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SUPPLY CHAIN MANAGEMENT IN SUGAR INDUSTRY: A STUDY OF WESTERN MAHARASHTRA IN INDIA

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ABSTRACT

Agro processing is a large sector that covers activities such as agriculture, horticulture, and plantation. It also includes other industries that use agriculture inputs for manufacturing of edible products. Sugar Industry is one such major player in Agro processing sector. Greater delegation and competitiveness in agro based industries require new forms of co-ordination between farmers and other agencies to increase quantity within catchment area. During the entire production season, to maximize sugar production with minimum overheads a good network of all the elements is required to be in place. Sugar industry faces a lot of problems such as lack of co ordination, interruptions in supply of raw material due to natural calamities and many other such problems. To overcome these problems industry needs to have a proper supply chain management. Sugar industry particularly in Maharashtra is very popular in the cooperative sector. It is contributing to nearly @ 40% of total national production of sugar. The tonnage figures are @ 50-70 lakh tons of sugar every year[2].

Keywords- Sugarcane, supply chain Management, sugar Industry, production.

INTRODUCTION

Sugar industry constitutes one of the most important agro based industries in India. It started growing in an organized way during the 1930 after introduction of sugar industry protection act in 1932. Sugar industry in India is well developed with a consumer base of more than billions of people. It is also the second largest producer of sugar in the world. The Indian sugar industry has a turnover of Rs. 500 billion per annum and it contributes almost ` 22.5 billion to the central and state exchequer as tax cess and excise duty every year (ref: Ministry of food, Government of India report). Sugar industry directly provides for primary producers who often lack the knowledge to manage these new and dynamic relationships. Improving efficiency of supply chain is now become the need of the hour as this industry has to compete at international level.

employment to 45 million i.e. 7.5% of rural population engaged as sugarcane farmers, agriculture laborers and dependents. It also employs 0.5 million skilled and semi skilled workers. In aggregate employment generated by sugar industry is for more than Five million persons. It is considered as engine of rural development and socio economic upsurge. In the sugar industry management of supply chain is changing considerably in response to the often difficult market environment. Market forces present real challenges to wholesalers and retailers but are exceptionally problematic.

Although India's average farm size is smaller, the industry maintains that smaller farmer is a valuable part of the grower base and will continue to be so into the immediate future. This characteristic underlies the importance of

initiatives such as sharing of farm equipment and partnerships as well as the need to support harvesting by grower owned cooperatives or farmer's diversity of income sources[1][2].

Supply Chain in Sugar Industries:

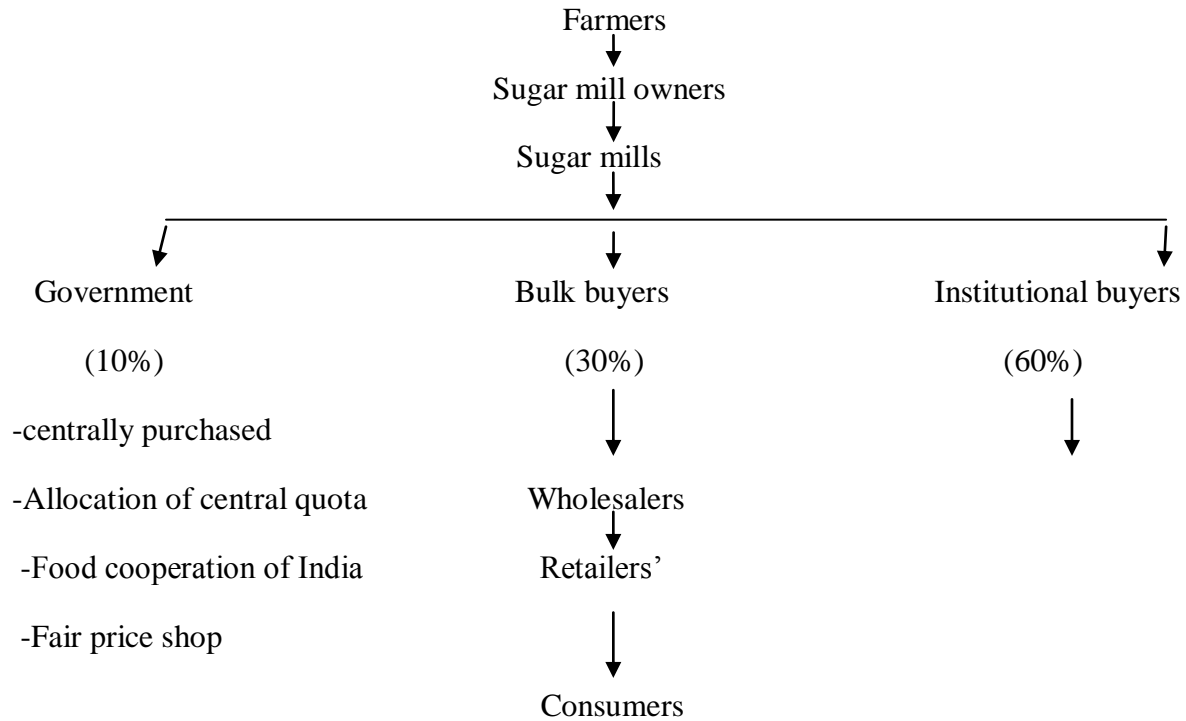


Fig. No. 1: Formal Supply Chain in Sugar Industry in general

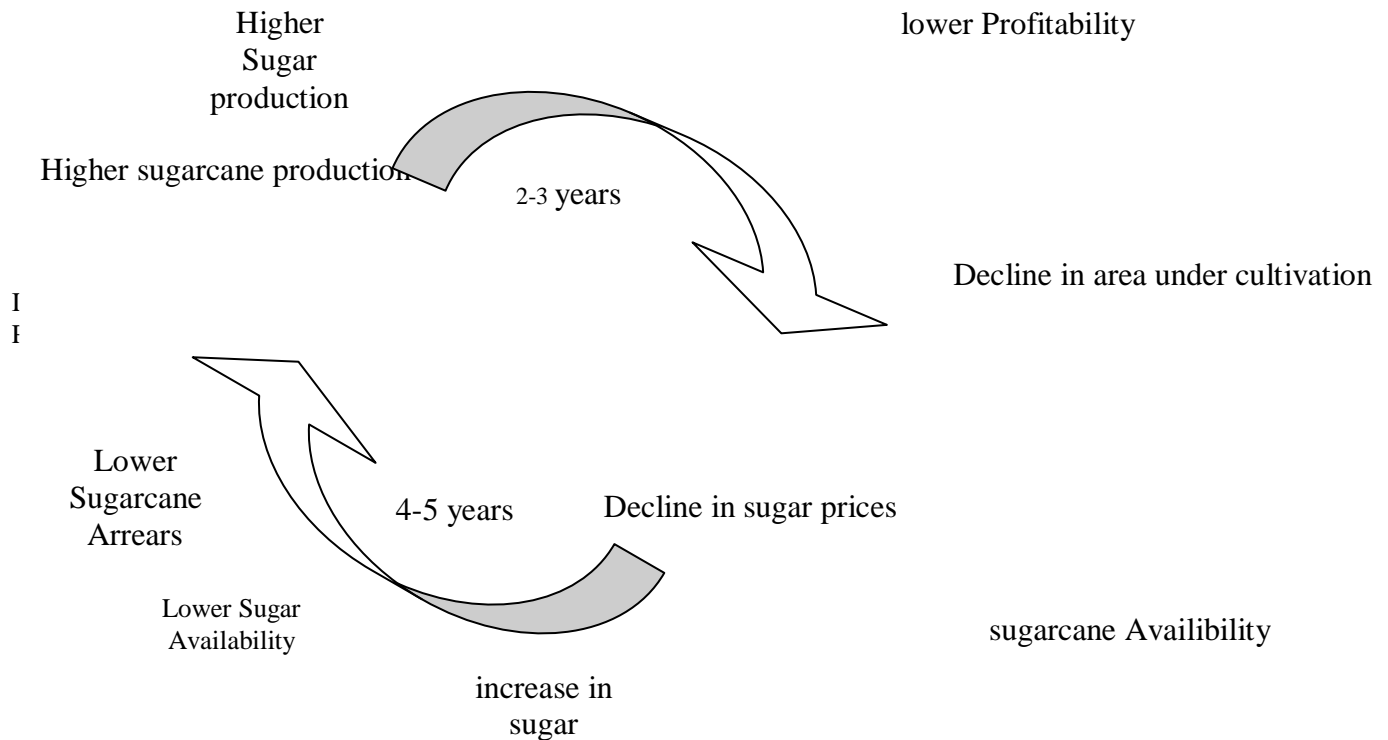


Fig. No. 2: Cycle of variation in Sugarcane production

Product Flow—

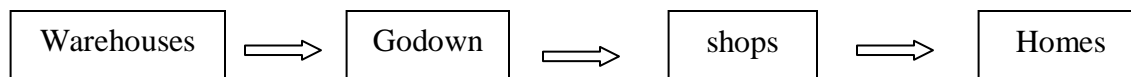


Fig. No. 3: Product flow diagram

Supply chain management in sugar industries involved a lot of problems which will in turn affect the productivity of sugar. The sugar industries in India use only sugarcane as input, hence sugarcane have been established in large sugarcane growing states like Uttar Pradesh, Maharashtra, Karnataka, Gujarat and Tamilnadu and Andhra Pradesh. These six states contribute more than 85% of total sugarcane production in India. Uttar Pradesh and

Maharashtra together contribute more than 57% of total production [3].

FACTORS AFFECTING SUPPLY OF SUGARCANE

- Climate- Due to global warming there are frequent changes in the climate which in turn affect the yield and quality of sugarcane.

- Technical- Lack of technical knowledge among farmers regarding cultivation and harvesting of sugarcane
- Sugarcane production- When there is more production of sugarcane it will lead to more production of sugar and vice versa.
- Political factors- This is major factor affecting the supply of sugarcane as majority of sugarcane industries in western Maharashtra are dominated by politicians and the political battle strongly affect this industry.
- Recovery rate, Duration of season, sugarcane utilization for sugar production is also another factor that affects the supply of sugar[1].

Structure of sugar industry in India-

Public: 06%	Private: 54%	Cooperativ: 40%
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MAJOR PROBLEMS IN SUPPLY CHAIN OF SUGAR INDUSTRIES-

A) CANE PRODUCTION

In the region, cost of production- including harvesting, infield haulage, road transport, loss of throughput can add to costs at every link in the supply chain value chain research provides some initiatives for reducing this cost and improving the efficiency of supply chain, like the implementation of GPS guidance system to assist tracking while harvesting, group farming, rationalization of harvesting group to reduce cost of growers, upgrading the website to facilitate the collection and analysis of data from farmers to assist with agronomic and farm financial management decisions, regularly providing the latest updates of market and climatic changes as well as the best practices for improving sugarcane production to the farmers by conducting workshops and special training programme will also help to improve the production of sugarcane.

B) TRANSPORTATION

Sugarcane industries are mostly located in rural areas as sugarcane is the main raw material used for manufacturing of sugar so the sugar industries in order to reduce their transportation cost prefer to set up the industries near the of sugarcane production areas, but the main problem here arises is that improper road facilities. In absence of dynamic vehicle scheduling, a typical sugarcane transport system symptomatically exhibits excessive queuing times large number of no cane stops, significant over fleetling and poor vehicle utilization, a high level of coordination is required between farmers, harvest contractors, transport contractors and mill managers to make sure the mill receives a steady stream of fresh cane. The development of larger cane bins and an efficient trapping system for the efficient transport of whole crop material will help to reduce the transportation cost to some extent.

C) WAREHOUSING

After manufacturing and before distribution the sugar is stored in warehouses which is also called as inventory, during this storage some problems may occur like sometimes due to moisture sugar get converted in solid cubes or may be spoiled due to improper handling. So proper care should be taken to maintain the inventory in good condition. To solve these problem industries should develop warehousing at consuming destinations this enables industries better pricing and eliminating too many middlemen, better Information Technology and application of quantitative tools and techniques can be used for inventory management.

GOVERNMENT POLICIES

Sugar has historically been classified as an essential commodity and has been regulated across the value chain. The heavy regulation in this sector artificially impacts the demand supply forces resulting in market imbalance. Sensing this problem, since 1993 the regulations have been progressively eased. The key regulatory milestones

include de-licensing of the industry in 1998 and the removal of control on storage and distribution in 2002 .However, policy still plays an important role in industries. There are various legislations regarding sugarcane procurement, sugarcane pricing, sugar sales, capacity and production, import and export.

OTHER PROBLEMS

Mismanagement, lack of coordination between farmers, mill owners and distributors, lack of modern technologies as many of the industries still rely on old technologies are some problems which need to be corrected for improving the efficiency of supply chain

Problem of Farmers

- A marginal Indian farmer is faced with several challenges that result in yield and quality being inferior by world standards.
- He lacks access to information accurate weather forecasts and up to date information on commodity market prices.
- He lacks access to the market and thus caught in the vicious cycle of suboptimal use of farm inputs higher cost of credit and lower price realizations on his produce leading to indispensable income for him[1].

Solution for these problems

- Pre configured SAP solution
- Web based cane management system
- Add on utilities; smart card and SMS

- ASM clean development Mechanism

CONCLUSION

In the sugar industry management of supply chain is changing considerably in response to the often difficult market environment. Geographic Information System(GPS) and Global positioning system(GPS) are used extensively in location, site selection, land use planning, environment science, transportation system, trucking companies now track their tracks via GPS technology. In vehicle navigation system, vehicle location system, emergency vehicle deployment and traffic management are using GIS and GPS for their value chain. In addition to this effective communication throughout the world had had communicated virtual world of e business, e integration, e commerce, e marketing, e procurement. Modern sugar industries are required to adopt all these measures for improving the efficiency of their supply chain management.

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