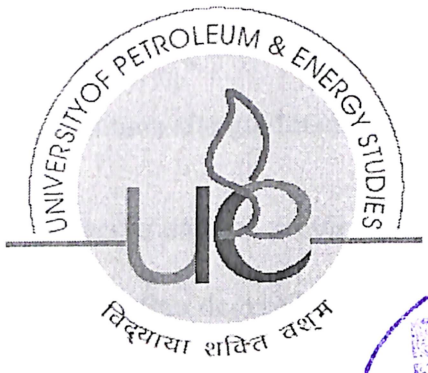
REVIEW & ANALYSIS OF VALUE CHAIN OF AGRO FOOD INDUSTRY AND INFORMATION TECHNOLOGY AS SUPPORTING BUSINESS TOOL

Dissertation Submitted in the partial Fulfillment of

MBA (Information Systems Management) Degree



Submitted to: -

Mr. V.P. Mathur

(Course Coordinator)

Under the Guidance of:

Dr. D.K. Punia

Submitted by: -

MohitChaudhry

Roll no. - R750211011

SAP id- 500014736

MBA (Information Systems Management)

(2011 – 2013)

CERTIFICATE OF ORIGINALITY

I, hereby, declare that this dissertation report entitled **"REVIEW & ANALYSIS OF VALUE CHAIN OF AGRO FOOD INDUSTRY AND INFORMATION TECHNOLOGY AS SUPPORTING BUSINESS TOOL"**which is being submitted in partial fulfillment for the award of degree of MBA in Information Systems Management is the result of project carried out by me under the guidance and supervision of **Dr. D.K. Punia.**

I further declare that I or any other person has not previously submitted this project report in any other Institution/ University for any other degree/ diploma.

Mohit Chaudhry

Roll no. - R750211011

SAP id- 500014736

MBA-Information Systems Management

College of Management & Economic Studies

University of Petroleum & Energy Studies

Dehradun

BONAFIDE CERTIFICATE

This is to certify that the project titled **"REVIEW & ANALYSIS OF VALUE CHAIN OF AGRO FOOD INDUSTRY AND INFORMATION TECHNOLOGY AS SUPPORTING BUSINESS TOOL"** submitted to **University of Petroleum and Energy Studies, Dehradun**, by Mohit Chaudhry, in partial fulfillment of the degree of **Masters in Business Administration in Information Systems Management**, is a bona fide work carried out by him under my guidance and super vision. This particular work has not been submitted anywhere else for any other degree. To the best of our knowledge, he has made an earnest and dedicated effort to accomplish this project.

I wish him all the very best for his future endeavors.

Dr. D.K. Punia

Head of Department – Information Systems Management
College of Management & Economic Studies
University of Petroleum and Energy Studies
Dehradun

ACKNOWLEDGEMENT

Preservation, inspiration and motivation have always played a key role in the success of anyventure. In the present world of cut throat competition dissertation is likely a bridge between theoretical and practical working, willingly I have prepared this particular dissertation.

I would like to thank the supreme power, the almighty God who is obviously the one who has always directed me to work on the right path of my life. With his grace this dissertation could become a reality.

I have no words to express a deep sense of gratitude to the management of **University Of Petroleum And Energy Studies** for giving me an opportunity to pursue my dissertation.

I also thank my mentor **Dr. D.K. Punia**for the inputs provided by him. He has been an all time guide for me in making of this project.

I also would like to thank my course coordinator **Mr. V.P.Mathur**for giving me support while doing this dissertation.

I also place on record my appreciation of the support provided by other people in making of this project.

I also want to thank my colleagues for helping me whenever I needed them.

Table of Contents

Chapter 1: Executive Summary

India is one of the largest producer as well as consumer of agro food products, with the sector contributing to the development of the economy. Agro food products are the highest consumption commodity in India, with a potential market size of $180billion. In domestic terms the total spending agro food products accounts to nearly 21 percent of the GDP of the India. On the top of that, the Indian domestic agro food market is expected to grow by approximately 35 % of the current market in next five years. Food processing industry in India is serving as a potential source for driving the positive change in rural economy as it established the relationships between the consumer, industry and agriculture. A matured agro food processing industry pertains to increase prices for producers for their produces, minimal wastages, value addition in product value across whole value chain, promote crop diversification, generate employment opportunities as well as export earnings enabled through international business.

Some of the key measures undertaken by the Government to exploit the growth of the potential sector include:

- Agriculture Produce Marketing Committee Act, rationalization of food laws,
- Implementation of the National Horticulture Mission (NHM) & National Horticulture Board (NHB) etc.
- Implementation of agriculture export zones to promote international business.

The government has also plan to devise an effective mechanism in order toaddress the low scale of processing activities across the country by setting up the mega food parks which provides a potential common integrated platform for the concerned businesses, with integrated facilities for procurement of raw material, food processing, storage capabilities and transport facilities. Government allows 100% FDI in the foodprocessing & cold chain infrastructure in order to promote cash inflows in food processing sector (FDI). The recent budget(2013) has announced several policy measures,especially for the cold chain infrastructure, to encourage private sector activity across the entire valuechain.However,in spite of these measures and initiatives of the Government to provide the required inputsto the sector, processing is still at an immature stage in India with low processing efficiency

&market penetration. On the contrary, though India is a key producer of food products, having an adequate production base for inputs, productivity levels are very low in the country. While India remains a top producer of food(Based on FICCI survey on challenges in food processing sector), productivity is among the lowest amongst the BRIC countries. Also, the Indian export market, at USD 13.7 billion, has a share of only 1.4% of the world food trade.

Considering the criticality of the situation and the need to appropriately address the challenges faced by the sector, FICCI through its internal research identified following major factors hampering the growth of food processing sector and holding it back.

- Comprehensive national level policy on food processing sector
- Availability of trained manpower
- Processing plants with cost effective technologies
- Cost effective food machinery & packaging technologies
- Constraints in raw material production
- Inadequate infrastructural facilities
- Access to Credit
- Market Intelligence
- Inconsistency in central and state policies
- Lack of Applied research
- Adequate value addition
- Lack of specific plan to attract private sector investment across the value chain
- Food safety Laws
- Weights & measures Act & Packaging commodity rules
- Taxation

These challenges for the agro food processing sectors are diversified and demanding, and need to be addressed on several fronts to derive maximum market potential.

Chapter 2: INTRODUCTION

Industry Overview

Government has also plan to help in establishing small & medium size Agro Parks, Food Parks etc., which will provide a potential commonplatform with integrated infrastructure facilities for storage, processing, grading and marketing, thus ensuring that surplus production of agricultural products do not go waste as at present. Government of India is taking initiatives which will continue to promote production for export and provide access to domestic and export markets. Some states like Uttarakhand have been declared as difficult area category by the Ministry of Food Processing Industry (MFPI), Government of India. So production units/projects being set up in these states will be getting greater incentives according to the schemes of MFPI. The Government is also giving help as subsidy for such projects under various schemes of Agricultural & Processed Food Products Export Development Authority (APEDA), National Horticulture Board (NHB), National Horticulture Mission (NHM), Ministry of Food Processing Industry (MFPI) and the Natural Medicinal Plant Board (NMPB).

Agro processing could be defined as set of techno-economic process carried out for preservation; conservation and handling of agricultural produce and to make it usable as food, feed, fiber, fuel or industrial raw material. Hence, the scope of the agro-processing industry consists of all operations from the harvesting till the material reaches the end consumers in the desired form, packaging, quantity, quality and price. Food processing is the process of any type of value addition to agricultural or horticultural produce. Food processing also includes some processes which enhance shelf life of food products like sorting, grading & packaging etc. Food processing industry acts as an interface between Agriculture and Industry. The food processing industry offers linkages and synergies between industry and agriculture. In India this sector is one of the largest sectors in terms of production, consumption, export and growth aspects. That is the reason why the Government has taken food processing sector on high priority and continuously trying to expand this sector. In order to promote and expand the food processing sector the Government provides many reliefs such as fiscal reliefs, incentives, subsidies and some other benefits. These initiatives of the Government help to encourage commercialization and value addition to agricultural produce which willincrease the employment & export growth and minimize pre/post harvest wastage. Agro-processing is now regarded as the sunrise sector of the Indian economy in view of its

large potential for growth and likely socio economic impact specifically on employment and income generation. Some estimates suggest that in developed countries, up to 14 per cent of the total work force is engaged in agro-processing sector directly or indirectly. However, in India, only about 3 per cent of the work force finds employment in this sector revealing its underdeveloped state and vast untapped potential for employment. Properly developed, agro-processing sector can make India a major player at the global level for marketing and supply of processedfood, feed and a wide range of other plant and animal products.

The Ministry of Food Processing Industries (**MOFPI**) is a ministry of the Government of India is responsible for formulation and administration of the rules and regulations and laws relating to food processing in India. These rules are formulated for encouraging and administrating of food processing sector. The main aim of this ministry is to create opportunities fordeveloping a strong and vibrant food processing industry, to generate more employment in rural sector and enable farmers to get the benefits of modern technology and to increase the production as surplus production for exports and fulfilling the demand for processed food. The Government has taken some initiatives to nourish the food processing industry. Some of these initiatives are as follows-

- Custom duty rates have been substantially reduced on food processing plant and equipments, as well as on raw materials and intermediates, especially for export production.
- Wide-ranging fiscal policy changes have been introduced progressively in food processing sector. Excise and Import duty rates have been reduced substantially.
- Many processed food items are totally exempt from excise duty.
- Corporate taxes have been reduced and there is a shift towards market related interest rates. There are tax incentives for new manufacturing units for certain years, except for industries like beer, wine, aerated water using flavoring concentrates, confectionery, chocolates etc.

SWOT Analysis

Strengths

- Availability of raw materials round the year
- Agro-processing is socially acceptable and is supported by the central government.
- Vast network of manufacturing facilities all overthe country.
- Huge domestic market.
- Employment generation

Weaknesses

- Capital intensive
- Reliable and betteraccuracy instruments and equipments are not easily available
- Inadequate management of information.
- Inadequately developed interface between Research labs and industry.

Opportunities

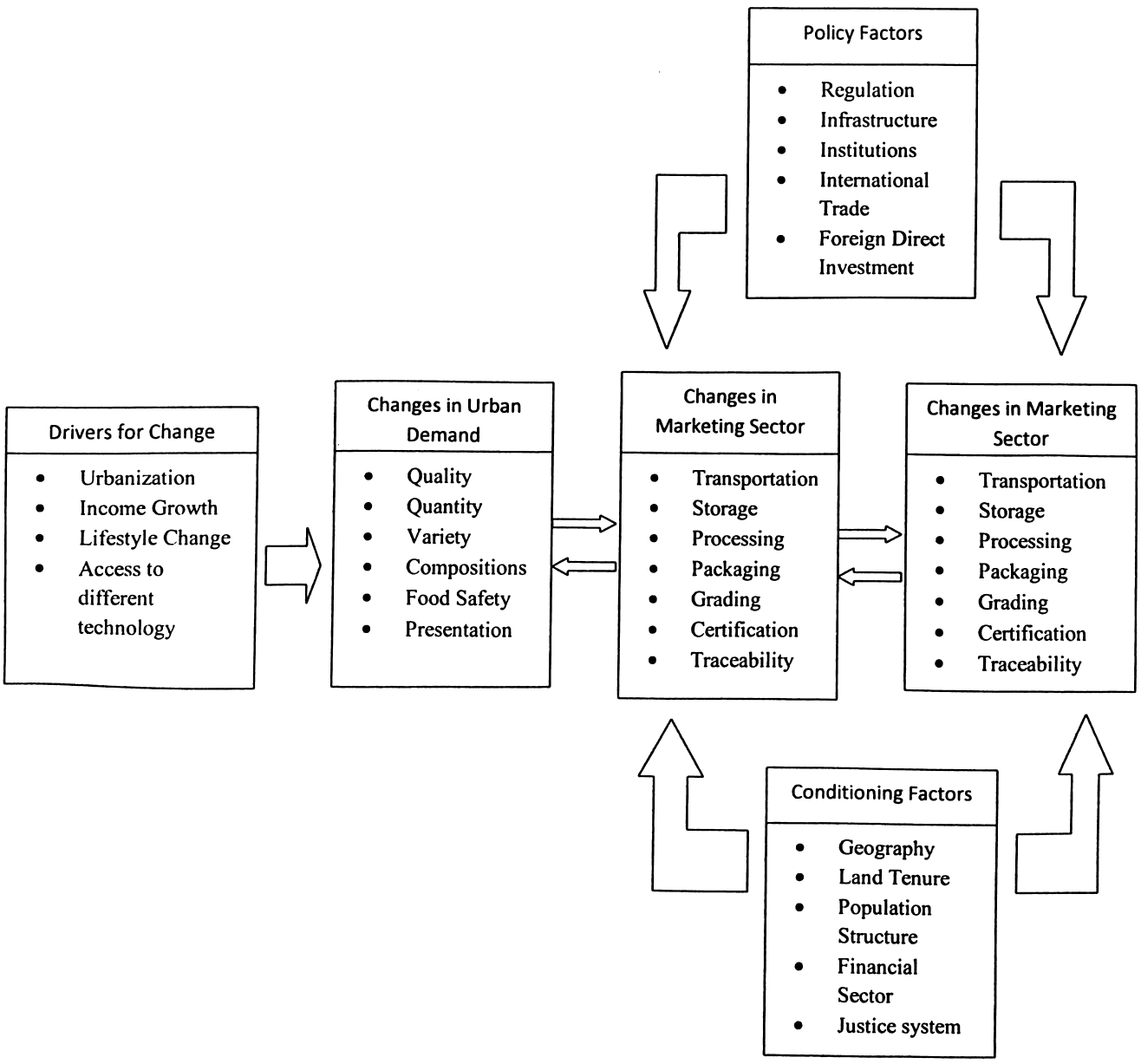
- Large agricultural material base in the country offers vast potential for agro processing activities.
- Developments in technologies such as electronics, material science, computer, bio-technology etc. offer wide scope for fast improvement and progress.
- Opening of global markets may facilitate generation of additional income and employment opportunities.

Threats

- Global competition
- Low retention rate of trained manpower due to better working conditions available in other industries
- Rapid developments and increased requirements of the industry may lead to fast obsolescence

Changes in Rural-Urban Food Supply Chain

The Rural-Urban food supply chain has changed a lot in today's time. There are many reasons for these changes but following are the reasons contributing to changes in rural-urban food supply chains. These are urbanization, income growth, changes in lifestyle, and access to technology. Thenumber of people living in urban areas is increasing and increases the movement of food from rural to urban areas.



- **Urbanization in India**

  The share of the urban population in India increased from 18% (1961) to 31% (2011) based on the official definition of urban centers used by the Census of India.

Census Year	Urban Population(million)	% Urban Population
1961	78.93	17.97
1971	109.11	19.91
1981	159.46	23.34
1991	217.17	25.72
2001	286.20	28.54
2011	377.10	31.16
2020(P)	429.61	32.20

Source: Population Census of India, various years; P = projections by Census of India

- **Income Growth**

  India has been known by its strong GDP and income growthover the past years. Population growth was only slightly lower than GDP growth from the '60sinto the '80s. Per capita growth was increasing since the liberalization of the economy in the '90s.This high economic growth is also reflected in expenditure levels of households.

Average value of expenditures per person per 30 days in urban India

Year	Food Expenditure	Total Expenditure
1972/73	40.83	63.33
1977/78	57.72	96.15
1983/84	96.92	164.0
1987/88	140.94	249.92
1993/94	250.53	458.00
1997/98	320.26	645.44
2000/01	402.04	932.80
2006/07	517.00	1312.00

Source: National Sample Survey (NSS) data, various surveys

- **Change in Lifestyle**

In today's world more women working outside the home, which leads to differentconsumption patterns, as women have less time to spend on food preparation. The participation ofwomen in the urban labor force in India increased from 13.4 percent in 1972 to 16.6 percent in 2004, which is still a very low number compared to other countries such as China and the United States.

Value Chain Development

Generally producers do not sell their goods directly to consumers. They rather use a multi-channel system to reach their final consumers. Effective topology of marketing channel, acts, as a strong interface among producer, intermediaries & consumers, which intend can provide competitive advantage to a firm in the industry. Perhaps the absence of a good distribution channel can prove to be a greatest loophole in today's cutthroat competitive market place. Decisions based on the design of marketing channel are the most critical ones facing the marketing management today. The decision making is complex pertaining to the grey areas of uncertainty and the complexity further gets compounded by the fact that the channel system take time to build usually years. Channel partners are not owned by the company in most of the cases. The business developers play a crucial role in getting the best critical routes out of marketing channel. Integrating the efforts of sales force, marketing department, distributors & suppliers prove to be most essential in order to achieve objectives of an organization. The study mainly focused on analyzing the distribution channel of agro Food industry and doing a market analysis of some agro products with respect to pricing, competition and supply chain of new brand and its market position in relation to the well established brands through producers, distributors, retailers and consumers survey. Surveys have been conducted by observation and interviews methods.

After complete analysis of data collected through various methods regarding the sales and distribution, marketing channels and other strategies effective findings can be drawn about the awareness and market strength and potential of agro food market. These findings and conclusions will help Agro companies to make any possible changes that would be feasible for the sustenance of the brands and any measure that will increase the market penetration of the brands.

Developing Value chain has become a key approach as number of bilateral and multilateral aid organizations using it to streamline their development interventions. Value chain concept

depicts the idea of actors connected along a chain producing and bringing goods and services to end consumers through a complex and sequenced set of activities. Poor agricultural producers often struggle to gain market access because of the less knowledge about market requirements or the required skills to meet them. Obstacles in Value Chain like poor information flow prevent them from entering into new markets, or reduce the benefits they obtained from entry. Some Government initiatives that enhance value chain development, often with a focus on reducing poverty among smallholder farmers, are designed to overcome some of these obstacles. Such types of initiatives help in mobilizing the knowledge, information and resources of lead players in value chains to help poor producers and service providers to enter market and add value. "Value Chain Development" can be understood as implementing the value chain concept to development interventions:

- Identification & nurturing of new links within a value chain;
- Development of capabilities of targeted segments to improve the terms of value chain participation;
- Risk management of value chain operations on non-participants and/or adjacent communities;
- Creating new value chains.
- Development and implementation of activity drivers to enhance the operations across value chain.

Chapter 3: OBJECTIVES OF STUDY

- To analyze the value chain of agro- food industries
- To examine the changing pattern of food supply chain and its socio-economic impact on society.
- To study the supply chain models and to analyze how the model could be designed more effectively and efficiently in order to reduce supply chain uncertainties.
- To analyze and suggest the role of information technology as a supporting business tool in agro-food industries.

Chapter 4: SIGNIFICANCE OF STUDY

This study will help to throw light on the transformations which are ongoing in the food industry in India. It will also help in understanding certain issues persisting in different processes of agro-food value chain management. Also findings from the study may serve as a basis for evaluation of entire agro-food value chain system which has been transferred from national to global retailing. This will help to adopt feasible measures in order to improve the relationships between the retailers, manufacturers and consumer.

The study will also help in updating the existing knowledge which encouraged the retailers, distributors and manufacturers to improve the efficiencies of existing agro-food systems. This could help in strengtheningthe retail internalization which will further lead tomore focus on increasing sale growth and market share rather on profitability.In this way, the study can serve as basis for further research on the topic in various countries globally, for the particular types of food product value chain.

Chapter 6: REVIEW LITERATURE

1. Agro-Processing Industries in India- Growth, Status and Prospects

R.P.Kachru

Agro processing is defined as set of techno-economic activities, applied to allthe produces, originating from agricultural farm, livestock, and aquaculture sourcesandforests for their conservation, handling and value-addition to make them usable as food, feed, fiber, fuel or industrial raw materials. Agro processing sector hasexperienced expansion during last 5 decades, starting with a handful of facilitieswhich were mainly operating at domestic/cottage level. The paper provides asummary of the growth history of the sector covering role of R&D, recent trendsvis-a-vis crop-wise status of agro processing industrialization and problems, exporttrends, SWOT analysis and thrust areas for future for achieving greater role of thissector in the national economy.

- **IndiaConnecting small-scale farmers withdynamic markets**

GhayurAlam and DeeptiVerma

Food markets in developing countries are undergoing important changes. In the pastre tailing, particularly in the food sector, consisted of a large number of small outlets. This is now changing. The large players, including corporate business, are becoming increasingly involved with food retailing activities in developing countries. These changes are accompanied by the adoption of new institutional and organizational innovations. They also involve the use ofnew technology (especially information technology and food processing) and lead to consolidation. These changes are expected to have a profound effect on the functioning of food markets and on small-scale farmers, who are particularly vulnerable to market changes.

- **Agro-food Value Chain Interventions in Asia**

L.F. Henriksen

UNIDO analyzes with the purpose of synthesizing approaches and experiences in value chain development projects in Asia region. It consists of a conceptual reviewof different forms of value chain development projects emerging from the literature. It then engagesin a comparative analysis of value chain development projects.The synthesis focuses mainly on the issues of project design and formulation while featuring, to a lesser extent, issues related to other parts of project cycle. This paper aims at consolidating methods and tools of value chain analysis to develop a guideline for value chain development interventions in the agro-food sector. These guidelines will provide a simple approach to analyzing value chains and designing value chain development projects.

- **Bottlenecks in India Food Processing Industry**

FICCI

It was a survey conducted by FICCI (*Federation of Indian Chamber of Commerce and Industry*) in 2010 upon challenges of Indian food processing industry. The survey focused on identifying the challenges hampering the growth of food processing sector also the five major challenges which the food processing companies come across inachieving their maximum potentialalong with the top five challenges which need immediate action and policy intervention by the Government.

- **Institutional Innovations and Models in the Development of Agro-Food Industries in India: Strengths, Weaknesses and Lessons**

Vasant Gandhi, Dinesh Jain

They gave emphasis on how to organize sustained production and procurement from large numbers of small farmers, how to ensure adoption of the right technology and practices to generate quantity and quality output at a reasonable cost, how to obtain capital for ensuring good processing technology and meeting the high working capital requirements in a fluctuating business, how to deliver strong marketing efforts to compete and open nascent markets, and how to ensure effective ownership, management and control to ensure performance for its main stakeholders of producers, consumers and investors.

Agriculture sector in india:

1. Sector Overview

In India, agriculture is the single largest area of economic activity and accounts for 22% of the GDP and provides livelihoods to 60% of the country's population. The Indian agri-food industry, estimated to be worth US$181 billion, is expected to grow to US$318 billion by 2020.

India is the world's largest producer of cereals and milk; second largest producer of rice, wheat, sugar, fruit and vegetables, and inland fish; and third in cotton. Although it is one of the world's major food producers, it still accounts for less than 1.5% of international food trade. This indicates vast scope for both Canadian investors and exporters. The processed food industry in India is at a nascent stage with only 2% of the total produce being processed. The food processing sector in India holds good potential for Canadian companies.

India is home to 1.10 billion consumers with a growing youth population estimated to reach 242 million by 2015. The very rich, the rich and middle income households are expected to grow from 64 million in 2015 to 100 million households by 2020. Such favorable demographics are expected to drive consumption across categories.

In 2009, Canada exported agri-food products worth CA$539 millions to India, up 26% from 2008. Pulses accounted for 98% of this trade. Other exports to India include fish and crustaceans, oilcakes, mustard seeds, malt, etc.

Indian export figures for agri-food to Canada were CA$255 million in 2009 and CA$239 million in 2008. The top most imports were fish and crustaceans, grains & cereals and tea/coffee/spices. India's agriculture and agri-food sector is extremely well-positioned for steady growth in the next few years. Several agribusiness companies are looking at new ways to reach out to farmers and consumers, including setting up agri-food retail chains. The growth in private sector investment has been responsive to the surging demand for ready-to-eat food products as family incomes increase and more families move to urban centers.

Some of the major companies heading out into the agri-food retail chain format, carrying both fresh groceries and processed food items are:

- Reliance, Mumbai (Reliance fresh stores)
- RPG Retail, Kolkatta - Supermarkets - Food World, Spencers, Nilgiris
- Pantaloon, Mumbai - Food Bazaar Supermarket
- Aditya Birla Group, Mumbai - Trinethra Supermarket
- Subhiksha Trading, Chennai - Subhiksha discount stores
- ITC, Secunderabad - Choupal Fresh stores (procuring fruits & vegetables directly from farmers)

Some of the major foreign competitors are:

- Metro AG Germany - Cash and Carry Hypermarket
- Bharti-Walmart - Cash and Carry JV
- South Africa's Shoprite - Shoprite Hyperstore

There is an increased potential for import of food products by growing supermarkets and hyper stores. Food and Grocery has been judged to be the fastest growing retail segment in India. The current share of Food and Grocery in the total retail market is US$181 billion (including imports), of which the organised food retail is US$3.3 billion. The projected growth of organised food retail by 2015 is US$36 billion and according to global consulting

firm AT Kearney, India is the most attractive destination for food retailers, outperforming China for the second year.

2. Market And Sector Challenges (Strengths And Weaknesses)

India is a major importer of pulses, edible oils, fertilisers, horticulture products, & processed foods. Excellent opportunities exist for a wide range of Canadian agricultural commodities (pulses), bulk and packaged foodstuffs and frozen, prepared foods including sea-food and icewine. Current Government of India sanitary and phytosanitary conditions effectively block exports of live cattle for breeding, live pigs for breeding, horses, poultry genetics, pork, dairy products, petfood, wheat, oats, malting barley, canola seeds, certain fruits.

Pulses: Due to domestic production shortfall, it is estimated that India's pulse imports from April 2010 - March 2011 will be an estimated 4 million tonnes. There is no import duty applicable on import of pulses and private trade is permitted by the Government. to supplement domestic availability. Canada supplies around 50% of India's pulse needs and is the largest supplier of yellow peas. But Canada needs to watch out for pulses from France, Turkey, Ukraineand other origins. Canadian suppliers need to visit the market place and meet with individual buyers in order to have an on-the-spot assessment of the Indian needs. Indian buyers should be invited by the suppliers to showcase their products and to build awareness of their supplies capabilities among Indian buyers.

Canola Oil: 55% of edible oil available in India is imported. Currently, India is the largest importer of edible oils in the world. The total import of vegetable oil for the year 2009-10 is reported at 6.1 million tonnes to 5.43 million tonnes the previous year. The Indian consumer is discerning in dietary habits and moving away from conventional edible oils to one's containing Omega-3 Fatty acid considered good for health. An opportunity for exporting Canola oil to India exists, targeting upper middle class and rich people -who are conscious of healthy, nutritious oil. The import tariff has also come down from 85% to 7.5% and is sure to give a flip to the sale of oil in India.

Seafood: Imported seafood is emerging as a preferred choice for many consumers who are experimenting with foreign varieties such as salmon, lobster, tuna and seabass. Over a five-year period (2003-2009), demand for imported seafood grew at a compounded rate of 24% with a total market size of US$13 million in 2008-2009. Frozen shrimp and prawn are the

largest imported category (US$7.58 million), followed by Atlantic salmon (US$ 2.32 million) and processed seafood (US$1.13 million). Norway, Indonesia and Thailand are the top three suppliers. The Hotel Restaurant Institution (HIR) sector enjoy duty exemption on products imported and is the largest single market segment for high quality imported seafood.

Nutraceuticals: It is estimated that higher disposable incomes and greater awareness on health have buoyed the US$380 million nutraceuticals market in the country which is growing at about 40%. Customers are aware of health-related products available globally, as they probably have been exposed to such products on their overseas trips. The major domestic players in India are - Reliance Wellness, Dabur, Avesthagen Himalaya, Ranbaxy Laboratories, Dr Reddy's Laboratories, Wockhardt, GNC India and Guardian Lifecare. Most of them are opening retail chains for selling their products in different cities. Canadian companies can liase with such retail chains to market their products in India. The Indian market is focusing on products such as diet drinks with low calories and high fibre, energy drinks with vitamins and minerals, meal replacer with high calories and high fibre, etc.

Processed Food: The food processing industry is still in its nascent stage. Rising income levels, education and a global exposure have contributed to the evolution of the India middle class in purchasing and shopping habits maturing as a result. We have identified long term opportunities for Canadian companies with product offerings such as canned products (seafood in particular), maple syrup, sauces & condiments, gourmet specialty products, icewine, juices, confectionary, ready-to-eat meals which can substitute home based processing. Bakery, processed cereals, and pasta categories are under developed and under-penetrated. The key challenges are high tariffs, low initial volumes and competing on price with suppliers from Australia, UK, France, Italy, and South East Asia. Price is one of the most important considerations for choice of food so the price-value equation has to be carefully evaluated before any product launch. The investment in brand building, increasing awareness, advertising and promotion can be significantly higher for the initial years. Other challenges in this sector are lack of an efficient cold supply chain system. Food producers considering the Indian market need to be aware of local cultural preferences and consumer habits that can vary between regions. A large number of Hindus do not eat beef due to religious taboos and the same applies with pork for Muslims. About 25-30% of Indians are strict vegetarians, while most others practice some form of vegetarianism. This non-meat

ethic is often strictly adhered to and can extend to an avoidance of any food that contains the slightest trace of animal products, including eggs.

3. Sub-Sector Identification

With the liberalisation of the Indian economy, there is a growing awareness of imported food products.

Some of the major products/services that have potential demand in India are:

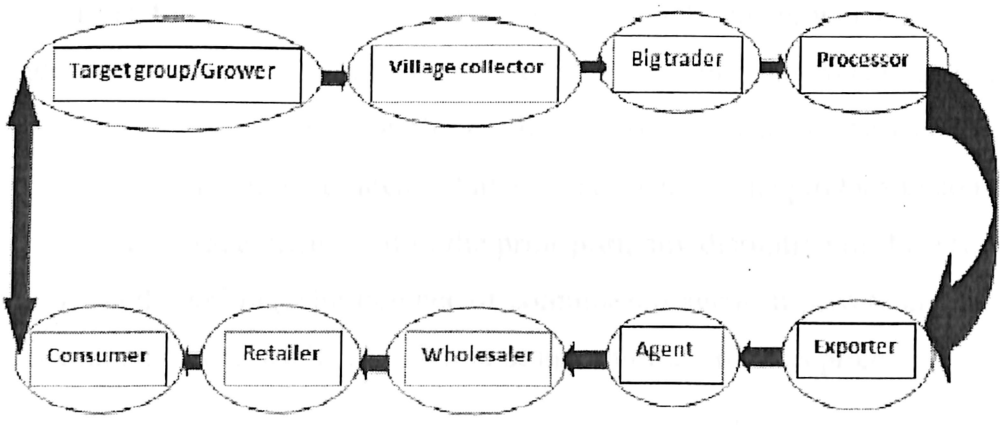
- Grain handling and storage services/expertise - Government of India through Federal and State Corporations are planning to set them from 1000 to 100000 tonnes at various locations, scope for Joint Venture and technology transfer.
- Pulses (mung beans, chickpeas, lentils and field peas)
- Canola oil
- Seafood
- Icewine
- Processed foods (as above) & pork.
- Fertilisers
- Animal Husbandry (bovine genetics, live animals - bulls, chicks, & horses)
- Nutraceuticals

Agriculture supply chain concept:

Supply chain is a kind of network where only one player is involved at each stage a manufacturer a manufacturer may receive material from several suppliers and then supplyseveral distributors. Thus most supply chain is actually networks. A typical supply chain may involve actors like customers, retailers, Wholesalers/distributors, manufactures and raw material suppliers.

The concept of supply chain in agriculture is relatively new. It includes the all stages directly or indirectly involved in fulfilling the customer request in addition to the functions of product development, manufacturing, marketing, distribution, and finance and customer satisfaction.

It is the process of managing of these intermediaries and functions efficiently.



Supply chain management and agricultural business are integral part of agricultural marketing system. Efficient supply chain and business models are necessary for creating efficient agricultural market which delivers agricultural produce from the farmer to the consumer in the most efficient way. While output and productivity are supply side factors, markets provide an intermediate link between producers and final demand by consumers.

In India two types of supply chain can be seen– one which is highly-regulated by the government and another that is run by the private sector. Due to food security concern in 1960's, the Indian government decided to make rules on five agricultural products – wheat, rice, pulses, sugar and edible oils. In both supply chain the farmers sell their produce to the commission agent in negotiated prices due to lack in market accessibility after which the commission agent find a buyer, usually the government or a produce trader, and then charge a percentage commission which generally ranges from 2.5-6% of the transaction value.

The Commission Agents also provide financial assistance to farmers throughout the growing period which is very important since most farmers can't get credit in excess of the value of their next harvest as they have so little land, this means they can rarely afford to make investments that will increase efficiency and reduce waste. The supply chain splits between the government (largest purchasers of crop, wheat) and the private sector.

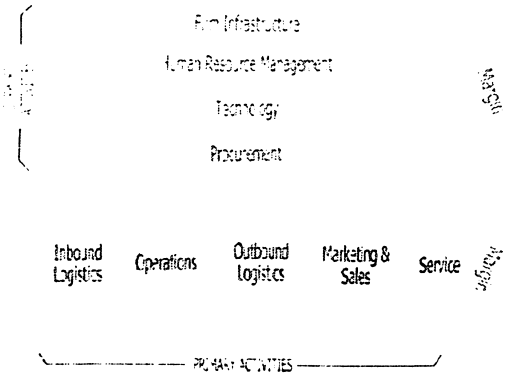
In case if government is buying, the Food Corporation of India will transact with those commission agent at a regulated minimum support price and the FCI plays a very important role as they distribute the agricultural products to impoverished populations through the Public Distribution System. The government has provided ration card to government employees for getting these subsided agricultural products

Apart from the government the private sector supply chain, which moves mostly fruits and vegetables often involves 4-5 middlemen. The Commission Agents generally sell to one or more traders who arrange for the produce to be shipped to city wholesale markets. Once there, it is sold yet again to local retailers, who then sell the produce to consumers. Due to the lack of cold storage mentioned in the prior post, any disruption of this sequence can result in tons of food spoiling. The number of commission agent in private are more in government supply chain which results in inflation of agricultural products prices.

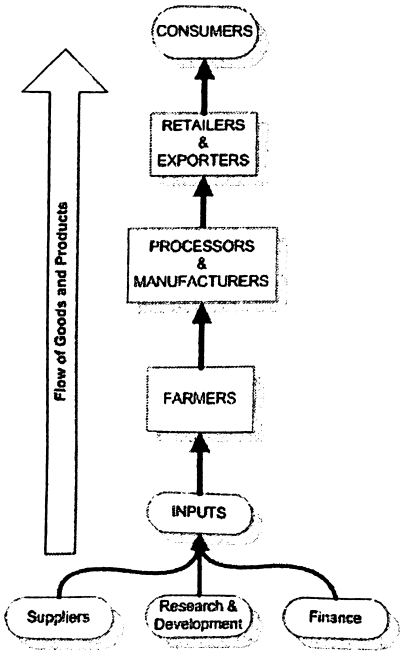
The current scenario of upcoming larger food companies is beginning to change the traditional scenario through direct purchases from farmers as well as investment in modern processing and logistics. However, these participants still play a minor role in the overall supply chain, as the government limits and regulates foreign direct investment in India.

Value chain analysis in agriculture

A value chain is a chain of activities for a firm operating in a specific industry. The business unit is the appropriate level for construction of a value chain, not the divisional level or corporate level. Products pass through all activities of the chain in order, and at each activity the product gains some value. The chain of activities gives the products more added value than the sum of the independent activities' values



(Wikipedia)



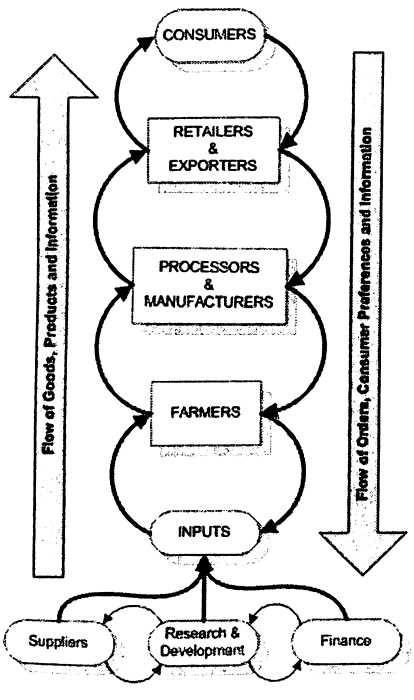
Traditional value chain:

In traditional value chain, farmers produce the raw product and push it or deploy it to the market directly. The raw product is either consumed as it is or it is processed through processes which increases the product value of each level of processing which is generally referred as value chain of the product.

The value of the product increases with respect to the every activity within the process In the value chain, the product which is going through.

In the traditional value chain, the farmer is totally unaware of the progressing value of the product across the value chain.

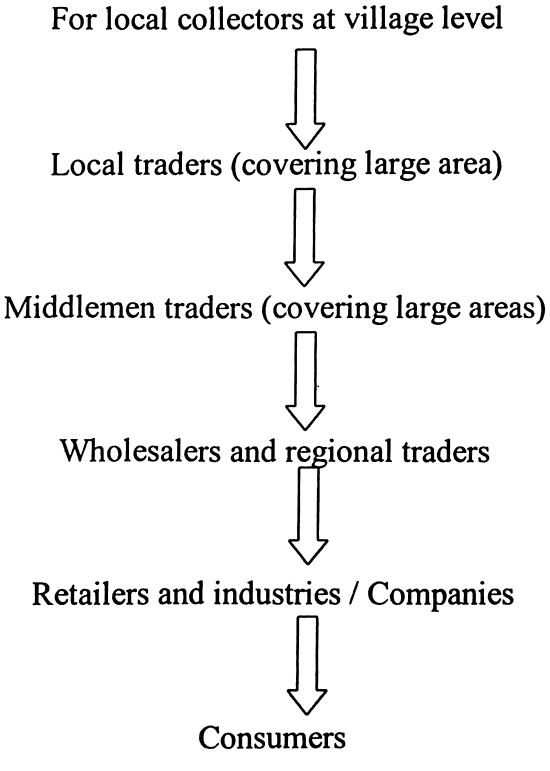
Value chain marketing system



In the marketing value chain approach, every player within the value chain is benefited by understanding the needs of the consumer and a close relationship between producer and distributer. Here, in this case, a new concept of customized or need based production is emerged. Good functioning value chains are said to be more efficient as they bring products to consumers and all actors get benefitted from value chain development.

Role of IT Applications in Agro-Supply Chains

Use of IT can be used for the supply chain management process:



The overall agricultural sector is facing a new trend with the innovation of Information and Communication technology (IT) which has given opportunities for smaller holder farmers in developing nation. There are many challenges where IT can aid in taking advantage of opportunities and mitigating some of the challenges. IT applications guided by business logic has given many advantages in supply chain by reducing costs of coordination in collection of production, distribution and in making transparent decision between partners; reducing transaction costs; disseminating market demand and price information; disseminating weather, pest, and risk-management information; disseminating best practices to meet quality and certification standards ,collecting management data from the different field and ensuring traceability which could prove to enhance the Agribusiness and motivate the small holders farmers.

The interventions drivers are different and varied from private to public sector. There lies a bigger difference between them. In private sector they view supply chain relationship as a competitive advantage. The IT applications developed by them which provide services are typically exclusive to its suppliers. Larger agribusiness needs resources to deploy available IT solutions within their supply chain and if they are supported by a potential viable business model they will prove to be sustainable but they

might focus on smallholders .In public sector the inclusion of small holders are focused as a public good. There supply chain focus on inclusion. The applications created and developed by them are less likely to be exclusive as they usually designed to be specific to particular projects and used one time, public-sector interventions are unlikely to be easily generalized to other contexts Now organizations have understood the importance of information flow in supply chain and how valuable is it. They are focusing on logistics and supply chain system for reducing the transaction costs of procuring from smallholders. Now any sizeable company nowadays uses SCM systems to handle procurement systems.

There are specified functions performed by supply chain software which are running on networked computers:

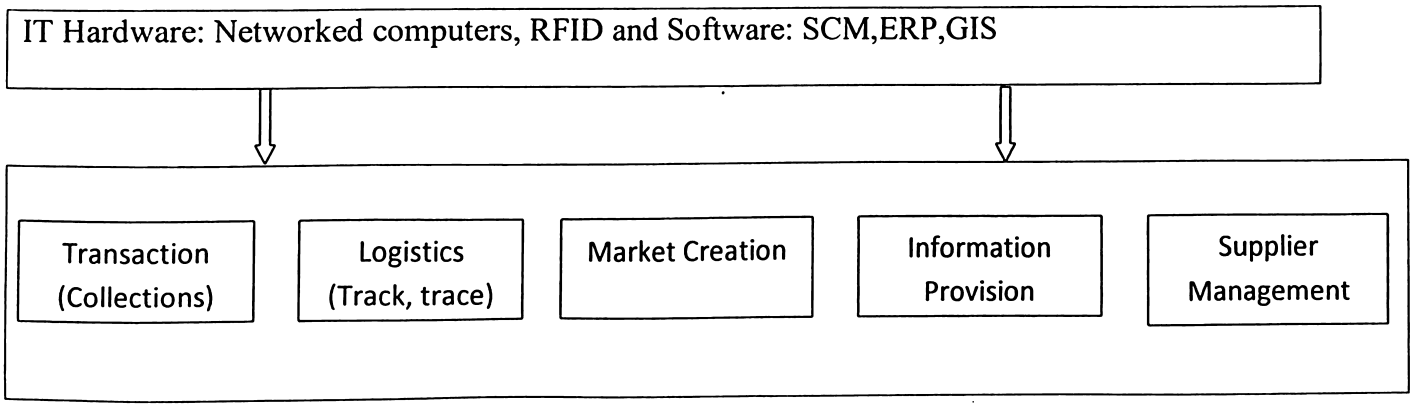
1. Storage of information about the suppliers- the function provide information to food-processing company about which farmers grow what, information about farmers' names, locations, previous transactions, and previous performance. Such a database makes it much easier to deal with a large base of smallholders.

2. Order details-this allows to know what is required, when it will be collected, and how much will be paid for it.

3. Production monitoring can be done effectively making it possible to manage quality and incentivize high-performing suppliers or support poorer performers.

4. At last, SCM software might track the transport of goods from the farm gate to the warehouse or retailer.

Typical IT Applications and services



The use SCM systems can be proven difficult due to lack of context-appropriate software, the prohibitive cost of hardware, and the lack of supporting infrastructure. By the use of IT and their applications analyzed that the technologies can solve many supply-chain problems associated with transactions such as ordering, invoicing, payment, in logistics such as collection, storage, transport, In quality assurance problem like safety, traceability, process management (production oversight, input distribution, extension support) and product differentiation (specialization in organic, fair trade, or regional labels).There are Some applications which are masters in handling activities from transactions to logistics and quality control where as other focus on smaller subset of areas. There is a sense that IT applications can act as glue which will holds together complex supply-chain partnerships. The rapid flow of information between buyers and producers that such applications allow minimizes misunderstandings, allows for risk management, provides higher levels of transparency, and ultimately fosters trust. Better communication between farmers and procurers, and systems which will allow farmers to be paid faster on return can reduce abrupt behavior and help relationships endure. The application of ITs can be expensive from the perspective of software development or purchase, implementation, training. Nowadays IT has played a vital role and helped the organization in keeping real time information, to automate delivery and billing, and retailers are striving to complete the implementation of scanner systems. Successful IT-based coordination between firms and suppliers or distributors occurs in several industries which have proven fruitful and profitable for them. Typical areas where IT can be implemented and reduce in cost and inventory automation of ordering processes and payment mechanisms, scheduling of warehousing and delivery, and control systemsfor

quality assurance in production. The point-of-sale scanner is the key IT tool for tracking retail demand in the grocery industry.

Using ICT to manage distribution and supply chains can increase efficiency and predictability and reduce waste in value chains

Examples of existing agriculture supply chain throughout the world

a) ITC E-choupal
b) Supply chain of agricultural products in Tanzania (Agricultural Products from Regions into Dar es Salaam Market)
c) Supply chain of cashew nut by Tanzania who is world fourth largest producer of cashews after Vietnam, India and Brazil.
d) Wal-Mart Supply chain of agricultural products.
e) Supply chain of Mc-Donald
f) Supply chain Trikaya Agriculture
g) Ghana's processed fruit supply chain
h) South Africa–The Netherlands' Fresh Fruit Supply Chain

Chapter 7: RESEARCH METHODOLOGY

This research has been a combination of both exploratory and analytical research.Exploratory research often relies on secondaryresearch such as reviewing available literature and/or data, or qualitative approaches such as informal discussions with consumers, employees, management or competitors, and more formal approaches through in-depth interviews, focusgroups. The Internet allows for research methods that are more interactive in nature.Secondary data collected from different books, institutions, organization's websites, articles etc for analyzing explaining and combining the information.

In Analytical approach based on appropriate techniques providing well support findings adequate for answering complex research questions. The analytical analysis has also been done by using the facts or information already available and analyzes then to make critical evaluation of the material. Collection of primary data has done by using PRA tools and conducting interviews for ground reality.

Since the study is an initial exploratory research as well as analytical research. Due to this we can fulfill our research objectives.

Chapter 8: DATA ANALYSIS

Challenges in Agro supply chain:

Modern agricultural supply chains have three major flows:

- **Physical product flows-** They are the physical product movements starting from input suppliers to producers to buyers to final customers.
- **Financial flows-** They are the credit terms and lending, payment schedules and repayments, savings, and insurance arrangements
- **Information flows:** They coordinate the physical product and financial flows.

Logistics and communications are integrated in all of these flows. Poor logistics and information is a major source of risk facing an agricultural supply chain

Challenges in terms of coordination

Due to Lack of coordination in Supply chain functionaries there is increase in manufacturing Cost, Inventory Cost, Replenishment Lead time, Transportation Cost, Labor Cost, and Level of product availability which ultimately lead to disputes amongst chain partners.

Agricultural markets in India, in particular the business models of agri businesses along with supply chain models are very inefficient. In India, farmers' produce is generally disposed of in the village, rural/primary market or secondary agricultural market. The challenges facing supply-chain management and agri-business in India can be broadly classified

1) lack of accessibility to regulated markets,
2) Lack of competition under the Agricultural Produce Market.
3) Absence of a nationwide common agriculture market. These are challenges that run across the various channels through which the supply-chain and agri-business models operate. These channels are (i) Producer-Consumer, (ii) Producer-Retailer-Consumer, (iii) Producer-Wholesaler-Retailer-Consumer, (iv) Producer-Commission agent-Wholesaler-Retailer-Consumer and (v) Producer-Village Merchant-Wholesaler-Retailer-Consumer
4) Lack of internal infrastructure across the country.
5) Lack of efficient logistics and transportation facilities.
6) Information needs of stakeholders are not satisfied with the existing system.

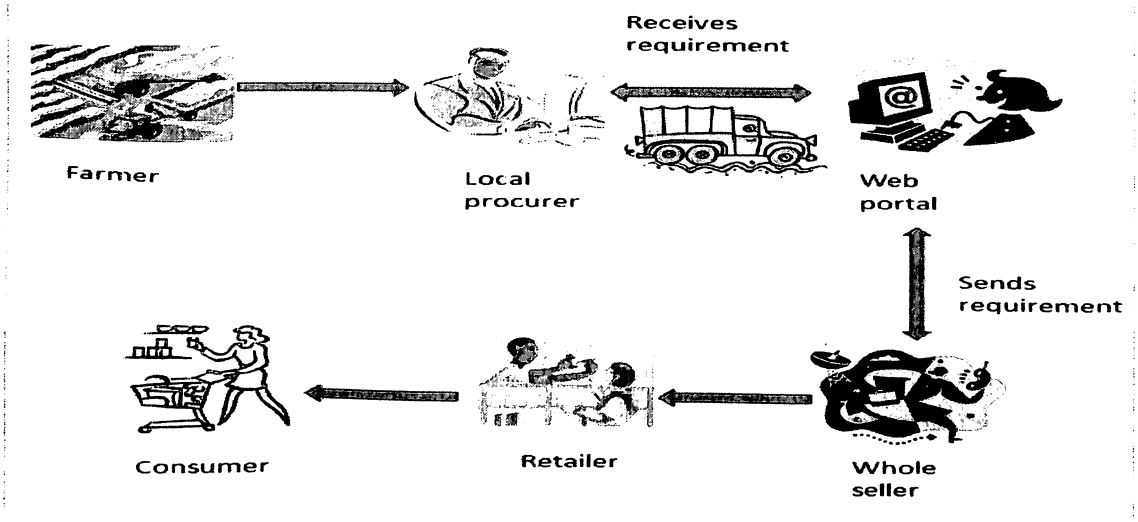
7) Gaps in demand supply cycle.

8) Agriculture markets in India are regulated through the model APMC Acts.

The model APMC Act allows States to collect market fees from the buyers/traders on the sale of notified agricultural produce which are generally high. The high incidence of commission charges on agricultural/horticultural produce renders marketing cost high. There are other charges like entry tax/octroi tax that vary across states as well as across commodities. These charges prevent the emergence of a nationwide common market for agricultural produce. Moreover, restrictions on the movement of goods under the Essential Commodities Act remain in place in various states. These had inhibited free access of agriculture markets. Most of the agricultural markets are also characterized by dominance of cash based transactions where issues of cash management also become important. Also, there are issues of weights and measurements as well as the presence of brokers and commission agents

Proposed Model:

Web based exchange model



How would this model address the challenges of current agro- supply chain model?

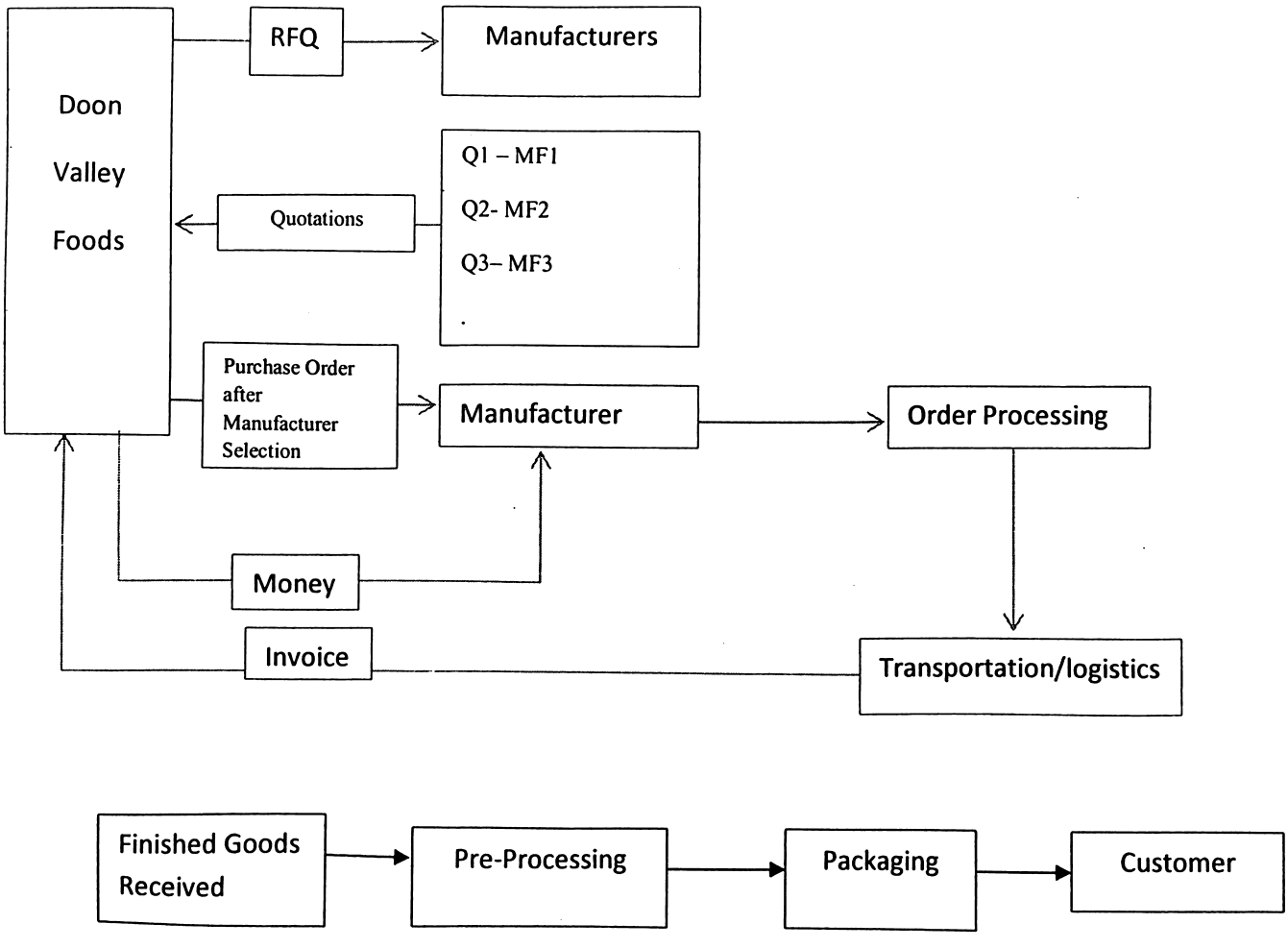
1. This model integrates two or more intermediate processes which directly lead to cost reduction.
2. This business model supports the concept of customized farming based upon the analysis of demand and supply patterns.
3. The wastage with this model is relatively low.
4. This model delivers an efficient collaboration and cooperation across every level of supply chain.
5. The information needs of every stakeholder are satisfied providing the information system developed in order to disseminate timely adequate and accurate information across each level of supply chain.
6. This model efficiently deals with the gap in demand and supply patterns.
7. Farmers get good price for their produce and being informed about day to day market price, and also get aware of new technology, best practices or methodologies of cultivation, government schemes and vendors (seed, fertilizers, technology, etc.)
8. Optimal use of all physical resources

Project Execution(Proposed model)

Phase 1- Defining the Project

1. Project definition

- **Merchant Trading Process**



Project Concept

The main objective of this project in to present a bankable model for high quality commercial trading of Agro Products [Processed Finished Goods]

Analysis & Reviewing of Agro food processing Industry & implementation of merchant trading company, on some highly demanded agro products.

Scope Management

Decisions that we are made with reference to the project are designed to solve or meet the requirements & needs of the business.

Market Research, Market Demand Analysis, Resources Management.

Project Process

Planning of Cost/Expenses – Feasibility Study

Legalities – Cost – Benefit Analysis

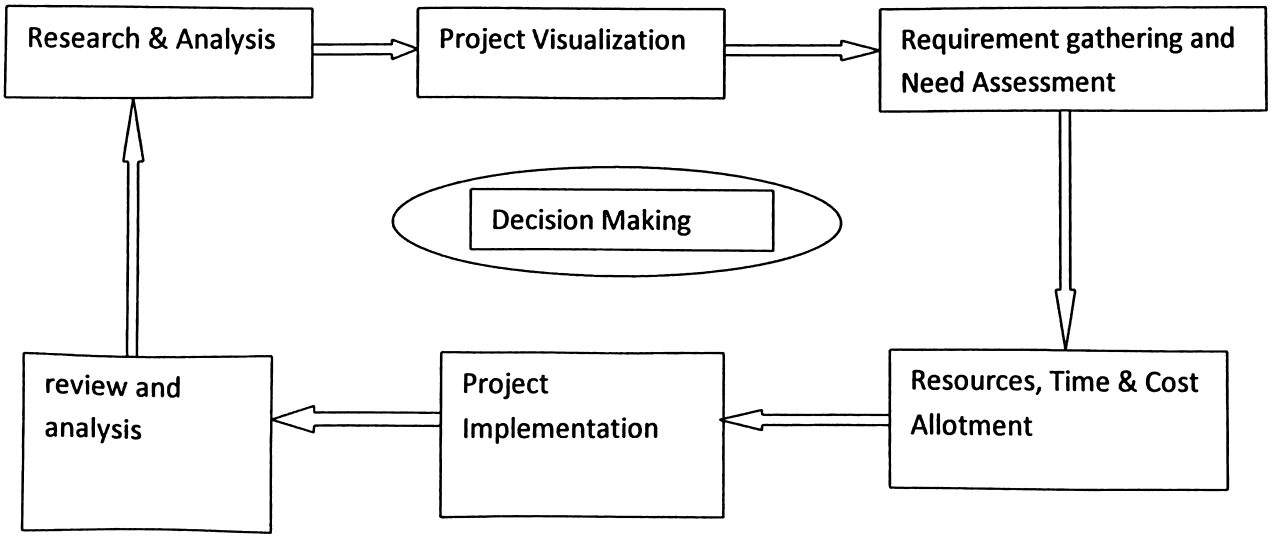
Estimation of opportunity cost

Identification of problems in advance & Resolve them on paper.

Phase 2- Design the Project Process

Time Planning – This allows us to construct the comprehensive but conprihensible picture of the project activities.

Work flow planning

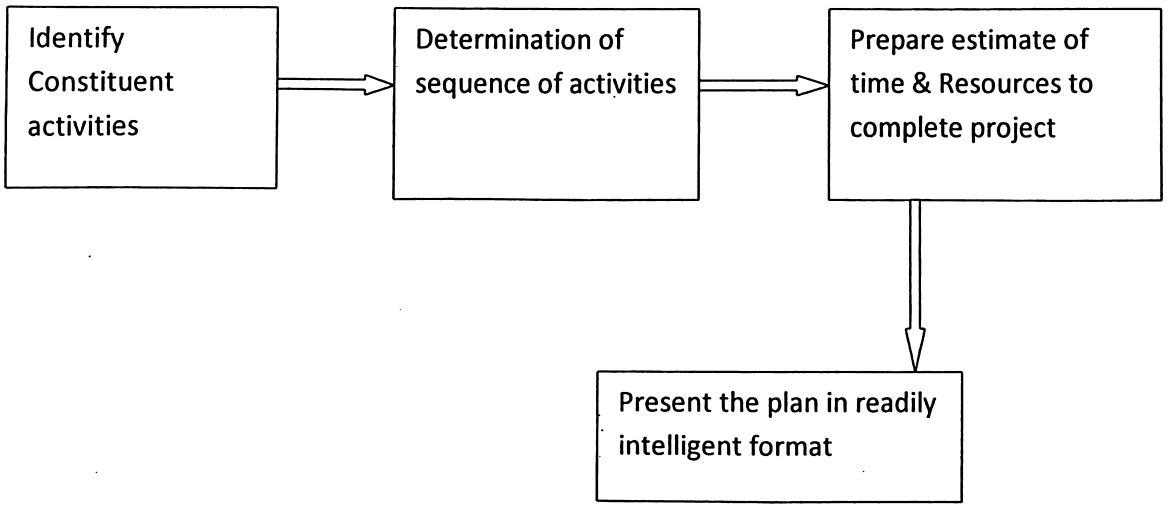


Research and Analysis of

- **Potential Products**
  - Porridge
  - Corn Flakes
  - Nutri Nuggets
  - Muesli
  - Besan
  - Suji
  - Murabba
  - Pickels
  - Refined Oil

- Oats

Work Break down Structure



Planning

- Work Flow Planning
- Resource planning
- Time Planning
- Cost Planning
- Risk Planning
- Strategic Planning
- Team Planning
- Financial planning
- Market research & analysis Planning
- Market Testing Planning
- Plant Location & layout Planning
- Inventory Planning
- Operational Planning
- Labor Planning

Cost Analysis

Product	Cost of Raw material	Cost of Procurement of Finished	Cost of Transportation +	Cost of Packaging	Labor & inventory Cost +

		Product	Taxation		Variable cost

List of Competitors	Products they Offer	Price List of retailing products	Their potential suppliers	Their Potential Distributors	Our final Prices

Research & Analysis of products

Product	Cost of Procurement per unit	Cost of finished goods	Cost of transportation

Resource Planning

Items	*Quantity*	*Cost/Unit*	*Total cost*
Land & Building			13.45
Land	400	250	1
Land Development			
Land Area	400	500	2
Building			
Production Block			
Main Production Area	100	5,000	5
Packaging Unit	50	5,000	2.5
Misc. Handling Area	100	2,000	2
Contingencies	10%		0.95
Plant & Machinary			28.98
Corn Flakes Making Machines	1	70,000	0.7
drought	2	50,000	1
electrically	1	250,000	2.5
Porridge Making Machine	70	30,000	21
Contingencies	15%		3.78
Misc. Fixed Assets			6.73
Furniture & Fixture	1	40,000	0.4
Sealing and Wraping Machin	2	50,000	1
Vehicles	2	200,000	4
Weighing Scale	1	25,000	0.25
Others	1	20,000	0.2
Contingencies	15%		0.88
Pre-perative expances			5.9
Establishment	1	230,000	2.3
Professional charges	1	200,000	2
Security deposit	1	160,000	1.6
Total			55.06

Project2

as of Wed 5/1/13

Dates			
Start:	Sat 6/1/13	Finish:	Wed 10/2/13
Baseline Start:	NA	Baseline Finish:	NA
Actual Start:	NA	Actual Finish:	NA
Start Variance:	0 days	Finish Variance:	0 days

Duration			
Scheduled:	106 days	Remaining:	106 days
Baseline:	0 days?	Actual:	0 days
Variance:	106 days	Percent Complete:	0%

Work			
Scheduled:	6,136 hrs	Remaining:	6,136 hrs
Baseline:	0 hrs	Actual:	0 hrs
Variance:	6,136 hrs	Percent Complete:	0%

Costs			
Scheduled:	$64,656.00	Remaining:	$64,656.00
Baseline:	$0.00	Actual:	$0.00
Variance:	$64,656.00		

Task Status	
Tasks not yet started:	54
Tasks in progress:	0
Tasks completed:	0
Total Tasks:	54

Resource Status	
Work Resources:	4
Overallocated Work Resources:	3
Material Resources:	0
Total Resources:	7

List of Potential Distributors

Company name	Address	Contact No.	Dalia	Corn Flakes	Poha	Oats	Muesli	Nutri
Victoria foods	B-32, Lawrence Road Industrial Area New Delhi - 110035, INDIA.	+91-11-45325500	Rs.890/50kg		Rs. 500/10kg			
Jainys Cereals p. Ltd	366, Sector - 8, IMT Manesar, Gurgaon	Sachin Jain- 9212720025	-		-			-
ORAI FLOUR MILLS	INDUSTRIAL AREA, KALPI	Anchal Gupta- 9554559977		-	-	-	-	-

PVT. LTD.	ROAD, DIST- JALAUN, Orai							
Ahaar Consumer Products (p) Ltd.	G-37, Group Indl. Lawrence Road, Delhi	011-27195002/3/5, 09953364884 sameershukla, ahaarconsumer@gmail.com		=		=	=	
Ishu Foods Private Limited	Plot No. 2/2, 4th Milestone, Opposite Madhu Gas Godown, BasaiRoad,gurgaon	varunchaudhary-08376805152	=		=			=
Amrapali Biotech India Private Limited	No. 1/3, VaibhavKhand,indirapuram,gzb	Mr. S. K. Singh / Mr. P. K. Singh (CEO)+(91)-9717740139/ 8010258507 mkt@amrapalibiotech.com,ceo@amrapalibiotech.com	=		=	=	=	=

	-	Price of finished product(in rs)			
	Product	Procurement price	Big Bazar	Easy day	JR Planet
	-	-	-	-	-
	Porridge	18rs/kg	30	40	40
	Corn Flakes	92rs/kg	300	300	215
	Nutri nuggets	-	275	285	150
	Muesli	255rs/kg	450	450	260
	Muesli (fruit and nuts)	300	500	500	-
	Oats	-	140	140	145
	Pricing strategy (Dalia / Porridge)	-	-	-	-

	-	-	-	-	-
	(I)	-	50%	40%	10%
	Quantity	-	250gm	500gm	1kg
	No. of pieces	-	200	80	10
	Cost	-	10	16	30
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
	(II)	-	50%	40%	10%
	Quantity	-	200	400	750
	No. of pieces	-	250	100	13
	Cost	-	8	15	22
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
	Price of raw materials	-	-	-	
	-	-	min.	max.	
	Wheat	-	1200	1500	
	Corn	-	1100	1600	
	Soyabean	-	3600	4000	

Market Research & Analysis

List of Potential Customers

Super Markets	Multi retail chain	Direct to wholesellers
Needs	Big-bazar	Paltanbazzar
JK whole sellers	Easy Day	
Etc	Etc	Etc

Other Potential Customers

Canteen services

Catering Services

Direct Supply's to Hotels

Demand Analysis of Potential Products & Price list of competitors.

- Surveys
- Questionnaires
- Meetings

Products	Product wise Demand	Prices	Cost/benefit ratio

- Analysis & Information Processing
- Annual Reports of FICCI
- Annual Reports of NHM
- Annual Reports of Ministry of Agriculture
- Annual Reports of Small scale & Cottage industries
- Report on food Processing Industries

Inventory Planning

Aggregate and Capacity Planning

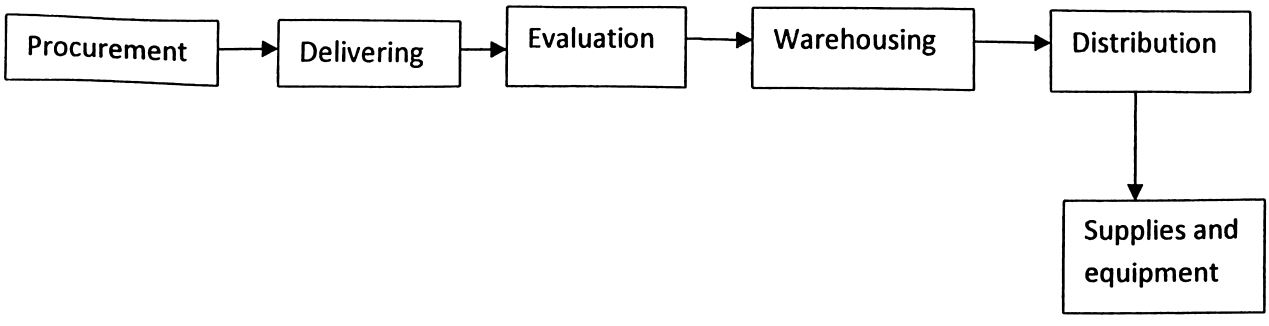
Line Balancing

Cycle time = Production time/production capacity

N_t= minimum no. of work station = Time / cycle time

Efficiency = Time / (cycle time * N_t)

Materials management Functions



Statistical Process Control (SPC)

Variability is inherent in every process-

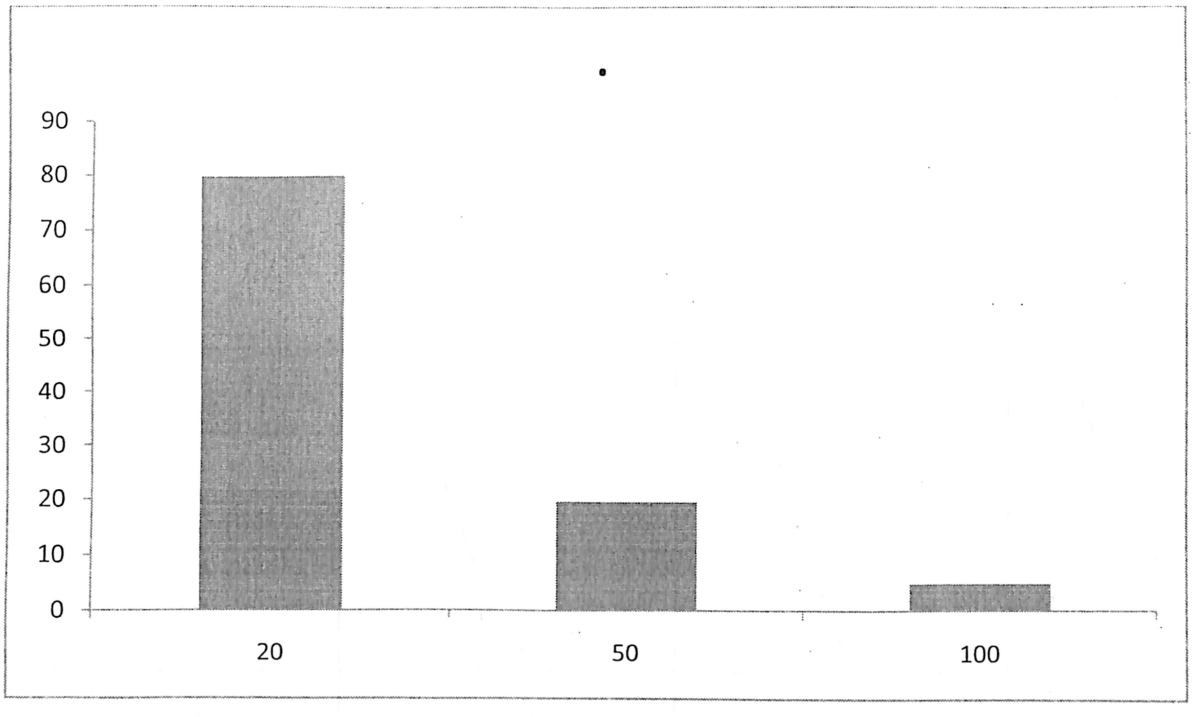
- Natural or Common causes
- Special or assignable causes

Detect and eliminate assignable causes of variation.

Output measures follow a profitability distribution.

Samples ⟶ Distribution

Distributions do differ in terms of central tending (mean), standard deviation or variance and shape.



Just in Time Inventory

- Minimum inventory that is necessary to keep a system perfectly running.
- The exact amount of items arrives at the moment they needed, not a minute before nor after.
    1. Elimination of waste = Delays due to internal and external factors
    2. Synchronized manufacturing
    3. Little Inventory

✓ Average inventory = ———————————————

✓ Minimization of holding, ordering and set up cost of machines.

✓ Batch processing system is deployed.

Research & Analysis of

Potential Manufactures of these finished goods in U.K./U.P./DELHI- NCR or other nearby regions

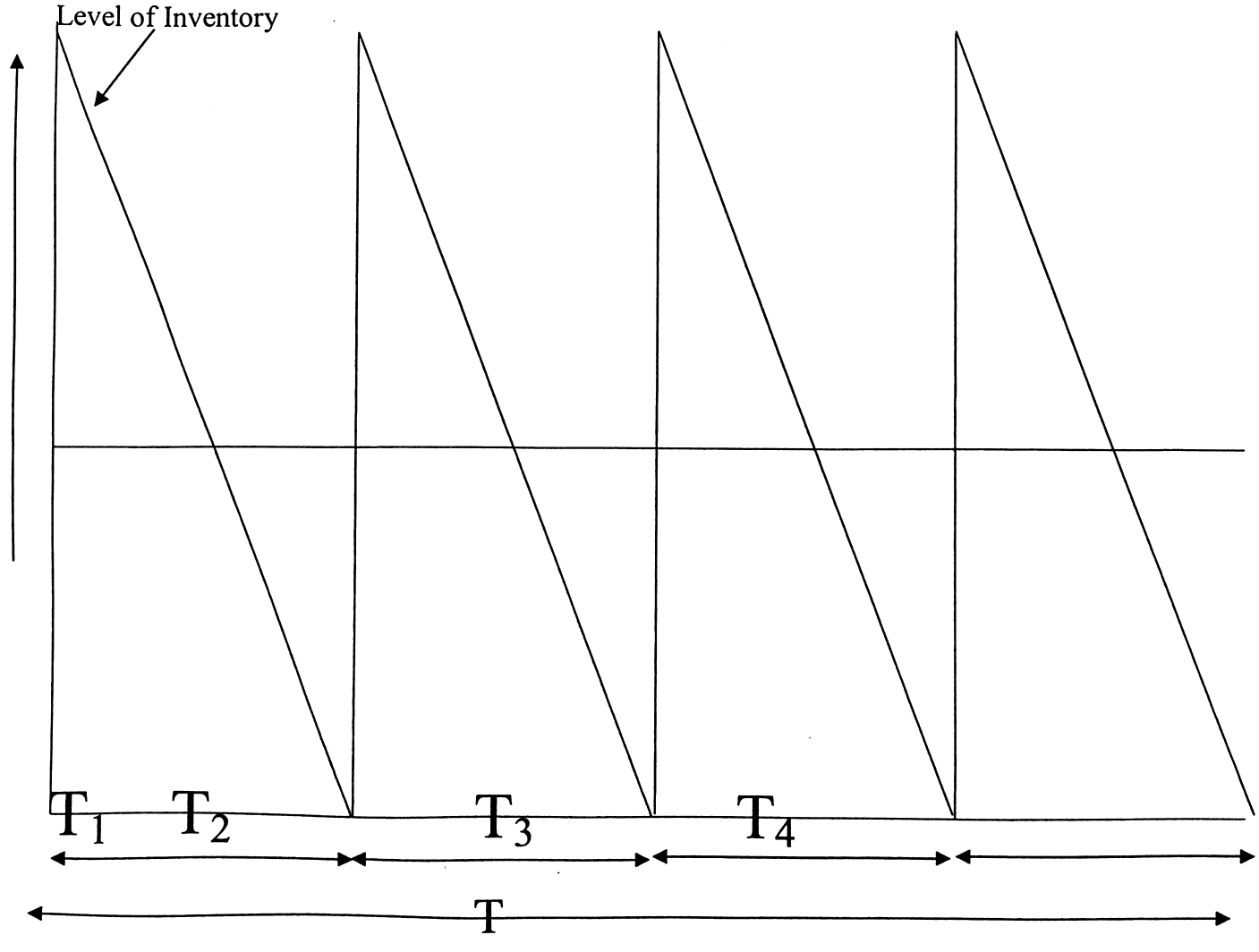
List of	Location	Product Offerings	Quality

Manufactures			

Other competitor's presently operating

Competitors	List of products	List of potential suppliers

Saw-Tooth Model



EOQ = $\sqrt[2]{2DC/Ch}$

ROP = Demand rate * Lead Time

Economic order quantity

- When Should company replenish its inventory
- When Should company place an order
- When Should company manufacture a new lot
- How much should the company order or produce

Models for inventory management

EOQ(Economic order quantity) - determination of optimal quantity the company should order ROP.

ROP = demand rate per period * lead time in periods

EOQ = $\sqrt[2]{2DC/Ch}$

D = Annual Demand

C = ordering set of cost

Ch = cost of holding 1 Kg. of inventory

Promotion strategy

- Advertisements
- Branding
- Suppliers/Distributors Relationship

Pricing Strategy

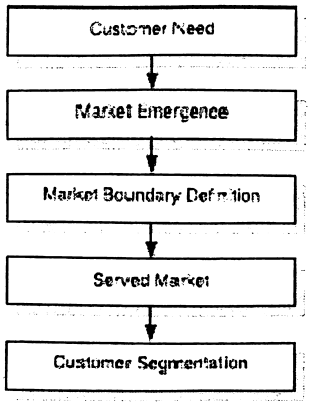
PRICING STRATEGY FOR NEW PRODUCTS

The pricing strategy for a new product should be developed so that the desiredimpact on the market is achieved while theemergenceof competition is discouraged.Two basic strategies that may be used in pricing a new product are skimmingpricing and penetration pricing.

Skimming pricing is the strategy of establishing a high initial price for a productwith a view to "skimming the cream off the market" at the upper end of the demand curve. It is accompanied by heavy expenditureon promotion. A skimmingstrategy may be recommended when the natureof demand is uncertain,when a company has expended large sums of money on research and developmentfor a new product, when the competition is expected to develop and marketa similar product in the near future, or when the product is so innovative that the market is expected to mature very slowly. Under these circumstances, a skimmingstrategy has several advantages. At the top of the demand curve, priceelasticity islow.

Penetration pricing is the strategy of entering the market with a low initial price so that a greater shareof the market can be captured. The penetration strategy isused when an elitemarket does not exist and demand seems to beelastic over the entire demand curve, even during early stages of product introduction.

Identifying Markets to Serve



The three drives for marketing

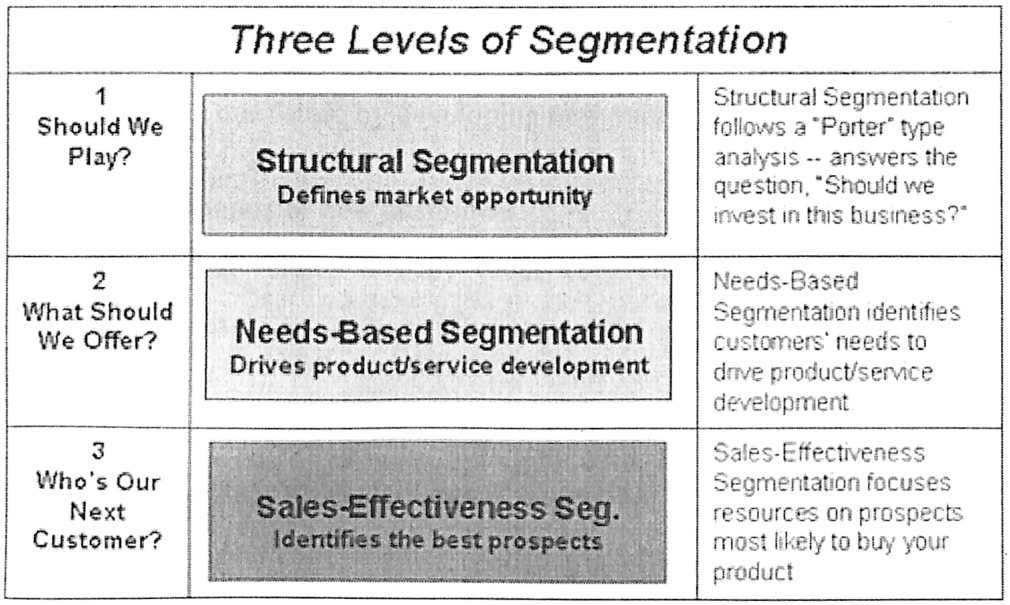
- The customer satisfactiondrive
- The process cost reductiondrive
- The process improvementdrive

Market Segmentation Strategy Development

Segmentation has big pay-offs when used in strategy development, product and market planning and sales targeting. each level of segmentation increases our customer insight.

Segmentation is a well-accepted concept. Many companies create a segmentation strategy to define their markets and direct product development. However, a common mistake is to useone segmentation strategy for all decision sets, which leads to less than optimal product development and sales effectiveness.

Market segmentation drives three critical sets of decisions:



For entering in the market, structural segmentation can help us to identify the markets that offer a higher than average return. onceevaluation is done, needs-based segmentation drives the product and service development. Sales- effectiveness Segmentation builds sales momentum by targeting early adopters and those customers most likely to switch.

Increasing Demand

We can increase demand by increasing:

- Consumption per existing user
- Shareof existing consumption
- Market penetration to accelerate the rateof adoption
- Market/product applications

Accelerating Maturation

We can accelerate market maturity by:

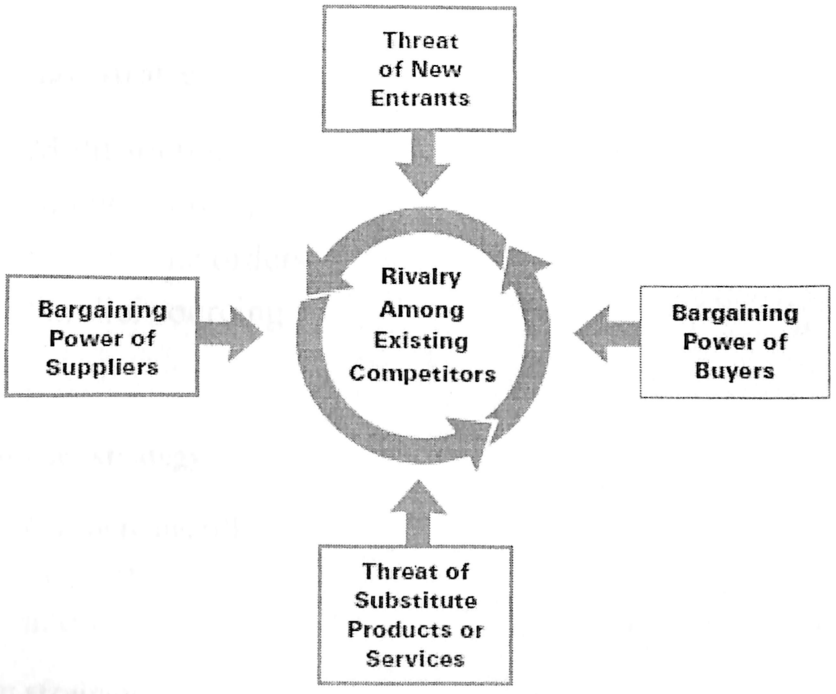
- Becoming the low-cost marketer
- Gaining greater control over your go-to-market system

Reinventing Your Future

We can reinvent our future by developing new value tooffer to the market

- our customers or new customers
- Value that relates directly toour core business or value that takes us into new businesses

The Five Forces That Shape Industry Competition



Cost Focusing/differentiation Strategy

1.Marketing

- **4 ps**
  - **Product**
  - **Price**
    - Skimming
    - Penetration
  - **Promotion**
    - Push
    - Pull
  - **place**

2. Purchase strategy

- Multi sourcing
- Single sourcing
- Just in time orders
- Parallel sourcing

3. Logistics strategy

- Outsourcing,3PL
- In house
- internet

4.Hrm strategy

- low skilled employees
  - ✓ low pay
  - ✓ repetitive tasks
  - ✓ high turn over
- part time/leasing temporary employees

5. Financial strategy

- Internal Financing through cash flow
- Debt financing
- Equity financing
- Leveraged Buyouts

6. Strategies to avoid

- Follow the leader
- Do everything
- Loosing hand
- Arms race

Factors to be considered for strategy alternatives

- Industry scenario
- Financial scenario
- Management Attitude for Risk
- Pressures from stakeholders
- Corporate culture

Financial Analysis

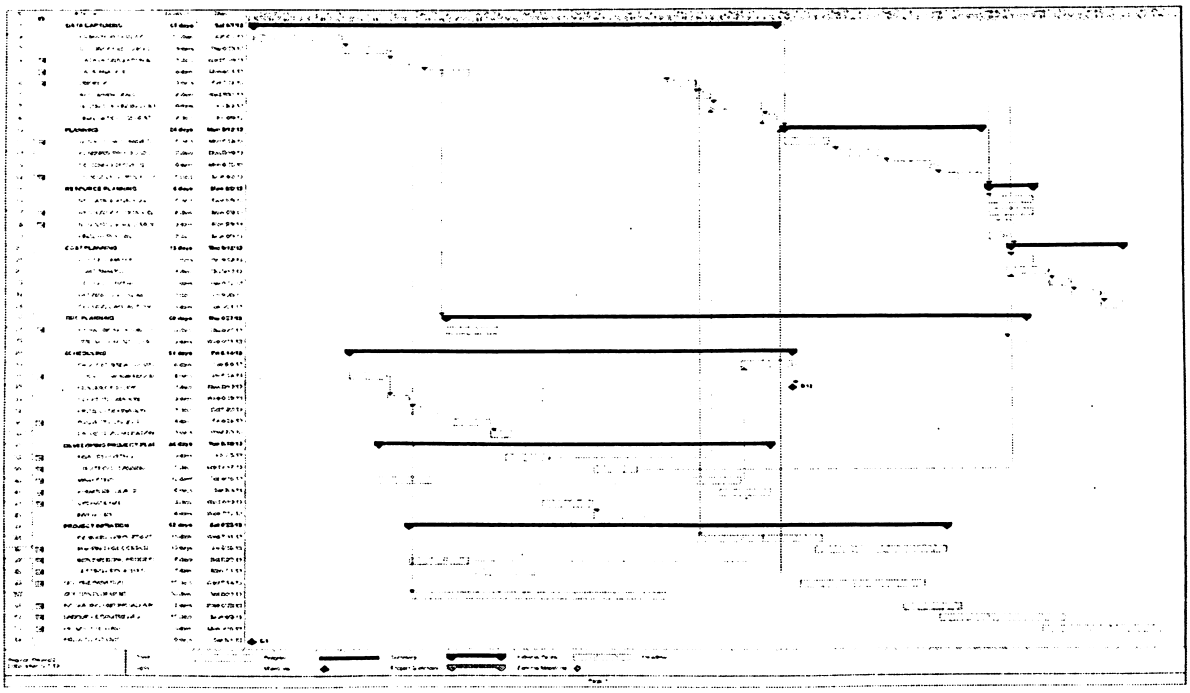
Discounted Cash Flow Statement - Total capital invested							
	Construction		Production				
	Year 1	Year 2	1	2	3	4	5
Total cash inflow	0	0	350000	400000	450000	500000	500000
1. Inflow operation	0	0	350000	400000	450000	500000	500000
Sales revenue	0	0	350000	400000	450000	500000	500000
Interest on securities	0	0	0	0	0	0	0
2. Other income	0	0	0	0	0	0	0
Total cash outflow	260000	270000	262107	241150	310100	346643	339780
3. Increase in fixed assets	260000	270000	0	0	0	0	0
Fixed investments	250000	250000	0	0	0	0	0
Pre-production expenditures	10000	20000	0	0	0	0	0
4. Increase in Net working capital	0	0	57977	8300	8300	8300	0
5. Operating costs	0	0	204130	232850	261565	290280	290280
6. Corporate tax paid	0	0	0	0	40235	48063	49500
Net cash flow	-260000	-270000	87893	158850	139900	153357	160220
Cummulative Net cash flow	-260000	-530000	-442107	-283257	-143357	10000	170220

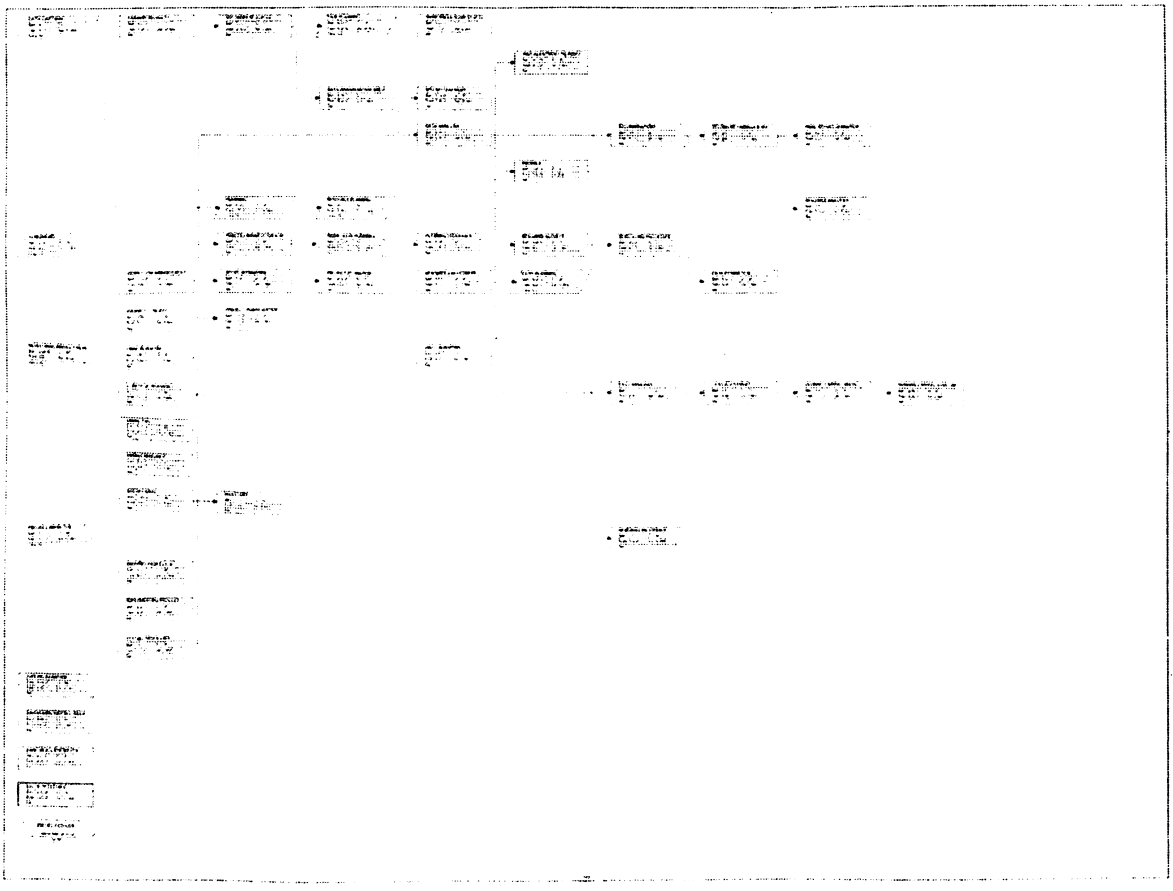
Net income statement (In Rupees)

	Production				
	1	2	3	4	5
Capacity Utilization(%)	70%	80%	90%	100%	100%
Total Income	350000	400000	450000	500000	500000
Sales Revenue	350000	400000	450000	500000	500000
other income	0	0	0	0	0
less variable cost	194500	222000	250000	278000	278000
variable margin	155500	178000	200000	222000	222000
(In % of Total Income)	44.4	44.4	44.4	44.4	44.4
less Fixed costs	39,800	40700	41650	42560	42560
operational margin	115,700	137300	158350	179440	179440
(In % of Total Income)	33.06	34.33	35.19	35.89	35.89
Less cost of finance	63000	28850	24000	19250	14420
gross Profit	52,700	108450	134350	160190	165020
Tax	0	0	40305	48057	49506
Net Profit	52,700	108,450	94,045	112,133	115,514

Projected Balance Sheet(in Rupees)							
	Construction		Production				
	Year 1	Year 2	Year 1	Year 2	Year 3	Year 4	Year 5
Total Assets	***260000***	***440000***	***491315***	***564741***	***624016***	***701550***	***777000***
1. Total Current Assets	0	70000	203785	307481	397032	504843	610569
Inventory on Materials	0	0	34535	39470	44403	49336	49336
Work In Progress	0	0	6060	6920	7788	8653	8653
Finished Goods	0	0	12115	13850	15577	17307	17307
Accounts Recievables	0	0	38180	43636	49091	54545	54545
Cash in Hand	0	0	5270	6020	6774	7526	7526
Cash Surplus	0	70000	107625	197585	273399	367476	473202
Securities	0	0	0	0	0	0	0
2. Total Fixed Assets	260000	370000	287530	257260	226984	196707	166431
Fixed Investment	0	100000	302680	302680	302680	302680	302680
Construction in Progress	250000	250000	0	0	0	0	0
Pre-production Expenditure	10000	20000	15134	15135	15134	15134	15134
Less Accumulated Depriciation	0	0	30284	60555	90830	121107	151383
3. Accumulated losses Brought Forward	0	0	0	0	0	0	0
4. Loss in Current Year	0	0	0	0	0	0	0
Total Liabilities	***260000***	***440000***	***491315***	***564741***	***624016***	***701550***	***777000***
5. Total Current Liabilities	0	0	38180	43636	49090	54545	54545
Accounts Payables	0	0	38180	43636	49090	54545	54545
Bank Overdraft	0	0	0	0	0	0	0
6. Total long term Debt	160000	240000	240380	200320	160255	120190	80127
Loan A	160000	240000	240380	200320	160255	120190	80127
Loan B	0	0	0	0	0	0	0
7. Total Equity Capital	100000	200000	160255	160255	160255	160255	160255
ordinary capital	100000	200000	160255	160255	160255	160255	160255
preference capital	0	0	0	0	0	0	0
Subsidies	0	0	0	0	0	0	0
8. Reserves, Retained Profits Brought Forv	0	0	0	52500	160530	254413	366561
9. Net Profit After Tax	0	0	52500	108030	93886	112147	115512
Dividend Payable	0	0	0	0	0	0	0
Retained Profits	0	0	52500	108030	93886	112147	115512

Time Planning and Scheduling





FINDINGS

- Designing value chain tominimize the product losses
- add highest value in whole supply chain of the industry
- Identification of practices increase the quality standards
- Designing Processes to minimize the processing cost
- Proposed model ensure that the producers get a fair share of value addition
- Identification & nurturing of new links within a value chain;
- Development of capabilities of targeted segments to improve the terms of value chain participation;
- Risk management of value chain operations on non-participants and/or adjacent communities;
- Creating new value chains.
- Development and implementation of activity drivers to enhance the operations across value chain.

Determination of important inventory management practices

- When Should company replenish its inventory
- When Should company place an order
- When Should company manufacture a new lot
- How much should the company order or produce

RECOMMENDATIONS

1. This model delivers an efficient collaboration and cooperation across every level of supply chain.
2. This model efficiently deals with the gap in demand and supply patterns.
3. Optimal use of all physical resources
4. This project has great potential with high returns as future aspects
5. Refinement of traditional equipment and processesfor production of different foods, feeds, fibres andfuel materials for better quality, higher capacity,energy efficiency, and reduced drudgery toworkers.
6. Development of new produces and processes forbetter nutrition, convenience and taste.
7. Energy auditing and use of non-renewable sourcesof energy for post harvest operations.
8. Product quality analysis, sensory evaluation andconsumer acceptance studies.

BIBLIOGRAPHY

1. *Kachru R.P.*, Agro-Processing Industries in India—Growth, Status and Prospects
2. *Bart Minten, Thomas Reardon, AnneleenVandeplas*, Linking Urban Consumers and Rural Farmers in India- A Comparison of Traditional and Modern Food Supply Chains.
3. *AlamGhayur, VermaDeepti*, Connecting small-scale farmers with dynamic markets: A case study of a successful supply chain in Uttarakhand, India.
4. *Government of Uttarakhand*, Food Security in Bageshwar and Chamoli.
5. *Mohammad Rais&NehalAFarooquee,* Agro-biodiversity and livelihoods R&D in Uttarakhand.
6. *Chopra Ravi, PassiSantosh*; Where are the empty Thalis in Uttarakhand? District level food insecurity analysis of Uttarakhand.
7. *SethiDeepti, Mittal Surabhi, TripathiGaurav;* Development Strategy for the Hill Districts of Uttarakhand.
8. *Jan van Roekel, Sabine Willems, Dave M. Boselie*; Agri-Supply ChainManagement: To Stimulate Cross-BorderTrade in DevelopingCountries and EmergingEconomies.
9. *Jan van Roekel, Ronald Kopicki, Carry J.E. Broekmans, Dave M. Boselie*; Building Agri Supply Chains: Issues and Guidelines
10. *Salin Victoria*, Information Technology in Agri-Food Supply Chains.
11. *Steven Jaffee, Paul Siegel, and Colin Andrews*, Rapid Agricultural Supply Chain Risk Assessment.
12. http://www.wikipedia.com/agri%supplychain%%india
13. http://www.uttra.gov.in
14. http://www.nhb.nic.in