insecurity status of farming households. It was found that almost 70 percent sample households are food insecure. The study also finds that age of the household head, sex of the household head, total cropping area of land, oxen owned are significant determinants of food security status. The study also reveals that food insecure families were practised to sale of livestock, selling of firewood and seasonal migration as cropping strategies. The study recommends to limiting population size

and giving priority to gender mainstreaming, provision of water harvesting technologies for achieving high food security.

Kassie et al (2012) in their study analysed the determinants of food security with a bias on the link between gender of the household head and food security. The results of the study reveal that Female headed households in general and more likely to be food insecure compared to their male counterparts. It also reveals that female headed households' food security increases with quality of extension workers, land quality, farm size while distance to the market reduces the probabilities of food security. It recommends that improvement of the skill of extension staff, effective dissemination of technologies and other important information for securing better food security.

Guja (2012) in his study measures the rural households food security status, determinants that could potentially affects the households food security status and to find out the coping strategies during food shortfall. The study founds 71.6 percent and 28.4 percent of sample respondents were food secure and food insecure respectively. The average and squared food insecurity gap among the food insecure household found as 24.6 percent and 11.3 percent respectively. The study reveals that sex and age of the household heads, dependency ratios, household size in aggregates, livestock ownership and fertilizer utilization are significant determinants of food security. It also reveals that as the coping strategies for food security, reduction of meal, borrowing cash or grain, receiving food aid, working as a daily labourer, sale of livestock, fire wood, charcoal wild grass and household assets were found to be frequently practiced. The study recommends giving special treatment to older household heads and female headed households during the design and implementation of rural development programs in general and food security projects and programs in particular.

Mitiku et.al (2012) in their study examined the status and determinants of rural households food security in Shashemene District of Osmania regional state in Ethiopia. The findings of the study reveal that 36 % sample households are food insecure and 64 % sample household are food secure. It also found that family size, cultivated land size, total farm income, off-farm income and livestock ownership of households are significant determinant of household food security status. The study

recommends to consider these socio economic variable seriously while framing any policy formulation for achieving household food security.

Asgar & Muhammad (2013) in their study investigate the determinants of food insecurity for both general and farmer households of Pakistan. By using logistic regression model, the study reveals that household size, household size square, household income, number of rooms, dependency ratio, electricity connection, irrigation facility, age and age square of household head are significant determinant of household food insecurity in the surveyed area. The study reveals that 50.4 percent general households and 39.5 percent farmer households are found to be food insecure, which shows a lower tendency of food insecurity among farmer household as compared to general households.

Sekhampu (2013) in his study estimates the food security status and identify the determinants of food security among households receiving government grants in Kwakwatsi , South Africa. The study found that 38 percent sample population of Kwakwatsi town were food secure, It also reveals that total household income, household size, employment and marital status of the household head, employment status of spouse were significant determinant of household food security status out of which household size and marital status of the household head were negatively associated with household food insecurity. The study recommends that government policy has to be such that it promotes employment opportunities as well as educate the households to consider family planning measure so that household size diminish which helps to acquire household food security.

II.1 (C) Public Distribution System (PDS) of India:

This module would focus on the studies relating to analyse the role of Public Distribution System (PDS) of India on the food security status of individuals

Koshy (1991) in his study analyses the efficiency of PDS in regard to the extent of stock diversion in the retail points. The findings of the study reveal that even in the well performed states like Kerala, a significant portion of a critical commodity like rice supplied for PDS is siphoned off to the open market. The study suggests to modify the existing information flow emanating from the fair price shops and a more careful monitoring of procurement and distribution of commodities at the shop level.

It also reveals that targeting the PDS operations more sharply to the lower income segments would have more social and economic relevance than following a "universal" approach. Increasing the economic viability of the fair price shop would also reduce the malpractices in the PDS.

By investigating the effect of subsidies on food security and poverty in India, **Tritah (2003)** finds that PDS has a poor record on reaching the poor. The study pointed out the revaluation of the effect of PDS with respect to the food security is essential. The study reveals that new measurement of poverty line has the possibility of improving the performance of PDS to benefit the poor. The study also finds striking results that the benefit of food security accrued to the poor generate more food expenditure than the subsidy through a multiplier effect.

Swaminathan (2003) in her study examines the failures of India's major policy with respect to distribution; the public distribution system of food during 1990's and proposes alternatives. The study reveals that TPDS policy has failed to reach the genuinely need and failed to provide them adequate food at a reasonable price. It has weakened the entire delivery system and adversely affected the viability of fair price shops. The study recommends to return to a system of universal PDS, the huge level of food stocks held currently with the Government of India is an added reason to make coverage universal. It also recommends that state should be given greater flexibility in the design of food security system. At the same time, there are differences across states in taxes and levies on food and these should be discussed at the inter-state level to ensure an overall framework in which food prices can be maintained at reasonable levels.

Dutta and Ramaswami (2001) in their study analyse the targeting and efficiency in the Public Distribution System of India by comparing the case of Andhra Pradesh and Maharashtra. The finding of the study reveals that in regard to the institutionalisation of PDS in every way the poor in Andhra Pradesh are greater beneficiaries than their counterparts in Maharashtra. In Andhra Pradesh the coverage of PDS is universal whereas in Maharashtra nearly 30 percent of the poor are excluded because of lack of coverage. Errors of exclusions are lower in Andhra Pradesh. The study recommends that self targeting of beneficiaries is one of the important measures of minimizing

inclusion and exclusion error in the PDS system. It also suggests to improve the operational efficiency of PDS.

PEO Report No 189 (2005) investigates the performance evaluation of Targeted Public Distribution System of India. The study finds that delivery mechanism in most of the states of India is poor except Andhra Pradesh, Kerala and Tamil Nadu. Irregular delivery schedule of FPS quota was persistent problem in most states. Monitoring of activities of FPS's through inspection by district/taluka level officials was irregular and ineffective. The off take by the poor under TPDS is found to be substantially higher than that observed under the universal PDS. The findings of the study reveals that transition from universal PDS to TPDS has neither led to a reduction of budgetary food subsidies nor has it been able to benefit the large majority of the food insecure household in the desired manner. The study recommends to streamlining the BPL identification, making delivery mechanism effective to improve the performance of TPDS.

Mane (2006) in his study examines whether the targeted PDS (TPDS) system is efficient or not in regard to facilitate the poor for acquiring food security. The findings of the study reveals that the TPDS has worked counter productively to the policy objectives of the PDS system of India of reaching the poor. It reveals that large sections of the population falling out of TPDS due to wrong exclusion as well as inclusion for which a significant proportion of the poor and food insecure households are suffer from severe malnutrition and calorie deprivation. The study suggests a better policy alternative in lieu of TPDs to ensure better access to food for the poor and vulnerable sections of the society.

De (2007) in his study analyses the food security condition of the Tripura during the last two decades and the performance and relevance of PDS of the State, by considering some macro measures. The study reveals that Tripura has not been successful in achieving food security by some aggregate measures of physical and economic access to food. Contrary to the all India average, the state proceeding towards more food insecurity in terms of physical access because of decreasing per capita food production and availability of the food. It also reveals that quantity of PDS supply has not been utilised in Tripura. This indirectly means either improvement of food security or due to low quality of PDS supplied item. The study suggest that the

deficit of food crop should be met by encouraging trade for which government has to give top most priority for infrastructure development. It reveals that target should be shifted from only food production to improvement in resource allocation for achieving higher food security.

Rao (2008) in his study critically reviews the public distribution system in India towards ensuring food security. The study reveals that due to frequent changes in the food management system in India, it creates not only confusion and uncertainty in the minds of beneficiaries of the PDS but also has thrown open some new issues before the nation. The study argues that the availability of food grains is not a sufficient condition to ensure food security to the poor. In addition to availability of food grains it is also necessary that the poor have means to purchase food. The study emphasise that the huge network of PDS can only play a more meaningful role only if the system translates the macro level self-sufficiency in the food grains into micro level food security for the poor households.

To study the PDS system in Kerala, **Cyriac et.al (2008)** prior to 1997 and the Targeted PDS which came in post 1997 found that there was a lot of opposition for the shift from the universal system of PDS to Targeted PDS system. The study found that under the targeted PDS, the Centre had identified 24% of the population as being BPL and the allotment to the state has been reduced from the time of the Universal PDS. Ration shop owners got less profit and had more incentive to sell their goods in the black market as it was much more profitable. The study reveals that after the enactment of TPDS, at least 70 % of the population does not use the PDS system as opposed it 95% of the population had used the PDS system under universal system. The study also affirms that it becomes pretty apparent that the blame for the decline in the utilization of the PDS cannot be blamed on the shift alone. The study suggests to reform to the PDS system by explaining the possibility of introducing innovative ideas such as smart cards, food credit/debit cards, food shops and decentralized procurement in order to eliminate hunger and make food available to the households in a cost effective manner.

In his study **Nair (2008)** analyses the performance of the TPDS in food grains in terms of the utilization by the tribal population. The findings of the study reveals that average per capita consumption of food grains by the tribal people utilizing TPDS

meets 62 percent of their minimum requirement. The study also reveals that household income, number of members of the family and distance of the FPS from tribal settlement have significantly influence on the quantity of rice being purchased by the tribal people from the FPS's. The study recommends for rectification of errors in targeting, anomalies in norms and producers for classifying tribal people as BPL/APL, enactment of mobile fair price shops in tribal settlements to address the shortcomings and weaknesses of the TPDS.

Saxena (2009) in his study analyses the role of food assistance programmes in regard to alleviating poverty and hunger in India. The study reveals that although the food grain production in India has gone up in the 90's of the last century, the growth rate in availability of food grains per capita has come down in the same period. The food consumption of the poor in India has gone down in the last decade and is now 21 percent below as compared to the per capita consumption of top 10 percent. The study also finds that despite hefty increase in annual food subsidy, all is not well with TPDS and other food based schemes in India and this is due to the problem of illegal diversion and black market, selling of subsidized food stuff, a maximum purchase requirement that acts to exclude the poor weak monitoring, lack of transparency and inadequate accountability in management. The allocation of states like Uttar Pradesh, Bihar and Assam got more than doubled as a result of shifting TPDS, yet due to poor off take by the states and even poorer actual lifting by the BPL families the scheme has not made any impact on the nutrition level in these states. The study recommends more transparency and better accountability combined with more effective supervision to improve the performance of these schemes.

Choithrani (2009) in her study attempts to access the state of food security, hunger and malnutrition of India and the role of Government and PDS for ensuring food security. The study reveals that Madhya Pradesh stood first position in malnutrition under 3 years of underweight children in 2005-06, which is 60.3%. India stands 66 among 88 Countries according to global hunger Index 2008. More than 1.5 million in India are at risk of becoming malnourished because of rising global food prices. The study suggests price stability, participation of the rural poor in policy making, opening up of new ration and fair price shops run by women self- help groups, adaptation of more productive technologies and optimum utilization of the resources for ensuring food security in India

Kattumuri (2011) in his study examines the role of targeted Public distribution system towards ensuring food security in India by considering available secondary sources. The study reveals that the TPDS in India seeks transparent and accountable distribution of food for the poor. It also found that if TPDS meet s the challenges of efficient and accountable implementation, it can ensure that people have regular physical and economic access to sufficient food to meet nutritional needs. Technology based schemes will improve monitoring as well as communication and co-ordination of the TPDS.

Pal (2011) in his study critically analyses the organizational structure and their loopholes in the functioning of agencies like FCI & CWC engaged in the procurements, transportation, storage and distribution of PDS in India. The study finds that the problems of PDS have not been uniform in the country. It also reveals that more involvement of the Gram Sabhas in the identification of BPL card holder, vibrant storage and transportation facilities and incorporation of multi products in the PDS net can make the PDS transparent, efficient and effective, without which the vision of food for all cannot be attained in India.

Chennakhirsnan (2012) in his study analyses the evolution of public distribution system in India. It reveals that PDS is one of the most deliberate social policy of India. In the initial period of planning process of India it was urban bias but as time pass, it moves towards rural area also. The findings of the study reveal that the welfare gains of PDS in terms of income transfer are very meagre and its impact on poverty and nutritional status is minimal. The study suggests reassessing the PDS system of India and providing reform measures for its better performance.

Chhattisgarh's Public Distribution System (PDS) reforms have been landed as a model for National Food Security Act and as one that other states can emulate. **Krishnamurty et al (2014)** in their study analyse the effect of PDS reforms in Chhattisgarh on PDS rice consumption from 1999-2000 to 2009-2010 by using districts of the border area of Chhattisgarh and the rest of India as comparison groups. The study reveals that PDS rice consumption by households in Chhattisgarh grew substantially from 1999-2000 to 2009-2010 relatives to districts bordering Chhattisgarh in states that undertook no comparable PDS reforms. Excluding PDS rice consumption, the observable characteristics of households in these districts are

nearly identical to those in Chhattisgarh in 1999-2000. The findings of the study reveals comprehensive and sustained reforms when coupled with political will and civil society effort can improve PDS access and that improvements may not be substantial or sustained in the absence of these factors.

II.2. Research Gap:

From the review of literature, it is quite evident that there is hardly any study which intensively tries to access the state of food security of the BPL households of Assam and the role of PDS, as social safety nets to ensure food security to these BPL households. This leaves a big vacuum in the existing literature which is quite extensive in coverage but lacks the intensity. The present study is an attempt to fill this gap and try to access the state of food security of the BPL households of Assam and the role of PDS in respect of ensuring food security to these BPL households.