CHAPTER – 8

CONCLUSIONS

8.1 Introduction

The food processing sector is playing a crucial role in Indian economic development. It acts as a bridge between agriculture and manufacturing sector of Indian economy. In 1991, Indian economy got liberalized and it had induced new foreign trade opportunities for processed food sector. The processed food sector has begun to produce ready to eat food, pet bottled and tetra packed beverages, dairy products, frozen fruits, vegetables, marine and meat products. A developed food processing sector is expected to increase in farm prices. It in turn translates into increased rural income, reduce agri-wastage, ensure value addition, promote crop diversification, generate employment opportunities as well as export earnings. With such a large and diversified production base coupled with low manpower cost and modern technology, the Indian food processing sector is poised for growth. Its advantages are yet to be leveraged optimally.

India is the second largest producer of agriculture produce in the world. The raw material supplies are in abundance. Agriculture is an important sector in the Indian economy, accounting for about 18% of the GDP, employing nearly 60% of the total Indian workforce. The downside of the agriculture sector is a large amount of wastages of the farm products, fruits, vegetables, etc. The reasons for high wastages are twofold, first lack of proper, adequate storage facilities and second low levels of food processing capacity. The processing of fruits and vegetables is too low at 2 per cent, around 35 per cent in milk, 21 per cent in meat and 6 per cent in poultry products. It is quite below by international standards, as processing of agriculture produce is around 40 per cent in China, 30 per cent in Thailand, 70 per cent in Brazil, 78 per cent in the Philippines and 80 per cent in Malaysia.

The focus on food processing sector, which is just one link in the multi-tiered food supply chain can be justified by the fact that it has big potential to reduce agri-wastages, provide food security to society and easy to use food for working professionals. The scope of ready to cook vegetables, soups, juices, meat, bakery items and cooking ingredients like garlic, ginger, onion pastes and packed spices increased many fold. All these are due to
economic prosperity and the need for ready to cook food products. The food processing has tremendous export potential, enabling the farmer to add value to produce both in terms of quantity and quality. They can adhere to the requirements and standards of the market at all stages of value chain, processing and retail. It can create rural supply chain infrastructure in terms of creation of cold chain, warehousing, food parks etc.

The rapid growth and immense capability of the information technology has brought new ways of dealing with old supply chain problems. A primary benefit of IT is more efficient way of exchanging information and data, which results in supply chain coordination, and facilitation of logistics activities. Furthermore, significant cost reduction opportunities are created, as a result of the improved supply chain coordination. In food supply chains, traceability of the raw materials and processes are very important from food safety perspectives. For exports to western and European countries, it is mandatory and here IT tools like RFID and GPS can help to achieve this requirement.

The motivation behind the research was as follows:

- Processed food sector (PFS) is very important for Indian economy
- On one side PFS helps to reduce the food wastages and on other hand it ensures food security
- Value added by PFS helps to increase the income of the farmers and make food products available round the year and across nation
- Due to the changes in the demography, the demand of processed food is expected to rise
- Nuclear families, working women and high disposable income are the drivers to boost the demand

A questionnaire based primary research was conducted by taking responses from executives of processed food manufacturers, distributors, retailer, cold chain and logistics providers. A small proportion of consumers, academicians, researchers and business associations are also included. A total of 252 responses were received and analyzed using statistical tools and techniques with the help of Statistical Package for Social Science (SPSS) version 21 software.
8.2 Major Research Contribution and Key Findings

The major contributions made and key findings of the present research are as follows:

1. Supply Chain management of the Processed Food Sector is very important for reducing wastages of agri produce, better returns to the farmers for their produce, food safety, meeting requirements of the society in providing food products in all seasons all geographies and economic growth.

2. A comprehensive literature review is conducted to examine the current state of research and research gaps. Large number of meetings and discussions were held with the executives of the food processing and related industries to identify the needs of the industry and make the research relevant and useful. The main countries where PFSCM research was carried out are North America, Europe and Australia. The developing economies in order to grow faster must undertake and promote the research in PFSCM as being depicted by China, India etc.

3. An empirical research was conducted to identify the perceived benefits of processed food sector for consumers, farmers and economy.

4. Along with identifying the benefits of the PFS, the study identified the challenges and counter measures to be taken for the growth of domestic demand and export potential. The major issues in the growth of PFS are:

5. The key aspects related to PFS studied in this research are food quality and food safety, logistics and cold chain management, information technology and traceability and performance measurement system. The processed food products have short shelf life and many products need specific temperature conditions (like -18 C or 4-6 C). Under such requirements, Cold Chain Management where products are stored and transported under controlled conditions of temperature and humidity are very essential.

6. Information technology for the efficient management of supply chain is playing a key role in all sectors and PFS is no exception. Along with facilitating planning and control, demand forecasting, inventory planning, replenishment etc., in food sector, IT play a very critical role of traceability i.e. when required it should be
possible for every food product to know the source of raw material, manufacturing facilities used, compositions and ingredients added, process parameters etc.

7. Food quality and food safety are the fundamental requirements of food sector. Hazards assessment and control, standardization, implementation of best practices are some of the issues examined in this research.

The results and discussions indicate that all the global food safety norms laid down by WTO such as goods manufacturing practices (GMP), good hygienic practice (GHP), hazard analysis critical control point (HACCP), had been developed to embody principles of safe food processing sector globally. India had also developed their food safety norms as per laid down principles by WTO.

8. Three case studies related to SCM of PFS are carried to study the best practices, manufacturing and supply chain management issues and role of key players.

9. Under current research, an empirical testing was performed to find, was there a difference among nine schemes or incentives being offered by MOFPI or all these were of similar nature? The second was to present the relative importance of schemes, by arriving at relative ranking. The nine schemes constitute the basic framework for promotion of Indian processed food sector by MFPI.

There was significant difference in the impact of all nine schemes or incentives offered by MOFPI. FDI up to 100% in food infrastructure such as food park, cold chain, warehousing etc.,(FDI) was ranked first, Fruits & vegetables, dairy machineries were completely exempted from excise duty (EED) ranked second, Customs duty on refrigerated goods transport vehicles has been reduced (CDG) ranked third, Scheme for Human Resource Development, Training Centres (SHD) ranked fourth, Income tax rebate up to 100% of profits for five years and 25% of profits for the next five years for setting up of new agro-processing industries to process and package F&V (ITR) fifth ranked, Scheme for quality assurance, codex standards and R&D (SQA) and Central excise duty on preparation of meat, poultry and fish and yeast is completely exempt (CED) tied and ranked sixth, Up to a maximum of 24% foreign equity is allowed in SME(SME) ranked at seventh, No industrial license required for food & agro processing industries except for
beer, alcohol & wines, cane sugar, hydrogenated animal fats & oils etc. (NIL) ranked eighth.

10. The present research had crafted a holistic and balanced performance measurement system suitable for processed food sector supply chain and it was validated by using empirical study and statistical testing. It can be used to appraise the performance of processed food supply chain organizations globally.

8.3 Research Implications

The key findings of research had contributed to body of supply chain literature in general and the processed food supply chain management in particular. The findings of current research validate some of important and widely discussed aspects of processed food supply chain and also set out interrelations among many of these aspects. The results of current research demonstrate that effective and efficient processed supply chain in India can reduce the fresh fruits and vegetables waste. This way processed food supply chain’s performance will be enhanced and improves Indian economics status. These evidence support the objectives of processed food supply chain as a comprehensive and vital strategy that can built and sustain competitive advantage which ultimately leads to good business performance of processed sector.

8.4 Implication to Academia

➢ The research presents the various aspects of Indian processed food supply chain like food quality and safety, logistics and information technology and performance measurement system.

➢ The research had presented literature review dedicated to processed supply chain management. The study had identified research gaps in the literature which may form the basis of future research on processed food.

➢ The primary research was conducted using structured questionnaire that can be utilized for future research on processed food and other sectors.

➢ The sector specific research is always full of challenges and this exercise encourages academia to conduct similar research in other sectors of economy with diverse options and perspectives
8.5 Implication to Corporate

- The present research will help in analyzing the future scenario for policy frame works under different business and economic environment. By this, right policy can be framed for the growth of processed food to benefit the farmers, society and economy. It can be applied to many other sectors for similar purposes.

- The corporate managers can use the present research findings for developing better processed food supply chains, incorporating features like RFID for traceability, cold chain and appropriate performance measures.

- The present research has a focus on food quality and food safety in the processed food sector as it has identified the practices and implementation framework which would help in successful implementation of global food safety standards.

8.6 Limitation of Present Research and Scope for Further Work

The present research work is not free from limitations due to time and resources. Some of the research limitations and the further scope of research are as follows.

- As with other empirical studies, only a small segment of supply chain of processed food sector was covered in the survey. Though the efforts had been made to make the sample a representative one, still due to the fact that respondents are from Delhi and NCR, have its own limitation.

- The various aspects are measured based on the perceptions of the respondent which reflects their opinion based on their work experiences and responsibilities handled by them.

- The processed food sector is very vast and has several aspects and areas of study. In this research the major focus was only on food quality and food safety, logistics and information technology and performance measurement system.

- Though the questionnaire was very comprehensive and good sample size of respondents was achieved and several statistical tools were applied to get insights and verify different hypothesis but still there is a scope of further investigation and analysis.
8.7 Conclusion

In order to develop and maintain competitive advantage, Indian processed food sector must enhance skill such as capacities to plan, design food processing and manufacturing techniques and soft skills like management, control of products and meeting customer expectations. To improve the current situation of processed food sector, firms must change their organizational structures, relationships with their business associates, apply advance technologies and implement effective performance measurement system. The challenges for managers are to make processed food popular, adopt global food safety standards through implementing global processed food supply chain practices. The supply chain managers must be involved in deciding technological tools and polices to offer greatest strategic values for processed food supply chain.

Since improvement in any sector is a continuous process, the research may continue to incorporate new issues and supply chain practices in meeting challenges of quality sensitive globally competitive processed food sector. The organizations ought to be continually developed and adjust to the dynamic business environment for their survival.