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SUPPLY CHAIN MANAGEMENT: A STUDY OF PADDY IN ANDHRA PRADESH

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ABSTRACT

In India most of the farm operators being small and marginal farmers, the processing and marketing the farmers facing high cost in production, lack of adequate availability of raw materials, poor quality and timeliness of information. The advantages of the supply chain management approach are numerous. Some important advantages are, reduction of product losses in transportation and storage, increasing of sales, dissemination of technology, advanced techniques, capital and knowledge among the chain partners, better information about the flow of products, markets and technologies transparency of the supply chain, tracking & tracing to the source, better control of product safety and quality and large investments and risks are shared among partners in the chain. This paper emphasizes the issues involved in this supply chain have changed dramatically and are influencing not only the supply chain partners but also the whole agriculture sector in India.

KEYWORDS

Supply Chain Management, Paddy, Distribution, Channel, Storage, Selling, Information.

INTRODUCTION

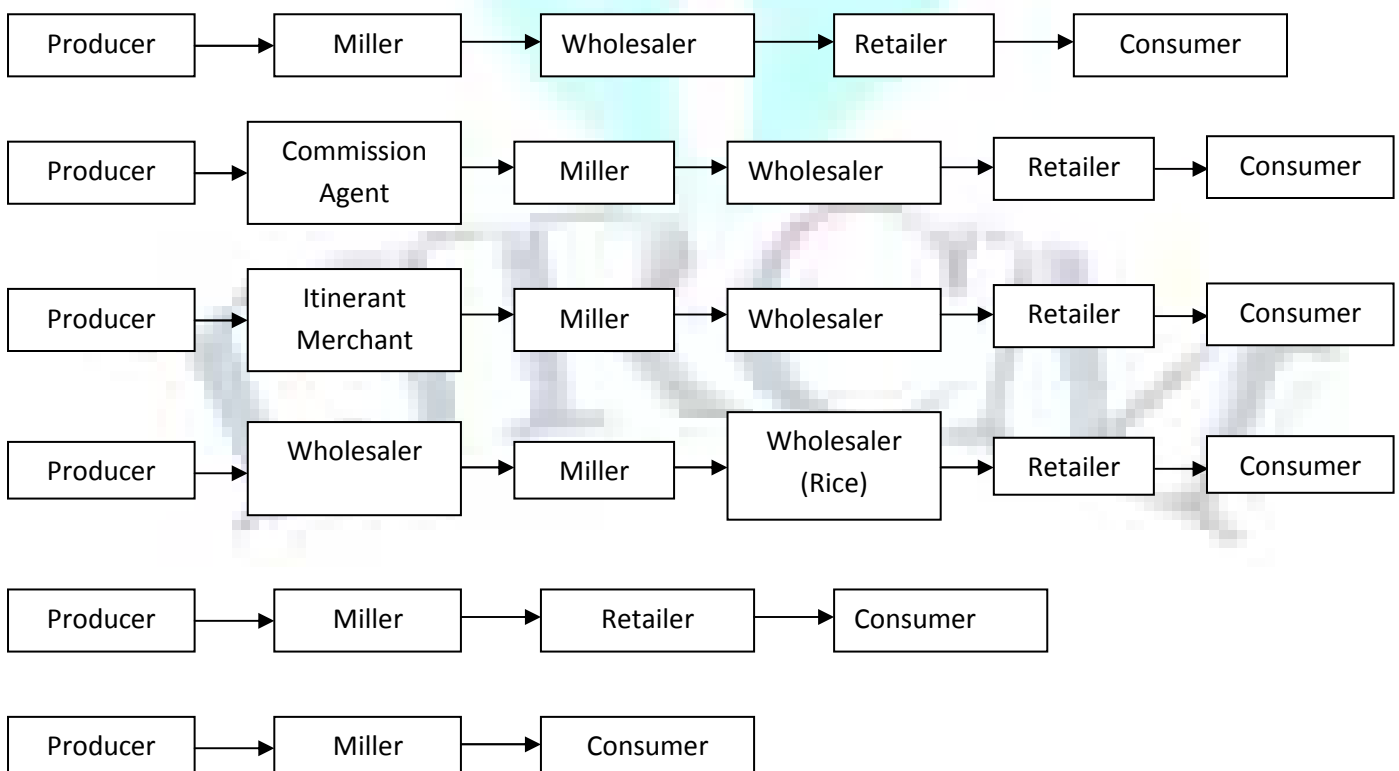
Indian economy is considered as agrarian economy. Agriculture is treated as the back bone of the country. It contributes to the economic and social well-being of the entire nation through its influence on the gross domestic product and employment. Agriculture plays a dominant role in the economic development of a country by providing food for the growing population, raw material and markets for expanding industries, employment avenues and capital formulation for further economic, social progress and growth.¹

The Indian economic growth in the recent years has been propelled by the growth of the service and manufacturing sectors, while agriculture sector is still playing a significant role by contributing 17 per cent of the GDP and providing employment to 60 per cent of the population.² As the Indian population is increasing, the demand for food grains is also increasing. It impacts, in the areas of procurement, processing and production, marketing, supply chain, infrastructure development, technology up gradation and education to the farmers. There is a need to manage the whole show in transparent and participatory ways with proper coordination with the stakeholders so that whole agriculture sector in India can derive the benefit effectively. Indian food supply chain is full of challenges and throws open several questions which has drawn attention of contemporary researchers. According to Food Corporation of India (FCI) sources, an average of 20 to 30 per cent of harvested produce is lost during transport from farm to factory.³

Managing supply chains requires an integral approach in which chain partners jointly plan and control the flow of goods, information, technology and capital from 'farm to fork' meaning from the suppliers of raw materials to the final consumers and *vice versa*. In order to react effectively and quick to consumer's demand, supply chain management is consumer-oriented. It aims at coordination of production processes.⁴ An efficient supply chain can contribute to an increase in the marketable surplus by lowering down the inefficiencies in production, processing, storage and transportation. It ensures better prices to the farmers suggest them to advance more in marketing so they get good price of produce.⁵

Paddy Distribution System in India: The distribution channels for paddy can be broadly categorized into two types. They are private channels and institutional channels (figure 1). The farmers have at least six private channel options. They are as following:⁶

(1) Private Channels - The major marketing channels identified in the private sector are:



(2) **Institutional Channels** – These channels cover the public and co-operative sector agencies. Institutional channels play a very significant role in the procurement and distribution of paddy. Food Corporation of India is the main agency for procurement, buffer stock operations and distribution of paddy. The main institutional marketing channels for paddy are shown below.

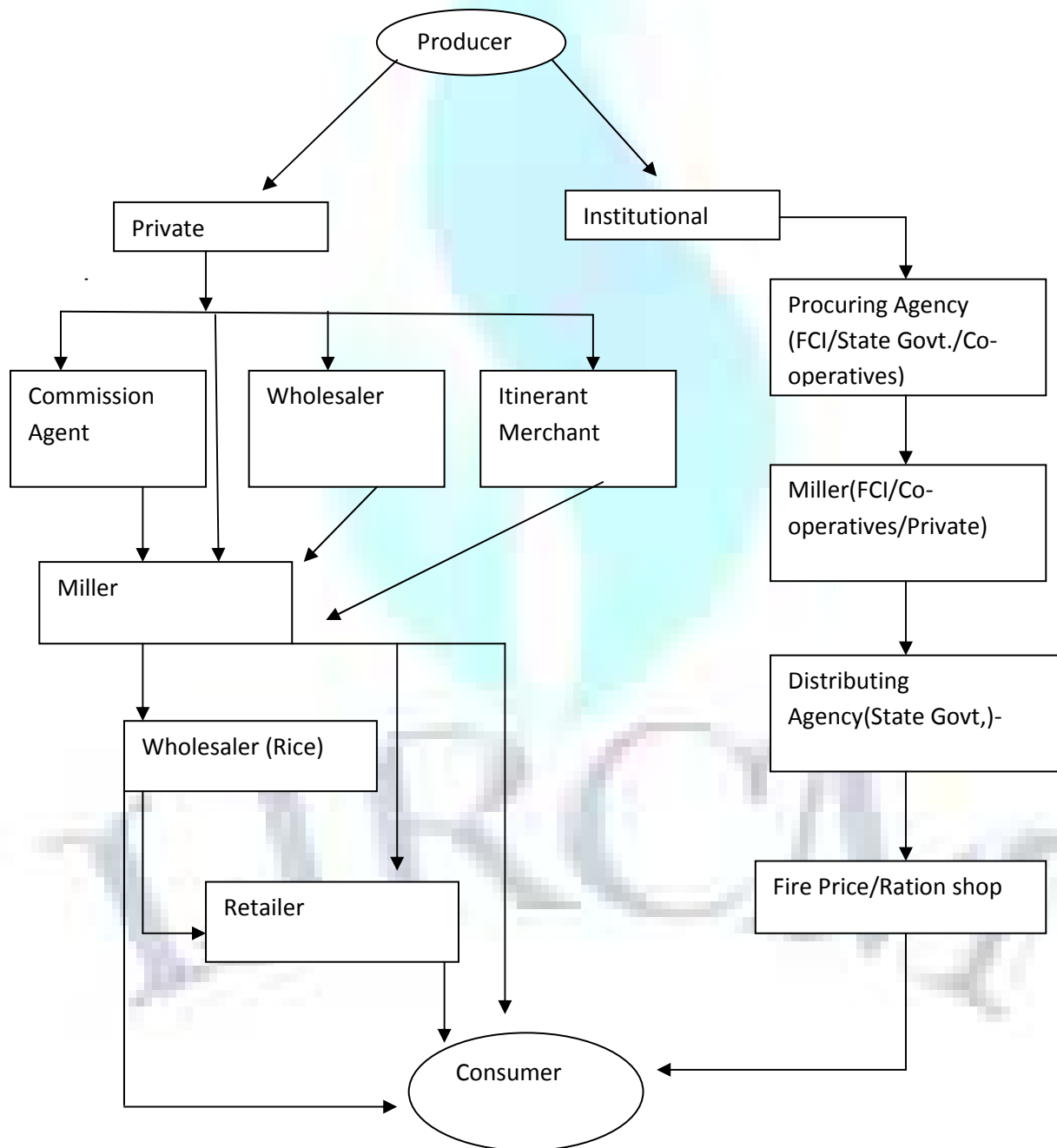
Producer – Procuring Agency (FCI/State Govt./Co-operatives) - Miller (FCI/Co-operatives/Private) - Distributing Agency (State Govt.)- Fire Price/Ration shop- Consumer.

FOOD CORPORATION OF INDIA

The Food Corporation of India was setup under the Food Corporation Act 1964, in order to fulfil the following two objectives of the food policy and to take up effective price support operations for safeguarding the interests of the farmers.⁷

- Distribution of food grains throughout the country for public distribution system
 - Maintaining satisfactory level of operational and buffer stocks of food grains to ensure National Food Security
- In its service to the nation for more than four and half decades, FCI has played a significant role in India 's success in transforming the crisis management oriented food security into a stable security system. The objectives of the FCI are:
- to provide farmers remunerative prices,
 - to make food grains available at reasonable prices, particularly to vulnerable section of the society,
 - to maintain buffer stocks as measure of food security, and
 - to intervene in market for price stabilization.

FIGURE I: MARKETING CHANNELS OF PADDY



PROCUREMENT

The government policy of procurement of food grains has the broad objectives of ensuring MSP to the farmers and also ensuring availability of food grains to the weaker sections at affordable prices. It ensures effective market intervention thereby keeping the prices under check and adds to the overall food security of the country. FCI, the nodal central agency of government of India, along with other state agencies undertakes procurement of wheat, paddy and coarse grains under price support scheme. The procurement under price support is taken up mainly to ensure remunerative prices to the farmers for their produce which works as an incentive for achieving better production. Before the harvest during each Rabi / Kharif crop season, the Govt. of India announces the minimum support prices (MSP) for procurement on the basis of the recommendation of the Commission of Agricultural Costs and Prices (CACPC) which along with other factors, takes into consideration the cost of various agricultural inputs and the reasonable margin for the farmers for their produce. To facilitate procurement of food grains, FCI and various State Agencies in consultation with the State Govt. establish a large number of purchase centres at various mandis and key points. The number of centres and their locations are decided by the State Governments, based on various parameters, so as to maximize the MSP operations.

The extensive and effective price support operations have resulted in sustaining the income of farmers over a period and in providing the required impetus for higher investment in agriculture sector for improved productivity. Whatever stocks which are brought to the purchase centres falling within the Government of India, specifications are purchased at the fixed support price. If the farmers get prices better than the support price from other buyers such as traders / millers etc., the farmers are free to sell their produce to them. FCI and the State Government agencies ensure that the farmers are not compelled to sell their produce below support price.

PUBLIC DISTRIBUTION SYSTEM

The concept of Public Distribution System in the country was evolved in 1942 due to shortage of food grains during Second World War. The Government intervention in distribution of food started since then. This intervention of Government in distribution of food grains in the food scarcity period and, thereafter, continued in major cities, towns and certain food deficit areas. This policy of Public Distribution System/Rationing System has undergone several changes with successively during the planned era. The seventh five year plan assigned to it a crucial role by bringing the entire population under Public Distribution System and became a permanent feature in the country's economy.⁸

The government of India fulfills certain objectives of food security through Public Distribution at an affordable price. The public distribution system aims at meeting the twin objectives - the price support to the farmers for their produce and maintenance of stocks. Public distribution system was widely criticised for its failure to serve the population below the poverty line, its urban bias, negligible coverage in the states with the highest concentration of the rural poor and lack of transport and accountable arrangements for delivery. Realizing this, the government of India has introduced the Targeted Public Distribution System (TPDS) scheme in 1997 to streamline the PDS by issuing special cards to the families below the poverty line and selling essential articles under PDS to them at specially subsidised prices with better monitoring of the delivery system. This quantity is issued as rice* or wheat or combination of both at Below Poverty Line prices. The states fix Consumer End Prices (CEP) at Fair Price Shops (FPS) level at not more than fifty paise per kg. over the Central Issue Price (CIP) particularly for the population below the poverty line. The states are also free to add the quantum coverage and the subsidy from their own resources.

OBJECTIVES OF STUDY

- To analyze the current scenario of Supply Chain Management of paddy in India
- To know the present position of Supply Chain Management of paddy in particularly Andhra Pradesh
- To analyze the Challenges & Opportunities in Supply Chain Management.

RESEARCH METHODOLOGY

Andhra Pradesh state which is known as Rice Bowl of India was selected for the study. The farmers of paddy are categorized into three groups viz., marginal & small size farmers, medium size farmers and large size farmers. The farmers holding land of below five acres are grouped under marginal & small farmers. The farmers with land holding varied between 5 acres and 25 acres are the medium size farmers. The farmers having land holding of more than 25 acres are large size farmers. A sample of 600 farmers divided equally among the three groups was selected for the study. Questionnaire was the research instrument used. The researchers conducted personal interviews with farmers. Adequate care was taken to minimize field errors.

PRODUCT DEVELOPMENT

Product development means cultivation process of paddy for the purpose of the study. Various issues starting from procurement of seeds to the generation of output have been analyzed to study the processes and problems of the farmers in paddy cultivation, information and marketing the produce.

SOURCES OF PROCUREMENT OF SEEDS

The sources for the procurement of seeds are self production, co-farmers, government agencies and open market. Out of the total, about 39 per cent of the respondents procure seeds from co-farmers, 23.3 per cent procure from the government agencies and 29 per cent develop seeds from their own resources. The study further reveals that most of the marginal & small size farmers are depending upon co-farmers for the seeds, while large number of medium size farmers procure seeds from government agencies and co-farmers. The majority of large size farmers use their own resources for the generation of seeds.

USE OF FERTILIZERS

Fertilizers basically can be classified as Inorganic and Organic (Bio- fertilizers) fertilizers. Out of the total, 363 respondents representing 60.5 per cent use only inorganic fertilizers and 30.3 per cent of the respondents use both organic and inorganic fertilizers. Only a few among the three categories of respondents use only organic fertilizers.

SELECTION OF THE FERTILIZERS REQUIRED

The information related to the variables influencing the selection of fertilizers required for cultivation from time to time. Out of the total, 343 respondents representing 57.2 per cent reveals that co-farmers are a major source for selecting fertilizers. As many as 195 respondents representing 32.5 per cent selecting fertilizers with their own experience. Only a few respondents, for the selection of fertilizers, depend upon agriculture officer and soil test. For using fertilizers soil test is considered as the best source among the others. Soil testing is the reliable diagnostic tool whose value in evaluating soil-fertility conditions is not realized by many farmers. It is necessary to create awareness and also provide testing facilities accessible to farmers.

USE OF PESTICIDES

The data relating to use of pesticides by the respondents, out of the total, 384 respondents representing 29.7 per cent use only chemical pesticides and 178 respondents representing 29.7 per cent use both chemical and bio-chemical pesticides. Only a few respondents depend upon biochemical pesticides.

* Paddy becomes Rice after processing by the millers. Rice will be in conservable form after properly cooked.

CULTIVATION TECHNIQUES

The cultivation techniques adopted by respondents. Out of the total, 454 respondents representing 75.7 per cent are still using conventional techniques of cultivation. About 15 per cent of the respondents are using both modern and conventional techniques and there are only 9.7 per cent who use modern techniques. Though majority of the farmers are aware of the benefits of the use of modern techniques for cultivation, they could not adopt due to lack of technical knowledge, financial resources and risk perceptions.

DISTRIBUTION

As referred already, distribution is the key element in agricultural marketing in general and marketing of paddy in particular. The key intermediaries in the distribution of paddy are; commission agents, rice millers, Food Corporation of India and general retailers (Table I). The study revealed that more than 75 per cent of the respondents are selling their produce to the commission agents. The role of FCI, rice millers and retailers is not that significant as only a few respondents are depending on them for marketing their produce.

TABLE 1: SELLING OF PRODUCE (n = 600)

Particulars	Status			Total
	Marginal & Small	Medium	Large	
FCI	21 (3.5%)	16 (2.7%)	7 (1.2%)	44 (7.3%)
Rice Millers	8 (1.3%)	14 (2.3%)	35 (5.8%)	57 (9.5%)
Commission Agents	160 (26.7%)	157 (26.2%)	155 (25.8%)	472 (78.7%)
Retailers	11 (1.8%)	13 (2.7%)	3 (0.5%)	27 (4.5%)
Total	200 (33.3%)	200 (33.3%)	200 (33.3%)	600 (100.0%)

Figures in parenthesis indicate percentage to the grand total.

STORAGE PROBLEM

One of the key problems faced by paddy cultivators, irrespective of their size of land holdings is the problem of storage. The majority of the respondents revealed that they were unable to realize fair price to their produce due to lack of adequate storage facilities. The respondents face the problem of storage of their produce. Most of the medium size farmers and large size farmers are facing this problem when compared with marginal & small farmers.

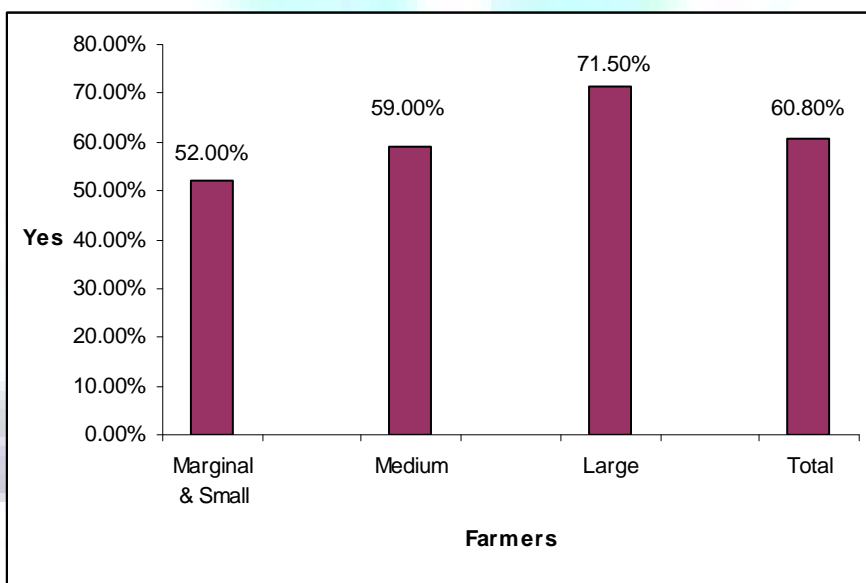
TRANSPORT EXPENSES FROM FIELD TO THE MARKET PLACE

The majority of the cases the buyer bears the transport expenses from field to markets. Out of the total, 487 respondents representing 81.2 per cent revealed the same. It suggests that the farmer sell the produce at the farm itself. There are, however, 9.2 per cent of the respondents revealed that they will bear the transportation expenses to carry the produce to the market place, while 9.7 per cent of the respondents revealed that the transport expenses are shared by themselves and the intermediaries.

PROBLEMS IN SELLING THE PRODUCE

The data shown in Figure II reveals that more than 60 per cent of the respondents face problems in selling their produce. The problems faced by the respondents include grading, under weighing, low price, lack of transportation facilities and lack of market information.

FIGURE II: DO YOU FACE PROBLEMS IN SELLING?



INFORMATION NEEDS

An attempt was made in the study to identify the information need of the respondents. The data presented in the Table II presents the details of needs. The information needs identified by the respondents includes seeds, cultivation methods, cultivation techniques, new tools & machines, fertilizers, pesticides, prices, demand pattern, Govt. schemes, export opportunities, crisis management, training sources, grading, storage facility, credit facility, interest rates and insurance. The study reveals about 80 per cent of the respondents need information on seeds occasionally. Information on cultivation methods was sought by 74.5 per cent of the respondents occasionally and 39.3 per cent respondents regularly. Regarding cultivation techniques, 54.3 per cent respondents need information occasionally while 32.2 per cent of the respondents need information regularly. About 71 per cent of the respondents need information on new tools and

machines occasionally. A little over 50 per cent respondents need information on fertilizers occasionally and about 42 per cent of the respondents need the information regularly. About 46 per cent of the respondents need information on pesticides regularly while a little over 45 per cent of the respondents need information occasionally. Regular information on prices was needed by about 49 per cent of the respondents and 45 per cent of the respondents need the information occasionally. The demand pattern of paddy was the information sought occasionally by about 59 per cent of the respondents and regularly by 23.2 per cent of the respondents. Out of the total, 64.2 per cent of the respondents want the supply information on government schemes occasionally while about 19 per cent of the respondents want the information regularly. Less than 50 per cent of the respondents wanted the information on export management either occasionally or regularly. The information on crisis management was sought by about 38 per cent of the respondents. About 90 per cent of the respondents wanted information on training sources. Information on grading was required by 58.3 per cent and information on storage facility was required by 88.5 per cent of the respondents. The information on credit facilities was needed by about 49 per cent of the respondents occasionally and 44.3 per cent of the respondents regularly. Information on interest rates was needed by about 89 per cent of the respondents, while information on insurance was needed by 79 per cent of the respondents.

TABLE II: THE DETAILS OF INFORMATION (n = 600)

Particulars	Frequency			Total
	Regularly	Occasionally	Never	
Seeds	83 (13.8%)	478 (79.7%)	39 (6.5%)	600 (100.0%)
Cultivation methods	236 (39.3%)	285 (47.5%)	79 (13.2%)	600 (100.0%)
Cultivation Techniques	193 (32.2%)	326 (54.3%)	81 (13.5%)	600 (100.0%)
New tools & machines	106 (17.7%)	425 (70.8%)	69 (11.5%)	600 (100.0%)
Fertilizers	250 (41.7%)	302 (50.3%)	48 (8.0%)	600 (100.0%)
Pesticides	273 (45.5%)	271 (45.2%)	56 (9.3%)	600 (100.0%)
Prices	293 (48.8%)	270 (45.0%)	37 (6.2%)	600 (100.0%)
Demand Pattern	139 (23.2%)	351 (58.5%)	110 (18.3%)	600 (100.0%)
Govt. schemes	113 (18.8%)	385 (64.2%)	102 (17.0%)	600 (100.0%)
Export opportunities	65 (10.8%)	220 (36.7%)	315 (52.5%)	600 (100.0%)
Crisis management	53 (8.8%)	175 (29.2%)	372 (62.0%)	600 (100.0%)
Training sources	235 (39.2%)	302 (50.3%)	63 (10.5%)	600 (100.0%)
Grading	62 (10.3%)	348 (58.0%)	190 (31.7%)	600 (100.0%)
Storage Facility	121 (20.2%)	410 (68.3%)	69 (11.5%)	600 (100.0%)
Credit facilities	266 (44.3%)	292 (48.7%)	42 (7.0%)	600 (100.0%)
Interest Rates	136 (22.7%)	399 (66.5%)	65 (10.8%)	600 (100.0%)
Insurance	103 (17.2%)	372 (62.0%)	125 (20.8%)	600 (100.0%)

Figures in parenthesis indicate percentage to the grand total.

CONCLUSIONS

There is a problem in supply chain management for processing and marketing of agricultural produces in India. There are two main types of agricultural supply chains in which one is highly-regulated by the government and another that is run by the private sector. Due to concerns over food security, the Indian government should create some more special rules for paddy. At this point the supply chain splits between the government and the private sector. If the government is buying a regulated crop, the Food Corporation of India will transact with the Commission Agent at a regulated minimum support price. The Food Corporation of India, a government body, is by far the largest purchaser of paddy, as well as many of the other key agricultural products, which it stores and distributes to impoverished populations through the Public Distribution System.

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