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**Title of paper:** Poor's Supply Chain: Indian Public Distribution System Revisited

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# Poor's Supply Chain: Indian Public Distribution System Revisited

## Abstract

In India a public distribution system (PDS) and its improved version targeted public distribution system (TPDS) was carved out as a novel system of safety net operations for the distribution of scheduled commodities to the targeted citizens through a network of institutions comprising Food Corporation of India (FCI) warehouses and fair price shops (FPS). However, this system is fraught with many difficulties such as inefficiency, deterioration of food grains, unsatisfactory quality of commodities, malpractices in weights and measures, mismatch of demand and supply, long waiting times, exorbitant corruption, rude behaviour of shopkeepers and poor service delivery. The objectives of this study are to understand the design, implementation and monitoring of PDS supply chain activities. Understanding of which will be help in proposing redesigning of PDS processes, introducing IT based interventions, thereby, making flow of food items and other commodities visible and making some policy recommendation. The methodology adopted is a mix of literature review, document analysis such as government gazettes, interview with policy makers in government, officials of agency responsible for public distribution system *i.e.* FCI, fair price shop owners, private retailers and survey of end users through a schedule. A hybrid approach is proposed to retain the current PDS supply chain while making suitable process redesigns, introducing ICT based interventions and involvement of private actors in service delivery.

**Key Words:** Food Supply Chain, Public Distribution Systems, ICT Intervention, Service Delivery

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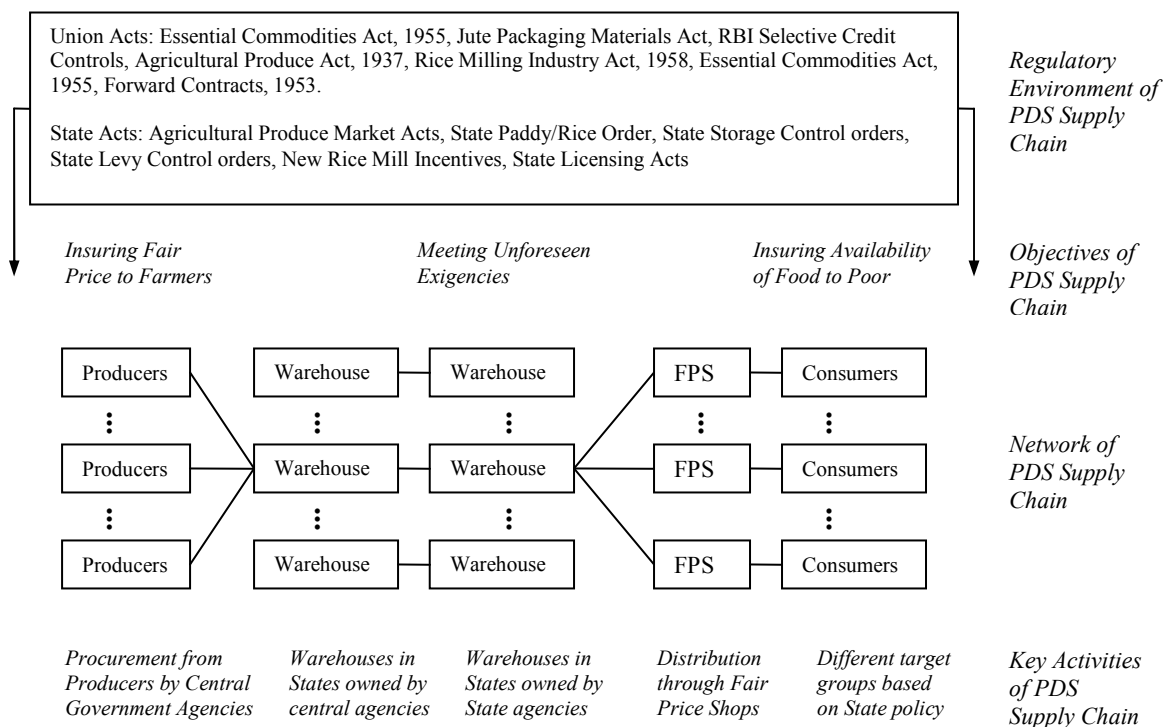
## 1. Introduction

In India a public distribution system (PDS) and its improved version targeted public distribution system (TPDS) was carved out as a novel system of safety net operations for the distribution of scheduled commodities to the citizens especially the below poverty line (BPL), above poverty line (APL) and those coming under *Antyodaya Anna Yojana* (AAY) through a network of institutions comprising Food Corporation of India (FCI) warehouses and fair price shops (FPS). Poverty line is multidimensional in nature. At one level it represents deprivation from physical needs such as food, clothing, and shelter. At other level it represents deprivation from education, health, lack of voice and information. Therefore, poverty alleviation involves providing basic food and other essential commodities at subsidized rates, providing relevant information and developing human capabilities so that they can acquire, assimilate and make decisions. For a developing county like India which is positioning itself as a pragmatic and progressive State, it is an opportune moment to serve its underprivileged citizens by crafting its TPDS supply chain through ICT based interventions. Hence forth the term PDS is used to mean TPDS.

PDS provides rationed amount of basic food items such as rice, wheat, sugar, and non food items such as kerosene at below market prices to specified group of citizens. The issues dealing with PDS comes under concurrent list of the constitution of India. Therefore, central as well as states governments are responsible for planning and running the PDS supply chain. The central ministry of civil supplies lays down policy to cover what commodities are sold in different areas, their prices, legislation, coordinating the work of several agencies and monitoring the performance. Central government agencies are responsible for procuring the goods, storing them, and transporting them to convenient locations in the states. The FCI handles grains. Within each state, the state ministry of civil supplies administers the PDS. The supply chain of PDS involves various actors such as producers, warehouse, FPS and end customers. Figure 1 depicts the PDS supply chain.

However, this system is fraught with many difficulties such as inefficiency, deterioration of food grains, unsatisfactory quality of commodities, malpractices in weights and measures, mismatch of demand and supply, long waiting times, exorbitant corruption, rude behaviour of shopkeepers

and poor service delivery. The PDS had been criticized for its urban biased (Dev and Suryanarayana, 1991) and for its failure to serve effectively the poorer sections of the population. Preliminary assessment of PDS reveals that PDS suffers from heavy losses of food grains, mismanagement of inventory, high carrying cost, lack of accountability and poor quality of service. The underlying reasons include lack of visibility of flow of food grains and embedded information. Information needed for planning and control of PDS fails to deliver desired results. Information and communication technology (ICT) enabled interventions in the PDS are very weak.



**Figure 1: Flow of Food Grains in PDS Supply Chain**

Streamlining of PDS processes will result in increased operational efficiency, thereby reducing transit losses and pilferages. This can be achieved by real time flow of information across all the stages of PDS. This visibility will ensure availability of correct quantities of scheduled commodities to fair price shop owners and the end customers thus, improving the service delivery. Improvement in service delivery will also improve quality of service across various stages of the PDS. To meet the expectations of policy makers and demands of the citizens, the PDS should be agile enough to identify the needs of the targeted citizen groups and adapt and align itself with dynamic market conditions and policy frameworks.

This paper is the outcome of an exploratory study on PDS in the district of Gwalior in the state of Madhya Pradesh. The objectives of this study are to understand the design, implementation and monitoring of PDS supply chain activities. Understanding of which will be help in proposing redesigning of PDS processes, introducing ICT based interventions, thereby, making flow of food items and other commodities visible and making some policy recommendation. The second section briefly provides a review of the literature on Indian PDS. Research method followed is provided in the third section and this is applied to the PDS supply chain existing in Gwalior district in the fourth section, possible solution of carve out efficient PDS supply chain is presented in section five followed by conclusions in the final section.

## **2. Review of Literature: Indian Public Distribution System**

### ***2.1 The Context***

Indian PDS is a safety net operation to deal with the problems of poverty (Mooij, 1994) and is one of the important forms of government intervention in the food grain market. The original objective of the PDS was stabilisation of prices of food grains and management of its supply. The primary responsibility of the central government was to intervene in the market for food grains by announcing minimum support prices as well as procuring surplus food grains. This was offered to the states for distribution through the PDS at a subsidized price. The government of India however, changed this policy as part of its economic reform programme and introduced in 1997, a targeted PDS (TPDS) under which food grains are being allocated to states on the basis of the estimates of population below the poverty line (Kannan et al, 2000). PDS is the joint responsibility of the central government, state governments, and the union territory administrations to ensure the smooth functioning of the system. While the responsibility of the central government is to procure, store, and transport grains from purchase points to central warehouses, the responsibility of state governments and the union territory administrations is to transport these commodities from the central warehouses and distribute them to consumers through the network of FPS. PDS supports approximately 400 million citizens and involves a network of 478,000 FPSs which distributes more than 200 million tones of commodities having worth of more than INR 15,0000 million. PDS also provides subsidy which depends on the level of procurement of food grains and off take under PDS and other welfare schemes. The budgetary estimate for food subsidy (Vyas, 2005) during 2008-2009 was about INR 370 billion. Rural India

spends about 64% of its budget in food. Food share is an inverse indicator of welfare (Deaton, 1997). Several empirical studies based on PDS purchases have shown that the poor were not benefiting much from the PDS (Gaiha, 2002). There is literally no public participation in the working of the public distribution system (PDS) network, even in an advisory capacity. The intended population, for whom items such as food grains or *kerosene* are despatched, is not involved in planning of these items, their quantities, quality and price (Jain, 1989). The operational details of the PDS differ from state to state. Though the policy of setting up of FPSs owes its initiation to national food policy, its implementation remains the direct responsibility of the state governments.

## ***2.2 PDS Operations***

Pricing within the PDS involves assessment of current and the anticipated open market prices by the government. The building of buffer stocks serves the purpose of meeting unexpected exigencies, matching the demand with supply and stabilizing inter-seasonal demands. The central government is responsible for inter-state movement of grains so as to balance the regional demand with supply. However, such grain movements incur operational costs. These costs plus the procurement price are often higher than the prices at which the grain is released through the PDS (Zhou, 1998). All the operations of PDS supply chain is performed by the public actors. Involvement of private actors in the food grain market will provide the right cues to farmers in deciding their cropping patterns in line with the emerging demand for different agricultural commodities. As for relative food grain price stability, it is more sustainable and less costly to seek to achieve it through expansion of irrigation and technology, especially to the less developed regions (Thamarajakshi, 1997). The leakages in PDS operations take place at every stage of the supply chain and take place in various forms. The leakages may take place right at the warehouse level and food grain may not reach to the targeted FPS, or FPS dealer may divert a part of allotted quota to open market. FPS owner may collude with district supply authorities in this operation or the leakage may also take place at household level where beneficiary may purchase the ration but sell it in open market at higher prices (Idrakanth, 1997). The leakage in PDS operations may also be attributed to the fact that the commission which a FPS operator earns on sale of PDS items is so small that he can not sustain.

### ***2.3 PDS Quality and Service Delivery***

Public and private actors procure food grains at almost similar prices. The poor quality of food grain distributed through PDS marks the inefficiency of its operations. Government spends a handsome amount of subsidy so that intended citizens' gets good quality of basic food items at very low prices. A reduction in food subsidies increases food prices and hurts the poor even when they are not major recipients of the subsidy. On the positive side the wider reach of the PDS makes it more effective than other welfare schemes such as employment guarantee scheme (EGS). Further, proper targeting and improved delivery system in rural areas will make the PDS more efficient. Nevertheless, not PDS alone, but a mix of policies involving effective implementation of anti-poverty programmes, controlling inflation, improving health facilities, will be needed to solve the food security problem in India (Dev, 1996). While many people do benefit from the present set-up, there are also people within almost all categories of stakeholders who are dissatisfied with the large-scale misappropriation of food grains. It is argued that there is scope for change, but change requires strategic political maneuvering and initially an evolutionary approach in order not to awaken and antagonizing strong vested interests (Mooij, 2001). The improvement in PDS operations is possible when all the activities of the system are analysed in an integrated manner. Procurement of food grains, their storage, their inter-state movement, their allocation to various states and distribution by FPS are not isolated problems and therefore, must be tackled in a holistic perspective.

PDS in state of Madhya Pradesh consists of 39 base depots, 25 general depots, 14 subsidized depots, 185 distribution centers, approximately 15,000 FPS and 58 mobile trucks operating in tribal areas. In financial year 2002-03, the State of Madhya Pradesh had approximately 6.05 million beneficiaries whom 2.54 million ton commodities should have been distributed. However, total distribution made was just 0.88 million ton, thereby incurring a deficit of 1.66 million ton. In State of Madhya Pradesh majority of the citizens complain about not getting desired information related to public distribution system such as information about availability and price (Right to Food Campaign Madhya Pradesh Support Group, 2004). Table 1 depicts select list of studies examining various issues related to Indian public distribution system. From this table we see that majority of the studies have been done from economic perceptive. Not many studies have analysed PDS from supply chain perspective. Analyzing PDS operations from supply chain

perspective is missing link in the literature. It is these gaps in the literature that this research seeks to address.

**Table 1: Select list of Studies on PDS in India**

#	Researchers	Key Finding of the Project
1	George (1979)	Analysis of public distribution of food grains and their income distribution effects in Kerala
2	Subba Rao <i>et al.</i> (1980)	Estimation of food requirement for India under certain assumptions.
3	Krishna (1981)	Analysis found that the beneficiaries of the public distribution system could be arrived at by deducting from the total population.
4	Mahendra and Suryanarayana (1991)	Analysis found that urban people were getting more benefits through PDS than rural and tribal people.
5	Howes and Jha (1992)	Analysis found that PDS is urban biased.
6	George (1996)	Analysis of food subsidy and production incentives for public distribution system
7	Tata Economic Consultancy Service (2000)	Analysis of diversion of PDS items found that at the national level there was the diversion of 36 per cent of wheat supplies, 31 per cent of rice and 23 per cent of sugar. In the case of rice in Bihar and Assam the extent of diversion was as high as 65 per cent. In the case of wheat the diversion was estimated to 10 per cent in Nagaland and 69 per cent in Punjab. The report found no correlation between the frequencies of the use of Enforcement Acts and extent of diversion. In Northern Region U.P has more diversion of rice and sugar despite a higher number of raids and convictions.
8	Srivastava (2001)	Analysis of food security and targeted PDS in U.P. found that multiplicities of agencies, poor coordination and low administrative accountability have combined to cripple the delivery machinery.
9	NIRD (2003)	Analysis of leakages in PDS found that not drawing and partial drawing of quota was substantially contributed to leakages.
10	Planning Commission (2005)	Analysis of PDS found that at about 58 per cent of the subsidized food grains issued from the central Pool do not reach the BPL families because of identification errors, non-transparent operation and unethical practices in the implementation of TPDS.

### 3. Research Method

The methodology adopted is a mix of literature review, document analysis such as government gazettes, interview with policy makers in government, officials of agency responsible for public distribution system *i.e.* FCI, fair price shop owners, private retailers and survey of end users. We reviewed existing literature on PDS in India to understand the context and critical issues of the problem. This learning was supplemented with discussions with various stakeholders such as policy makers, fair price owners and end customers. Based upon this learning we have used tools and techniques of Supply Chain Management and Information Technology to develop a framework for an effective PDS.