Public Distribution System is a social safety net ensuring the provision of essential commodities to the targeted population at subsidised prices. It has been evolved as a rationing measure with the two primary objectives of providing food security and price stability. Subsequently, changes were introduced to make it more targeted towards poor with the introduction of Targeted Public Distribution System (TPDS) in 1997. Up to the recent period, it continues as TPDS all across the states of India except in Tamil Nadu where it is universal. Post-2004-05 periods had witnessed a revival in PDS with the decline in poverty and increase in PDS coverage. Further, with the enactment of National Food Security Act (NFSA), 2013, many reforms were introduced including computerization of PDS and digitization of beneficiaries. Initiatives for computerization of PDS and biometric identification of beneficiaries by linking ration card with Aadhaar card gathered momentum to track the diversion and other mismanagement in PDS. Moreover, during the new phase of PDS the states of Chattisgarh, Odisha, Bihar and West Bengal which were once termed as laggards in the management of PDS gained more attention with their new initiatives of deprivatisation of ration shops, doorstep delivery of food grains, increase in access to PDS and system of tracking coupons. The efforts give a sense of confidence to reform the PDS to make it more efficient, together with which the new alternatives to the PDS such as cash transfer schemes can be introduced by evaluating the readiness of the system to reach to the beneficiaries avoiding any leakages and misappropriation of entitlements.

The historical background of the evolution of PDS in India from first five year plan to twelfth five year plan is elaborated in detail in the introductory chapter (chapter1). The chapter also gives a concise theoretical framework which relies on the Classical, Neo-classical and Keynesian approaches of the provision of food subsidies in terms of cash and in-kind. The
review of literature has reflected on the dimensions of PDS in terms of regional variation, state versus market in the redistribution of food through PDS and the pilot studies carried out to test the cash transfer scheme as an alternative to PDS. A part from these studies reviewed, chapter specific reviews of related literature are given corresponding to each chapter. The research studies conducted so far have not looked at the impact of PDS reforms on the purchase of PDS rice in the treatment group of states which have initiated the reforms in an early phase and completed the set of reforms. The studies on PDS impact of poverty across MPCE deciles for major states have not been probed into by the previous studies. Together with this the pilot studies on cash transfer scheme instead of PDS has been carried out only in the North Indian states and none have been undertaken in any South Indian states specifically in Kerala. The present study specifically intends to estimate the impact of PDS policy changes on the purchase of PDS rice, to analyse the impact of PDS on poverty, to evaluate the in-kind transfers of subsidized food through PDS and compare the possibility of replacing it with cash transfers in Kerala and to analyse the distribution and reforms in PDS through the ration shops in Kerala. Both primary and secondary data were used for the study. The secondary data source for the present study includes the 50th round (1993-94) on Household Consumer Expenditure, 61st round of National Sample Survey (NSS) data on Public Distribution System and other sources of household consumption for the period July 2004 to June 2005 and the 68th round NSS report on the same topic for the period from July 2011 to June 2012. The data is also collected from various issues of Food Grain bulletins. The primary data was collected by conducting a household survey and survey among ration dealers in two districts of Kerala. The difference-in difference method was used for impact assessment of PDS reforms and income transfer method was used to estimate the PDS impact on poverty.

An impact assessment of PDS reforms on the purchase of PDS rice has been carried out in chapter 2. This impact was estimated for the group of states which have initiated PDS reforms comparing it with the states which are yet to complete the PDS reforms. The estimation has been done using difference-in-difference (DID) method, which is an impact evaluation method to analyse the changes in economic and social policies by comparing the outcome of the treatment group with the control group during the period in which the PDS reforms were
initiated. The chapter focused on the impact of PDS reforms on the subsidised rice scheme. The treatment group of states in the study includes Bihar, Chattisgarh, Haryana, Karnataka, Madhya Pradesh, Maharashtra, Punjab and Rajasthan, and the control group of states consisting of Andhra Pradesh, Assam, Gujarat, Jharkhand, Karnataka, Kerala, Madhya Pradesh, Odisha, Tamil Nadu, U.P and West Bengal. Testing for parallel trends assumption is an important prerequisite for estimating the DID method. It states that if the subsidized rice policy had not been implemented, the trend line for treatment group and the trend line for control group would have followed parallel paths as shown in pre-treatment period 1993-94. A deviation from the parallel path indicates that there is the impact of PDS policy on the treatment states under consideration during the period from 2004-05 to 2011-12. A comparison of the PDS coverage for the (proportion of households that bought from PDS) treatment and control groups has been made by estimating from 61st and 68th rounds of NSSO. The major findings in the study show that the positive coefficients on the Difference-in-Difference dummy and treatment dummy are evidence for the better working of TPDS in the treatment states during 2004-05 and 2011-12. After treatment dummy is negative because there are some of the control group of states like Andhra Pradesh, Karnataka, Kerala and Tamil Nadu, where the average quantity of PDS rice did not increase in 2011-12. But in treatment states, there was a notable increase in the average quantity of PDS rice in 2011-12. Along with these findings, an increase in coverage of PDS has been witnessed at the All India level in rural India from 24.4 percent in 2004-05 to 45.9 percent in 2011-12 and urban India from 13.1 percent in 2004-05 to 23.3 percent in 2011-12. The positive DID interaction dummy and treatment dummy shows the real impact of the rise in PDS purchase of rice due to the reforms introduced. The experience of the states which have completed PDS reforms provides ample support for the fact that the inclusive PDS policy can improve the PDS rice consumption. The present study having comprehended an increase in PDS coverage and a notable impact on the purchase of PDS rice, as a result of PDS reforms implemented from 2004-05 to 2011-12, have reflected the provisions in NFSA, 2013 and provides new insights for the implementation of the Act in full length across the country.
An analysis to assess the impact of PDS on poverty across the Monthly Per Capita Expenditure (MPCE) deciles group in 17 major states in India was carried out in chapter 3. An analysis of the poverty across the MPCE deciles group helps in making a comparative assessment of the subsidy transfer among the poor and rich expenditure classes of households. The analysis, in turn, helps to evaluate whether the subsidies through PDS reached the targeted population. The impact of PDS on poverty is estimated through subsidy or implicit income transfer. The subsidy can be calculated as $S = Q_p (P - M)$, where $S$ is the subsidy through PDS, $Q_p$ is the quantity purchased from PDS, $P$ is the PDS price, and $M$ is the market price. The subsidy is then added to the Monthly Per capita Consumption Expenditure from NSSO consumption unit level data, and the PDS impact on poverty is compared in the absence of the subsidy. The major findings of the study show that for the major states across the rural and urban areas show that the impact in terms of percentage increase in real MPCE is more for the poorest expenditure class in top-most MPCE deciles for all the states. The percentage variation for the impact of PDS on poverty between rich and poor MPCE deciles was highest in urban West Bengal (78.93 percent) followed by rural Tamil Nadu (75.72) and Rajasthan (74.72). Evaluating the subsidy distribution across the MPCE deciles, it is more progressive (declining from top to bottom MPCE deciles) for the states of Andhra Pradesh, Bihar, Jharkhand, Kerala, Madhya Pradesh, Punjab, Haryana, Uttar Pradesh and West Bengal. It is less progressive (increasing from top to bottom MPCE deciles) among the states of Assam, Chattisgarh, Gujarat, Karnataka, Maharashtra, Odisha, Rajasthan and Tamil Nadu. Although the impact on poverty favoured the poorest MPCE deciles across the major states in rural and urban India, the subsidy distribution is reported to be regressive in 8 out of 17 major states in India. So the subsidy distribution must be streamlined in such a way that it must be targeted more towards the poorest top four deciles class in every state of the country. Only then the PDS can realize its goal of assuring welfare to the poor and targeted section of the population.

The primary survey on the functioning of existing PDS and the preference analysis on the PDS and cash transfers were analysed in Kerala which is acclaimed for one of the states which are having a well functioning PDS with new computerization reforms. The
socio-economic profile of the respondents was narrated in chapter 4. The sampling area of the 
study was in Thiruvananthapuram and Malappuram districts of Kerala based on a structured 
questionnaire. Through a simple random sampling method, the sample population of 367 
households was chosen from both the districts of study. The districts were selected based on 
the PDS coverage out of the total population in the district. The districts were selected based 
on the PDS coverage out of the entire population in the district. Thiruvananthapuram district 
was chosen based on the criteria of computerized ration shop tested in a pilot mode in the 
district and Malappuram has the lowest coverage (20.70%) in terms of the PDS in the state. 
Also, in terms of development indicators, Malappuram has the lowest Human Development 
Index (HDI) Rank (14th rank) (GOK, 2006). The unit of analysis of the study was households. 
The socioeconomic characteristics of the households comprise of family size, gender, religion, 
marital status, educational qualification, housing characteristics and land profile. The average 
household size in both the districts across the three sectors shows that to an average 
Malappuram has a household size of 5 and Thiruvananthapuram has an average household 
size of 4. As per the new NFSA, 2013 norms, the ration card is issued to the woman heads of 
the households based on this in the survey; female heads dominated the ration cards of the 
households in the rural, the urban and the tribal sectors of both the districts. In 
Thiruvananthapuram, under the urban sampling area, 100 percent of the ration cards were 
converted into women heads as per the new NFSA norms.

A study on the preference between cash versus PDS was carried out in Kerala analyzing the 
existing distribution, access, purchase, reforms in ration shops and access to banks (chapter 5). 
The primary survey specifically focused on the choice of the beneficiaries between cash and 
PDS and the utilization of PDS. The existing system of PDS was carefully examined based on 
the entitlements for them through the PDS, the quantity purchased, and the price of food 
grains through PDS based on the socio-economic background of the beneficiary households. 
As the flaws in PDS was a rampant issue, to plug leakages, it was asked to choose between 
PDS and cash transfer scheme taking in to account the readiness of the system through 
possession of Aadhaar cards, bank accounts and access to the bank and market. The major 
findings of the survey show that over a majority of the households (81 percent in
Thiruvananthapuram and 88.9 percent in Malappuram) preferred PDS to cash transfer scheme in both the districts. The preference for PDS is due to the familiarity with the PDS (69 percent in Thiruvananthapuram and 85.9 percent in Malappuram) and difficulty created by hassles in collecting money from banks (32.7 percent in Thiruvananthapuram and 78.6 percent in Malappuram). Assessment of the readiness of the requirements for E-PDS was examined during the survey among the households, to understand how far the benefits of PDS reforms can percolate to the intended beneficiaries most appropriately. Based on this 100.0 percent of the sampled population in rural and urban areas of both the districts is having Aadhaar card and they support in making Aadhaar card mandatory in government services and support in linking ration card with Aadhaar card. There were some common irregularities in maintaining the ration cards regarding unethical information entered (19.6 percent in Thiruvananthapuram and 10.6 percent in Malappuram) and illegible entries (19 percent in Thiruvananthapuram and 5.5 percent in Malappuram). In Malappuram district, 97.5 percent of the households and 94.6 percent of the households in Thiruvananthapuram were willing to take full ration every month from PDS. The readiness for the cash transfers was mainly assessed through evaluating whether the households hold a bank account in any of the banks. It is evident from their responses that in both districts (98.5 percent in Malappuram and 100.0 percent in Thiruvananthapuram) at least a member of the household has a bank account. In Thiruvananthapuram district, 58.3 percent of the households were aware of the NFSA norms, and 39.2 percent of the households in Malappuram district were aware of the NFSA norms.

The case study on the pilot experience of households with computerized ration shops in Thiruvananthapuram district gives new implications for the reforms in PDS. The households surveyed under the three ration shops which tested computerized PDS on a pilot basis were satisfied with new reform tried on a pilot basis in the pilot area, and they were supporting for PDS reforms rather than switching over to cash transfer scheme. The advantages of the new reform pointed out by them were systematic entries of food grains in stock register, assurance for the provision of the full quota of entitled quantities, identification of beneficiaries with the thumb impression, well maintenance of the stock of allotted food grains and exact measurements which can thereby prevent the corruption in the PDS.
An analysis of the utilization of PDS by tribal communities and their preferences towards PDS and cash transfer scheme (chapter 6) is examined in this section. Given the stark differences of their poor socioeconomic background and livelihood conditions for survival unlike the rural and urban regions shows a notable variation in the dimensions of literacy, with higher proportion of illiterate households surveyed in tribal areas. There exist occupational differences in tribal regions, unlike the rural and urban regions. The deprivation in housing with lack of toilet facilities (38 percent in Thiruvananthapuram and 49 percent in Malappuram) and households without electricity (12 percent in Thiruvananthapuram and 4 percent in Malappuram) is a persistent problem in tribal regions of both the districts. Access to the ration shops was difficult in tribal area of Thiruvananthapuram where 96.4 percent of the households have to travel more than 3 km to reach the ration shops. The case study on the preference analysis of tribal group between PDS and cash transfer scheme shows that majority of the tribal households preferred PDS to cash transfer scheme due to the lack of transportation facilities, which make difficult to reach bank and market from their settlement area. Providing access to the basic amenities at their doorstep is the need of the hour for tribal development. Only then an introduction of a new reform or initiative which is entirely unfamiliar to the tribal households here will become a reality in the present scenario. Ensuring the basic requirement for the locality is the prerequisite before introducing any reform, targeting the poor.

An efficient working of the PDS needs to have a perfect blend of beneficiary part and the service delivery mechanism through PDS outlets. The fair price shops are the basic link to reach to the beneficiaries to provide them with the entitled benefits. The final chapter (chapter 7) provides an outline about the profile of ration shops in Kerala and the major findings of the viability study conducted on the ration shops in Kerala. The survey on the ration shops was conducted in the household survey area to know the transparency in the provision of food grains through ration shops, functioning of PDS through ration shops. The analysis was also made on the issues faced by the ration dealers due to the mismatch between the sales and recurring costs, reforms introduced in ration shops with computerization and the challenges
faced by ration dealers for the new initiatives and the essential prerequisites to be maintained in the ration shop for the effective management of PDS.

There were some common and serious flaws noted in maintaining the ration shops. None of the ration shops surveyed has displayed helpline number, list of the BPL cardholders was not shown in the ration shops (83.3 percent) and days and hours of opening were not displayed on the information board in some ration shops (83.3 percent). The two case studies at the end of the section narrate the experience of the computerized ration shops in pilot mode and the issues and challenges faced by fair price dealers in running the fair price shops. The case studies shed light on the interest taken by the ration dealers for introducing new reforms which were not possible to continue in the long run due to nonpayment of the required salary for setting up of the biometric interface and the computer as result of the apathy from the authorities. The issues and challenges faced by the ration dealers including delay in commission (100.00 percent of the ration dealers in survey) and the amount which was not possible to meet the costs (83.3 percent) are most common. Along with this, the issues related with implementation of NFSA reforms and doorstep delivery of food grains is of the recent origin in Kerala as a whole and specifically in the districts of the study. Although the doorstep delivery was initiated to avoid intermediaries for distribution of gunny bags of food grains to ration shops, the gunny bags still get diverted, and when the food grains reach in bulk, some ration shops find it difficult to store them due to the lack of storage facilities. The state efforts should help the supply channel to function meeting its costs and helping it viable for running the shop.

In a nutshell, evaluating the PDS performance in the context of new reforms and proposed cash transfer scheme show that the inclusive PDS policy increased the coverage and increase in the purchase of PDS rice, with subsidised rice scheme in vogue. The analysis of the PDS impact on poverty brings out the importance of PDS which has a vital role in improving the standard of living of the poor expenditure classes by moving them out of poverty. The feedback elicited from the household survey proves that PDS is crucial in ensuring food security especially to the targeted population below poverty line. Cash transfers as an
alternative are preferred if the access to banks and markets are made possible for the convenience of the households. Cash transfers if introduced can plug in leakages existing in the PDS as pointed out by the households. But it may also adversely affect the illiterate, old age group who would find it difficult to manage the bank account and the purchase from the open market with the subsidy credited into the bank accounts. The beneficiaries have also expressed their concerns to jump into uncharted water by switching over to cash transfer scheme. All the households in the survey were agreeing and supporting the new reforms introduced for PDS. The proposed cash transfer scheme can be initiated by making sure that all sections of the population in rural, tribal and urban regions of the states have access to banks and markets at their convenience leaving none of them deprived of their entitlements.

8.1 Policy implications and the way forward
The policy implications evolved from the study are based on strengthening the reforms in PDS and in terms of readiness of the system to introduce cash transfer scheme as a new alternative.

• The positive impact of PDS policy in the states which have completed the PDS reforms give policy insights for the other states to complete the set of reforms as prescribed in NFSA, 2013. This can make the existing system of PDS more effective by plugging the leakages.

• The PDS impact on poverty estimated as a sum of actual MPCE and subsidies across the MPCE deciles group in the major states of India emphasis on the need to make the subsidy distribution more targeted and progressive (declining from top to bottom MPCE deciles) in the states which have regressive distribution of PDS subsidy. The uniform subsidy distribution, in turn, can increase the real MPCE which shows the PDS impact on poverty and thereby increase the standard of living of the expenditure classes especially the poor.

• Evaluating the cash instead of PDS among the households brings out implications to reform the PDS. The leakages and quality concerns are still rampant issues affecting the PDS, but the unfamiliarity with the new alternative, the delay in National Rural Employment Guarantee Act (NREGA) wages, and LPG subsidy through direct benefit transfer scheme together with
concerns regarding managing the bank transactions influenced their choices to opt for PDS. In the existing setup, more than a PDS there is a need for a reformed PDS with the states of India speeding up the process of computerization of ration shops, linking of ration card with Aadhaar card, reforming the supply chain, online allocation of food grains and building up of online grievance redressal cells.

• The case studies of households and fair price shops in the study show that the households overwhelmingly supported the reforms introduced in ration shops in the pilot mode to make it more transparent and leak proof. The ration dealers also supported this move on the demand of ensuring the timely payment of commission which is adequate to meet the costs for running the PDS shops. Some of the tribal households if ensured access to banking and market with adequate transportation facilities were willing to opt for cash transfers. So the basic needs must be assured and supported at the first level before initiating any alternative to PDS.

• Although there was no much variation in the preferences between cash versus PDS, readiness for E-PDS and PDS utilization in the rural, urban and tribal regions of two districts surveyed in Kerala, the tribal regions in Thiruvananthapuram district lack access to PDS since they have to travel more than 3 km, although there is an improvement in access compared to previous five years. Hence the access to PDS must be improved in tribal areas by increasing the number of fair price shops and gradually developing the transportation facilities to have access to markets and Banks. The reforms like computerization tested on a pilot basis in the ration shops in urban areas of Thiruvananthapuram district must be extended to rural and tribal regions and also to all other districts for the transparent working of the PDS.

8.2 Limitations of the study

There is a paucity of literature on cash transfer scheme studies in Kerala as no one has initiated such pilot study. National Food Security Act is not completely implemented in every states of India. Many states are in different stages of the implementation of this Act. Locating the fair price shops which had carried out computerisation on a pilot basis Thiruvananthapuram district was really difficult since beneficiaries were not much aware of the new initiative. The main purpose of NSSO data on household consumption is to estimate
the magnitude of poverty. Adequate and sufficient data is not available for determining the performance of PDS at the Central and state level. Hence the suggestion is to ensure and assist the estimation of efficiency of PDS with more reliable and adequate data.

Hence by strengthening the PDS reforms, improving the basic living conditions and helping these welfare initiatives to percolate to all the sections of the society, especially poor and vulnerable, the gradual implementation of the proposed cash transfer scheme as an alternative to PDS can take place.

8.3 Future Scope of the Study

Comprehensive recommendations for the reform in PDS through cash transfer of Food subsidy rules, 2015 are available to the government with the enactment of the National Food Security Act, 2013. Based on which it can be examined whether the Aadhaar linked approach in PDS and computerization can help in tracking the PDS distribution till the last link in the chain of distribution. The present study has explored the possibilities of implementing the cash transfer scheme in Kerala and has evaluated the working of computerized ration shop in a pilot mode in the state. After a certain period of implementation of cash transfer scheme as an alternative to PDS, afresh study can be carried out in Kerala comparing the impact of this reform in the state with the states like Chattisgarh and Madhya Pradesh which have tried cash transfer scheme on a pilot basis. Thereby it can be examined whether Kerala model can be replicated to the other south Indian states of India as well. With the implementation of the cash transfer scheme and computerization of ration shops in full length; the policy effect of the same, reaching to the beneficiaries can be assessed in the future research. The states of India are in various stages of PDS reforms through National Food Security Act, and the impact of these reforms in the new phase of TPDS can be evaluated across India in the future studies on PDS.