

Chapter 81

Strategic Planning of Cold Supply Chain Towards Good Manufacturing Practices: Issues and Challenges in Indian Market

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ABSTRACT

Cold Chain addresses subset of supply chain involving production, storage and distribution of products that require 'level of temperature control' to retain 'key characteristics and associated value' in terms of life expectancy and perishability. Successful cold chain management is essential for pharmaceutical companies, transportation providers and health care practitioners. With growing population and their demand; especially in retail and pharmaceutical sectors drives Indian cold chain market and it has huge potential to grow in the near future. India's greatest need is for an effective and economically viable cold chain solution that will integrate the supply chains for all commodities from the production centers to the consumption centers; thereby reducing physical waste and loss of value of perishable commodities. This article highlights the importance of cold chain concepts with Indian business scenario. Strategic planning of cold supply chain and their real value towards good manufacturing practices are critically highlighted.

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INTRODUCTION

A Cold Chain is a 'temperature controlled' supply chain linked to the material, equipment and procedures used to maintain specific shipments within the appropriate temperature range (Carla Reed, 2005; Bishara, 2006). An unbroken cold chain is an uninterrupted series of storage and distribution activities which maintain a given temperature range. It is used to help extend and ensure the shelf life of products; namely fresh agricultural produce, seafood, frozen food, photographic film, chemicals and pharmaceutical drugs, etc. Such products, during transport and when in transient storage, are called cool cargo. Unlike other goods or merchandise, cold chain goods are perishable and always en route towards end use or destination, even when held temporarily in cold stores and hence commonly referred to as cargo during its entire logistics cycle (Ali and Kumar, 2011; Fearn et al., 2006).

Cold Chain originates from the terminology of '*chain of custody*' in production, packaging, distribution and control of temperature sensitive product (Blanchard, 2007). This includes traditional areas of supply chain, raw material acquisition, transformation and manufacturing process, packaging and product protection, storage and distribution. The cold chain market was valued at nearly 90 Billion and is expected to grow at a Compound Annual Growth Rate (CAGR) of 28.75%. Government backing will help boost the capacity creation for cold storages while new players are gradually venturing into the more profitable refrigerated transport services. There are a large numbers of small players present in the Indian cold chain industry; some of the well-known organized companies are Snowman, RK Foodland Pvt. Ltd., MJ Logistic Services Ltd., Brahmanand Himghar Ltd. etc. It is anticipated that cold chain market in India will get more organized with the entry of large private players in this arena.

One of the most critical constraints in the growth of food processing industry in India is the lack of integrated cold chain facilities (Cunningham, 2001). According to warehouse report 2013, India has approximately 5,400 cold storage facilities of which 4,875 are in the private sector, 400 in the cooperative sector and 125 in the public sector. The combined capacity of cold storage facilities is 23.66 million metric tons; still India can store less than 11% of what is produced. Most of the infrastructure used in cold chain sector is outdated technology and is single commodity based. India's controlled atmosphere storage facilities and other cold storage facilities with the technology for storing and handling different types of fruits and vegetables at variant temperatures would have a very good potential market in India (Khan, 2005).

With the growth on domestic manufacturing and retail segments, demand for efficient warehouse management service has improved. Despite growing demand, warehousing continues to see little investment. Current spending on organized warehousing in India constitutes 9 percent of total logistics spending, as against 25 percent in the US. According to World Bank's 2014 Logistics Performance Indicator, India is ranked 54th and is behind countries like Japan, United States, Germany, China etc. Logistics costs account for around 6-10 percent of average retail prices in India as against the global average of 4-5 percent. Therefore, there is a clear scope to improve margins by 3-5 percent by improving efficiency of supply chain and logistics processes (Kumar, 2008). Developing an 'integrated supply chain including cold chain' can save up to 300 billion annually with the reduction of wastage of perishable horticulture produce. It is worth noting that the price of vegetables, fruits, milks and eggs, meat and fish have been rising faster in spite of the fact that India is the 2nd highest producer of fruits and vegetables. This is led by inadequate supply chain and logistics infrastructure and management (Maheshwar and Chanakwa, 2006).

Agriculture in India is witnessing a major shift from traditional farming to horticulture to dairy products to perishable one (Joshi et al., 2009). Demand for fresh and processed fruits and vegetables are

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