

# A STUDY ON PROBLEMS FACED IN AIR CARGO MOVEMENT OF PERISHABLES BY THE COLD CHAIN PROVIDERS WITH SPECIAL REFERENCE TO COIMBATORE

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## Abstract

Food sector of India, in the last decade or so, has attracted attention of the world owing to the tremendous potential the geography, climate and soil offer. Though, a leading producer of food in the world, it is not known for the exports of food products. The poor export figures are attributed to inadequacies in infrastructure for supporting the supply chains of perishables in the country, the cold chain. There are issues of concern that need attention, like huge losses in perishables because of Infrastructural deficiencies. The huge wastage of perishable food occur due to factors like: lack of precooling and storage facilities, dearth of refrigerated carriers, fragmented supply chains, poor scarce application of latest tools and technologies, poor product knowledge and lack of professionals. The collaboration among stakeholders like government bodies, private corporations, cooperatives, farmers and federations is imperative but the building up phase is still in the nascent stage. A well-organized cold chain reduces spoilage, retains the quality of the harvested products and guarantees a cost efficient delivery to the consumer given adequate attention for customer service. The main feature of the chain is that if any of the links is missing or is weak, the whole system fails.

**Keywords:** Perishables, Cold Chain, Supply Chain.

## Introduction

### Trends in Fruits and Vegetables Production and Present Status of India

India is the second largest food producer in the world, after China and one of the centers of origin of fruits and vegetables. A large variety of fruits and vegetables are grown in India like Banana, Mango, Apple, Papaya, Sapota, Citrus, Pine Apple, Grapes and Guava etc. in Fruits and Potato, Tomato, Onion, Brinjal etc. India has the potential to be the world's largest food producer which is bestowed with one of the best natural resources in the world and several factors like Increasing urbanization, nuclear families, working women, disposable income and changing lifestyles are gearing up the Indian food supply chains for a better future. Organized retail and Private label penetration, demand for functional food, and increased spend on health food are major drivers for the growth of this sector.

Fruits and Vegetables are also rich source of vitamins, minerals, proteins, and carbohydrates etc. These are referred to as protective foods and assumed great importance as nutritional security of the people. As the population is increasing, the demand for such food is also increasing. To meet such demand and provide a food in proper quality and nutrition, Supply chain plays a very vital role in this sector and becomes even more important because of perishability nature and very short shelf life. It not only helps to cut costs, but also adds to maintain and improve the quality of produce delivered, which are perishable in nature. Owing to the very short shelf life and perishable in nature, these items require proper transportation, handling and storage facilities in order to reach in fresh state to a customer. The whole supply chain is suffering from maximum inefficiency and facing various issues which motivated authors to identify the factors affecting the supply chain of Fruits and Vegetables sector in India.

### Importance of Cold Chain:

The temperature controlled supply chains or cold chains are a significant proportion of the retail food market. The market shares of fast foods, ready meals and frozen products have increased in recent years. There are several food temperature levels to suit different types of products. Freezing has been successfully employed for the long-term preservation of many foods, providing a significantly extended shelf life. The extreme cold simply retards the growth of microorganisms and slows down the chemical changes that affect quality or cause food to spoil. Competing with new technologies of minimal processing of foods, industrial freezing is the most satisfactory method for preserving quality during long storage periods. With the growing demands to keep and distribute temperature sensitive products in potent condition, organizations are seeking better solutions to maintain and monitor cold chain. The success of implementing cold chain management involves continual monitoring of product temperature throughout distribution and having appropriate corrective action plans in place.

A streamlined, well maintained cold chain helps to:

- Reduce costs
- Improve product integrity
- Increase customer satisfaction
- Reduce wastage and returns of expired stock

### Objectives of the Study

1. To Study about the various problems faced by the Cold Chain providers in exporting Perishables.
2. To Identify the Breakdown process involved in Handling Perishable Commodities in Air cargo.
3. To provide Suggestions for the Findings.

### Reviews

#### 1. Cold Chain Logistics Distribution Network Planning Subjected to Cost Constraints

In order to reduce the loss in the circulation of agricultural products, and to reduce the total cost, this article minimizes the operation cost by establishing an objective function when designing the cold chain logistics distribution network. Considering the characteristics of the cold chain products, this paper regards construction cost of network nodes, transportation cost and damage cost as the main factors in establishing an objective function. As the cold chain logistics is correlated to the demand of service time, this article comes up with a concept of "service radius", which transformed the transportation time between logistics nodes into the service radius of logistic nodes. The model is verified through a series of constraint conditions to express the relationship between the various decision variables. An example is given in the end, which demonstrates the application of this model in a vegetable firm distribution logistics network planning. The final computation results illustrated that the model is effective.

#### 2. Challenges Associated With Cool Chain Management System

Supply chain management system (SCMS) is a relatively new concept, practically unavailable in the business scenarios roughly two decades ago. Though cool chain management system is defined as a specialized logistic solution usually for perishable goods and products, in which temperature sensitive shipment ought to maintain the credibility and integrity through multi-stages movement and kept in ambient facilities to ensure the product's 100% quality, originality, freshness as well as the achievement of maximum customer satisfaction. The paper discusses the obstacles and challenges which are present in the global business market in the scenario of cool chain management system. In addition, the paper analyze in detail that how the cargo firms are trying to cope up with these pressures to make a stronger business network among the business players to achieve maximum customer satisfaction, timely goods supply.

### Analysis and Interpretation

- Simple Percentage Analysis
- Ranking

**TABLE SHOWING THE MOST HANDLED GOODS FOR EXPORT FROM COIMBATORE**

GOODS FOR EXPORT	NO OF RESPONDENTS	NO OF PERCENTAGE
Perishables	13	26

Medical Products	4	8
Dairy Products	8	16
Meat & Poultry Products	5	10
Food stuffs	11	22
Beverages	7	14
All the Above	2	4
<b>TOTAL</b>	<b>50</b>	<b>100</b>

Source: Primary Data

**TABLE SHOWING THE BREAKDOWN PROCESS INVOLVED IN AIRCARGO MOVEMENT OF PERISHABLE COMMODITIES**

BREAKDOWN PROCESS	NO OF RESPONDENTS	NO OF PERCENTAGE
Pallet Temporary Storage until Flights Actual Departure	8	16
Products Transported from Warehouse to Ramp	12	24
Product Loading Process to the Aircraft	4	8
In-Flight Temperature Setting Process	2	4
At Destination off-loading of the products from the Aircraft	6	12
Products Transportation through Airport Cargo to the Airport Warehouse	10	20
Temporary Storage of the products in the Airport Warehouse till the final pickup from the Airport	8	16
<b>TOTAL</b>	<b>50</b>	<b>100</b>

Source: Primary Data

**TABLE SHOWING THE PROBLEMS FACED IN CUSTOMS CLEARANCE PROCEDURE IN AIRPORTS**

CUSTOMS CLEARANCE PROCEDURE	NO OF RESPONDENTS	NO OF PERCENTAGE
Different Geographical Regions	9	18
Average Approval Time	14	28
Necessary Documents	12	24
Proper Packing	10	20
Stuffing	5	10
<b>TOTAL</b>	<b>50</b>	<b>100</b>

Source: Primary Data

**TABLE SHOWING THE FACTORS OF AFFECTING THE EFFECTIVENESS OF COLD CHAIN**

FACTORS	10	9	8	7	6	5	4	3	2	1	TOTAL	MEAN	RANK
Pre- Cooling Facilities	7	1	1	1	3	7	4	24	1	1	50	4.76	VIII
	70	9	8	7	18	35	16	72	2	1	238		
Refrigerated Carriers	1	5	3	9	9	6	13	2	1	1	50	5.74	VI
	10	45	24	63	54	30	52	6	2	1	287		
Packing	4	2	16	6	5	6	6	3	1	1	50	6.48	III
	40	18	128	42	30	30	24	9	2	1	324		
Warehousing	2	26	1	1	1	10	4	1	3	1	50	7.02	II
	20	234	8	7	6	50	16	3	6	1	351		
Long Complex Clearance Procedures	26	3	2	1	10	1	3	2	1	1	50	7.92	I
	260	27	16	7	60	5	12	6	2	1	396		
Infrastructural Facilities	1	4	11	10	7	8	2	1	4	2	50	6.14	IV
	10	36	88	70	42	40	8	3	8	2	307		
Airlines not Providing Sufficient Facilities	1	3	3	7	11	3	12	4	4	2	50	5.22	VII
	10	27	24	49	66	15	48	12	8	2	261		

	11	3	5	2	4	8	3	5	1	8	50		
<b>Power Supply</b>	110	27	40	14	24	40	12	15	2	8	292	5.84	<b>V</b>
	1	1	6	2	1	1	2	2	2	32	50		
<b>High Maintenance Charges</b>	10	9	48	14	6	5	8	6	4	32	142	2.86	<b>X</b>
	1	1	1	6	1	2	1	3	32	2	50		
<b>Under Capacity of Chambers</b>	10	9	8	42	6	10	4	9	64	2	164	3.28	<b>IX</b>

Source: Primary Data

## Suggestions

By building an efficient and effective supply chain using state of the art techniques it is possible to serve the population with value added food while simultaneously ensuring remunerative prices to the farmers. The surplus of cereals, fruits, vegetables, milk, fish, meat and poultry can be processed as value added food products and marketed aggressively both locally and internationally. Investments in cold chain infrastructure, applied research in post-harvest technologies, installation of food processing plants in various sectors and development of food retailing sector are mandatory for achieving gains in this sector. Strategic growth plans for achieving both national and international competitiveness of the food industry are essential.

However, lack of electricity, power supply and other supporting infrastructure are a big deterrent in setting up such facilities. The economic impact of cold chains will be felt in the villages. Farmers will get better realization for their produce due to improved quality and shelf life.

Cool chain management system is quite an advanced logistic solution for the business companies involved in the production and dealing with products having perishable nature. Today's intense business completion has compelled even the cargo companies and transporter to develop new and more sophisticated methods, introduce innovation in their operations and services for the achievement of maximum customer satisfaction and for development of stronger and long term business networking among all the players (i.e., growers, produces, manufacturers, retailers, customers etc.) involved in the business activity. In the paper, the authors tried to discuss the obstacles and challenges which are present in the global business market in the scenario of cool chain management system and that how the cargo firms are trying to cope up with these pressures to make a stronger business network among the business players to achieve maximum customer satisfaction, timely goods supply.

## Conclusion

The business system is tuned to food habits and convenience of rural and urban folks of the previous generation. Factors such as rapid growth in the economy, the technological innovations in home appliances such as refrigerators microwave ovens, rise of families with dual incomes and the changing food habits of the population all point to the increasing need for healthy processed food. The safety and nutritional quality of frozen products is to be emphasized only when high quality raw materials will be used, good manufacturing practices to be employed in the preservation process, and the products kept in accordance with specified temperatures. The frozen food market is one of the largest and most dynamic sectors of the food industry. In spite of considerable competition between the frozen food industry and other sectors, extensive quantities of frozen foods are being consumed all over the world. The food supply chain needs the attention of the academicians, the industry and the Government for its enhancement.

## Reference

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