

## Optimizing Supply Chain Management Towards Improved Agricultural Productivity

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### **Abstract**

*The role of production and supply chain management is increasing worldwide due to the growing consumer concerns over food safety and quality together with retailer demands for large volumes of consistent and reliable product. In developed countries, product losses (post harvest losses) are generally small during processing, storage and handling because of the efficiency of the equipment, better storage facilities, and control of critical variables by a skilled and trained staff. However, these losses are more in under developed countries. Due to the lack of cold storage, any disruption of this sequence can result in tons of food spoiling. This is one of the major reasons for rising of onion process in India in the month of August – September 2013.*

*This paper highlights the impact of information technology on agriculture processing industries in India market*

**Key words:** Food and nutritional security, inefficiencies in production, processing, storage and transportation,

### **Effective supply chain in agriculture is essentially required**

Increased variety of goods, the just-in-time delivery system, low load rate, specialization and centralization of production systems, globalization of marketing and seasonal variations are among the main challenges of effective supply chain management system. Effective logistics and technologies are a critical success factors for both manufacturers and retailers.

Agriculture and food supply chain is specific and complex area with important responsibilities. There are two main demands:

- a. Maintaining food quality &safety including animal welfare along the supply chain, &
- b. Reducing logistics cost.

Agriculture sector is very important for the food and nutritional security of the nation. The sector remains the principal source of income for more than 58% of the population. Compared to other countries, India faces a greater challenge, since with only 2.3% share in world's total land area; it has to ensure food security of its population which is about 17.5% of world population. This leads to excessive pressure on land and fragmentation of land holdings. Formation in agriculture and allied sectors has been going up in recent years. To fill up country's requirements, farmers in rural areas require good transportation system with their communication. Supply chain management is the powerful tools to achieve this collaboration. Agri-food chain necessitate the development of innovative logistics system

taking into Consideration, road and traffic conditions, climate, transport time and distance, and queuing at delivery points to:

- strength the economic competitiveness of stakeholders in the food supply chain
- maintain quality or adding value of food and improve animal welfare
- attenuate environmental impact

### **Onion supply chain affecting world economies**

According to the report of International Business Times, normally India does not import onions, but the current shortage in domestic supply has forced a few traders to import onions from countries like Pakistan, China and Iran. The price of a kilogram (2.2 lbs) of onion cost as much as 80 rupees (\$1.27) in the first week of September 2013. Adding to India's troubles is fuel inflation, which hit 11.3 percent in August on a yearly basis, indicating the impact of the rupee's weakness, which has depreciated 12.48 percent so far this year.

According to a Bank of America-Merrill Lynch report estimate, a 10 percent depreciation in the currency adds 1 percent to the inflation figure. India, the second largest producer of onion in the world after China, is estimated to have harvested 16.6 million tonnes of the staple vegetable last year. Total realization from 1.82 lakh tonnes of onion exports stood at Rs 2,294 crore in 2012. Prior to this, India had imported huge quantity of onion from Pakistan in 2011. In 2012, however, there was no need felt to import onion. But, this year again, India has become a net importer of onion despite adequate supply from domestic sources. National Agricultural Cooperative Marketing Federation (NAFED) had last week floated a tender to import onion from Pakistan, China, Iran and Egypt. Also, PEC Ltd had floated a tender to import 300,000 tonnes of onion early last week. Private players are also keen to import the commodity to meet domestic demand. India's wholesale price index, or WPI, hit 6.1 percent in August on a yearly basis, up from 5.79 percent in July, with food inflation rising by 12.4 percent annually, mainly due to a surge in vegetable prices, which rose 77.8 percent year-on-year. Prices of onion -- a key commodity credited with bringing down at least two governments since the 1980s due to shortages -- rose a whopping 244.6 percent in August.

According to trade sources, the landed cost of imported onion works out to Rs 34-35 a kg as against the current prevailing price in the benchmark Lasalgaon ( Maharashtra ) market at Rs 45 a kg and Mumbai at Rs 48 a kg. Onion prices have surged over 10 per cent in the last one week. Prices of an essential commodity like onion have touched Rs 80 per kg. Inadequate storage facilities and the failure to modernize the food supply chain have also added to the problem

### **Onion Mandi rates ( As on 25-September 2013)**

The Table shows the present rates of onion in some of the selected Mandis ( agricultural market places ) in India

Market	Min Price (Rs./ Quintal)	Max Price (Rs./ Quintal)	Modal Price (Rs./ Quintal)
Mandi (Himachal Pradesh)	4500	6200	6200
Shahbad ( Haryana)	3000	5675	3800

Azadpur (NCT of Delhi)	3250	4750	4205
Nagour(FV) (Rajasthan)	4000	5000	4500
Chalisgaon (Maharashtra)	2200	3600	3350
Mandsaur ( Madhya Pradesh)	3401	5114	4491
Ropar ( Punjab)	4500	5000	4800
Rajkot( Gujarat)	750	2250	1750
Palakkad ( Kerala)	5500	6000	5750
Hospet (Karnataka)	1700	1900	1800
Sultanpur (Uttar Pradesh)	5400	5800	5500
Hyderabad (Andhra Pradesh)	3800	5200	4500

Source: <http://www.indicat.com/Market-Rates/Commodity-Rates/Onion>

### **The Internet can have three main impacts on the supply chain**

**[1] E-commerce:** Refers mainly to how companies can respond to the challenges posed by the Internet on the fulfillment of goods sold through the net.

**[2]Information sharing:** Refers how the Internet can be used as a medium to access and transmit information among supply chain partners to have access data analysis and modeling to jointly make a better planning and decision making.

**[3] Knowledge sharing:** Refers Information sharing about actual sales enables companies to improve their forecasts. This affects the internal part of the supply chain (the focal company), but it also affects its upstream and downstream links.

### **Knowledge sharing through Collaborative Planning Forecasting and Replenishment (CPFR)**

In these programs, customer, focal company and supplier shares information, in addition to planning also. In a CPFR program a forecasting support system is hold on an Internet server. This support system is updated with data from actual sales and other information provided by the grocery company and the manufacturer and provides the forecasts to the grocery retailer, the manufacturer and its suppliers. In September 1999, Henkel and Eroski (a Spanish grocery retailer) initiated a CPFR program. It resulted in an important improvement in the forecasts of both companies. Before implementing the program, half of the forecasts had a forecasting error higher than 50%. Nine weeks after the implementation of the program, 75% of the sales forecasts had an error lower than 20%.

### **New breed of software catering the needs of Enterprise Solutions in Agro SCM**

Agro Industries have major role to play in the pushing the technology downward to the farmers in terms of awareness and using them. Agro Industries like Mawana Sugars, KRBL Ltd. and other agro industries have gone for ERP software package like SAP, which has changed the way these agro industries used to work. In any business, project, work, etc. need of timely information is very necessary to compete in today's cut throat competition. Transfer of information from one department to another, from one region to another from one country to another requires very complex, sophisticated and very advanced hardware's and software's. For decades companies are striving hard to meet these requirements of growing

businesses across the world. Microsoft, Oracle and SAP AG are the best amongst the providers of Software Solutions. A new breed of software has come to cater the need of Enterprise Solutions , i.e. Integrated Information Systems, commonly known as Enterprise Resource Solution, Supplier Relationship Management (SRM) and Customer Relationship Management (CRM).

## Conclusions

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. It widens market opportunities for products and thus helps in maintaining an ever increasing demand for the same. Organized retailing acts as a stimulator to promote growth of agro based industries, helping the farmers in production planning in advance, based on demand forecast.

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