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M.B.A.

AGRIBUSINESS MANAGEMENT

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# A STUDY OF VALUE CHAIN OF VEGETABLE PRODUCES IN VILLAGES UNDER MANDVA AND KARJUN COOPERATIVE (KAPRADA) IN SOUTH GUJARAT


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**ANAND-388110**


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**A PROJECT REPORT SUBMITTED TO THE**
**ANAND AGRICULTURAL UNIVERSITY**
**IN THE PARTIAL FULFILLMENT OF THE REQUIREMENT**
**FOR THE AWARD OF THE DEGREE**

**OF**

**MASTER OF BUSINESS ADMINISTRATION**
**AGRIBUSINESS MANAGEMENT**

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# A STUDY OF VALUE CHAIN OF VEGETABLE PRODUCES IN VILLAGES UNDER MANDVA AND KARJUN COOPERATIVE (KAPRADA) IN SOUTH GUJARAT

## ABSTRACT

India's diverse climate ensures availability of all varieties of vegetables. India is the largest producer of ginger and okra amongst vegetables and ranks second in production of potatoes, onions, cauliflowers, brinjal, Cabbages, etc. after China. The vast production base offers India tremendous opportunities for export. During 2019-20, Value of vegetables was worth Rs. 4,350.13 crores. Vegetables are an important crop in the horticulture sector, occupying an area of 10.32 million Hectare as per 2019-20 with a total production of 189.46 million Tonnes with average productivity of 18.4 Tonnes/Hectare. Vegetables are good source of nutrients, dietary fibre, phytochemicals, and vitamins. Vegetables with shorter duration, high productivity have resulted in greater economic returns to farmers. In fact, vegetables constitute about 59.3% of horticulture production. Due to delicate and perishable nature of the product, marketing of these produces requires a high degree of coordination among different actors of the chain and each stage requires a well-built emphasis on workforce progress to drive both productivity and upgrading.

The traditional farm-market linkages in the agriculture value chain are dominated by multiple layers of brokers and intermediates, resulting in slow and inefficient market movement of agriculture products, inflated price spread and post-harvest losses. The farmers, who should be the central focal point of agriculture value chain suffer the most and get lower profit/price margin for their produce, whereas the brokers/traders enjoy the highest margins. The farmers opined that the returns from farming were decreasing over years and marketing is still a major issue in spite of various institutional innovation. The study was carried out with following objectives, identify existing distribution channel of selected vegetable, developing a business plan focusing on procurement, value addition and vegetable distribution network, Developing and refining various processes of the vegetable value chain, facilitating sales of vegetables for the respective cooperative.

This study was suggested by the company which was entitled "A study of value chain of vegetable produces in villages under Mandva and Karjun Cooperative (Kaprada) in south Gujarat". Sweet potato, Tomato, Turmeric and Bottle gourd were selected for the study as their area under cultivation was high. To measure the distribution channels of vegetables, various parameters like storage, Procurement, value addition, various process of value chain and facility provide by the cooperative were taken into consideration. The research includes interviewing respondents through Schedule based on the mentioned objectives and analysing their responses with the help of appropriate statistical tools. The research has covered the selected villages of the

Valsad district of Gujarat. The surveyed areas were recommended by BAIF Development Research Foundation, the host organisation.

Four types of distribution channels were found in marketing of sweet potato, bottle gourd, tomato, and turmeric. These are: channel-1 (producer-consumer), channel-2 (producer-retailer-consumer) channel-3 (producer-wholesaler-retailer-consumer) channel-4 (producer-commission agent-wholesaler-retailer-consumer). The major constraints face of by farmer is marketing of vegetables as majority of farmers sell their produce at Nana Pondha market because in other market transportation cost were high. In the study area farmers have no value addition accept sorting and grading. In tomato and brinjal maximum loss in storage further greater post-harvest loss were in sweet potato and brinjal. Channel-2 is most preferred channel by farmers in Kaprada area.

Vegetable value chain process is like producer-transportation-trading-transformation-export. Where production and trading cost is higher as compared to other stage. In this process intermediary plays vital role and get more profit. So, farmer rare aware about price, market, demand, and supply. Farmers are keen to participate and learn latest package of practices realizing its advantage. Continuous efforts and timely training of farmers have helped in percolation of scientific methods of cultivation to a remarkable level. Practical training provided on field has helped in improved perception of scientific farming techniques. Farmers are participating in groups for learning and applying these techniques. The performance of the procurement and marketing (supply chain) is a key factor in the success of retail chain. The Indian retail cannot be competitive until the supply chain is made integrated, efficient and customer centric. For inclusive development of the entire process from production to marketing, emphasis must be given mainly on timely procurement of inputs and availability of product for market to facilitate this entire chain of process i.e., linkage of farmers with financial institutions, collection centre and technical guidance.

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# CERTIFICATE

This is to certify that the project entitled **"A study of value chain of vegetable produces in villages under Mandva and Karjun cooperative (Kaprada) in south Gujarat"** of M.B.A (International Agribusiness) embodies bonafide research work carried out by **Chauhan Divyesh Mohanbhai (Reg. No. 2040619005)** under my guidance and supervision and that no part of this project work has been submitted for any other degree. The assistance, guidance and help received during the course of investigation have been fully acknowledged.

Place: IABMI, Anand **(Dr. R. S. Pundir)**

Date: / / 2021 Advisor

# DECLARATION

I hereby declare that the project entitled **"A study of value chain of vegetable produces in villages under Mandva and Karjun cooperative (Kaprada) in south Gujarat"** Submitted for the M.B.A (Agribusiness Management) degree is my original work and this has not formed the basis for the award of any degree, associate ship or other similartitles.

Place: IABMI, Anand **Chauhan Divyesh Mohanbhai**

Date: / /2021 **Reg No. 2040619005**

# *ACKNOWLEDGEMENT*

*It is my privilege to express my feeling of gratitude to BAIF Development Research Foundation Pune, especially Mr. Jayanti Mori, Chief Program Executive, BAIF Development Research Foundation, for providing me opportunity to work with the organization. I express my sincere thanks to my industry advisor Mr. Kalpesh Bhoye, senior Project officer and Mr. Sandip Yadav, Senior Programme Manager (south Gujarat), his scholastic guidance and pertinent suggestionsin planning and execution of this project.*

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*At the last but not the least, I express my deep sense of feeling and thanks to my parents and my friends, without their encouragement and benediction itwould not be possible to me to complete this project.*

*Date: / /2021* ***(Chauhan Divyesh M.)***

*Place: Anand*

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# 1. INTRODUCTION

## 1.1 STATUS OF HORTICULTURE SECTOR IN INDIA

India is one of the world's largest producer of fruits and vegetables, milk, major spices, fresh meat, fibrous crops, staples, etc. and ranked fourth amongst the world's largest producers of agricultural produce, including many cash crops such as coffee and cotton. India's vast geographical area coupled with varied climate conditions facilitate to grow a variety of fruits and vegetables. It ranks second in fruits and vegetables production only next to China. During 2019-2020, India produced 100.3 million metric tonnes of fruits, 95.16 million metric tonnes of spices, 30.22 MMT of flower. (Source: Department of Agriculture and Cooperation & Farmers Welfare, GOI)

### 1.1.1 Area, Production & Productivity of Horticulture Crops

**Table 1.1 Area: Million Hectare, Production: Million Tonnes, Productivity: Tonnes/Hectare**

| Year | Area | Production | Productivity |
|---|---|---|---|
| 2009-2010 | 20.88 | 223.09 | 10.69 |
| 2010-2011 | 21.83 | 240.53 | 11.02 |
| 2011-2012 | 23.24 | 257.28 | 11.07 |
| 2012-2013 | 23.69 | 268.85 | 11.35 |
| 2013-2014 | 24.20 | 277.35 | 11.46 |
| 2014-2015 | 23.41 | 280.99 | 12.00 |
| 2015-2016 | 24.47 | 286.19 | 11.69 |
| 2016-2017 | 24.85 | 300.64 | 12.10 |
| 2017-2018 | 25.24 | 310.67 | 12.31 |
| 2018-2019 | 25.74 | 311.05 | 12.09 |
| 2019-2020 | 26.22 | 321.57 | 12.19 |

**Source: Department of Agriculture and Cooperation & Farmers Welfare, GOI**

Agriculture plays a vital role in India's economy. 54.6 per cent of the total workforce is engaged in agricultural and allied sector activities (Census 2011) and accounts for 17.8 per cent of the country's Gross Value Added (GVA) for the year 2019-20. India's diverse climate ensures availability of all varieties of vegetables. India is the largest producer of ginger and okra amongst vegetables and ranks second in production of potatoes, onions, cauliflowers, brinjal, Cabbages, etc. after China. The vast production base offers India tremendous opportunities for export. During 2019-20, vegetables worth Rs. 4,350.13 crores. The area under cultivation of vegetables stood at 10.1 million hectares. Vegetables are good source of nutrients, dietary fibre, phytochemicals and vitamins. vegetables with shorter duration, high productivity have resulted in greater economic returns to farmers. Vegetables are reported to be rich source of carbohydrates (sweet potato, potato, onion, garlic and methi), proteins (leguminous vegetables, leafy vegetables and garlic), vitamin A (tomato, carrot, drumstick, leafy vegetables), vitamin B (garlic, tomato and peas), vitamin C (drumstick leaves, Cole crops, leafy vegetables, green chilies and leaves of radish), minerals (leafy vegetables, drumstick pods). (nhd.gov.in, national horticulture board)

It can be grown throughout the year in different season. It also has medicinal importance especially for persons suffering from heart disease and diabetes. In addition, it also improves soil health and provide fodder to catties. Per capita availability of vegetables in India is 395 gm/person/day, which helps in fighting malnutrition. It can also be grown in back yard of house as the kitchen garden.

Horticultural crops play a big role in developing countries, both in income and social spheres for improving income and nutrition status. Further, it provides employment opportunities as their management being labour intensive, production of those commodities should be encouraged in labour abundant and capital scarce countries. Vegetable production is becoming an increasingly important activity within the agricultural sector of the country following the event of irrigation and increased emphases given by the government to small scale commercial farmers. Recently, due to their high nutritional value vegetable do have ever rising demand both in local and foreign markets and are classified among those export commodities" that generate considerable amount of foreign currency earnings to the country.

Due to delicate and perishable nature of the product, marketing of these produces requires a high degree of coordination among different actors the chain and

each stage requires a well-built emphasis on workforce progress to drive both productivity and upgrading.

The sector is constrained by low productivity, large post-harvest losses due to inadequate storage, cold chain and transportation infrastructure and inefficient supply chain management (SCM). The development and promotion of efficient value chain is critical for the accelerated development of this sector and for ensuring distribution of substantial gains among the value chain participants.

## 1.2 AREA, PRODUCTION & PRODUCTIVITY OF VEGETABLES IN INDIA

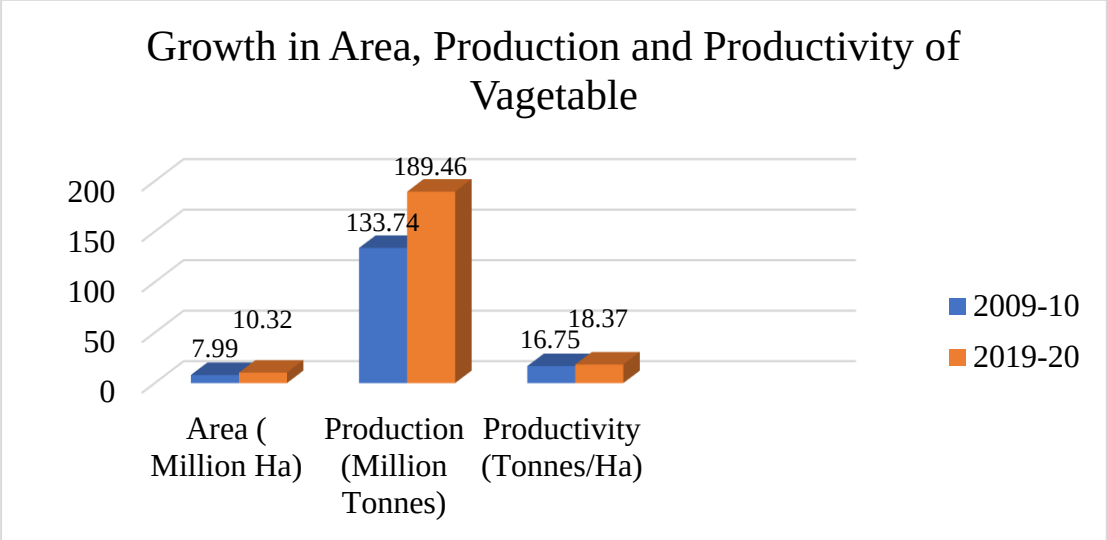



**Figure 1.1: Area, Production & Productivity of Vegetables in India**

Vegetables are an important crop in the horticulture sector, occupying an area of 10.32 million Hectare as per 2019-20 with a total production of 189.46 million Tonnes with average productivity of 18.4 Tonnes/Hectare. In fact, vegetables constitute about 59.3 per cent of horticulture production. During the period [2009-10 to 2019-20], area and production of vegetables increased by 29.2 per cent and 41.7 per cent, respectively. (www.agricoop.nic.in)

## 1.3 PRODUCTION AND DEMAND OF VEGETABLE CROPS IN INDIA

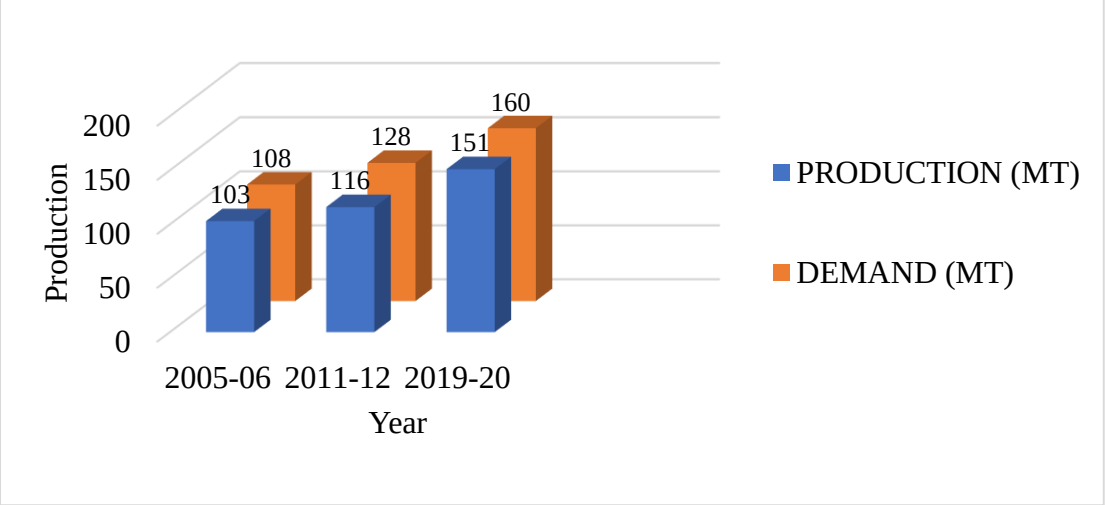



**Figure 1.2 Production and demand of vegetable crops in India**

## 1.4 PRODUCTION AND AREA SHARE OF LEADING VEGETABLE PRODUCING STATES

**Table 1.2: Production and area share of leading producing state**

| Sr. No. | States | Area (‘000 Ha) | Production (‘000 MT |
|---|---|---|---|
| **1** | West Bengal | 1474.37 | 28354.15 |
| **2** | Uttar Pradesh | 1251.31 | 27496.32 |
| **3** | Madhya Pradesh | 943.98 | 18761.31 |
| **4** | Bihar | 906.00 | 16939.90 |
| **5** | Maharashtra | 691.51 | 12173.55 |
| **6** | Gujarat | 640.33 | 12608.48 |
| **7** | Odisha | 632.59 | 8670.87 |
| **8** | Haryana | 447.53 | 8461.74 |
| **9** | Tamil Nadu | 324.46 | 7442.76 |
| **10** | Chhattisgarh | 521.55 | 7384.15 |

Although, more than 70 types of vegetables are commonly grown in different states of India, higher emphasis is given to more popular vegetables like tomato, brinjal, chilli, cauliflower, cabbage, peas, onion and few cucurbits and leafy vegetables. During

2019-20, the total vegetable production was the highest in case of West Bengal (283.54 million MT) followed by Uttar Pradesh (274.52 million MT).

## 1.5 VEGETABLE SCENARIO IN GLOBAL LEVEL

China was the leading producer of vegetables with a production volume of 588.26 million metric tons, followed by India with about 132 million metric tons of fresh vegetables. Tomatoes were the leading vegetables based on global production volume in the year 2019.

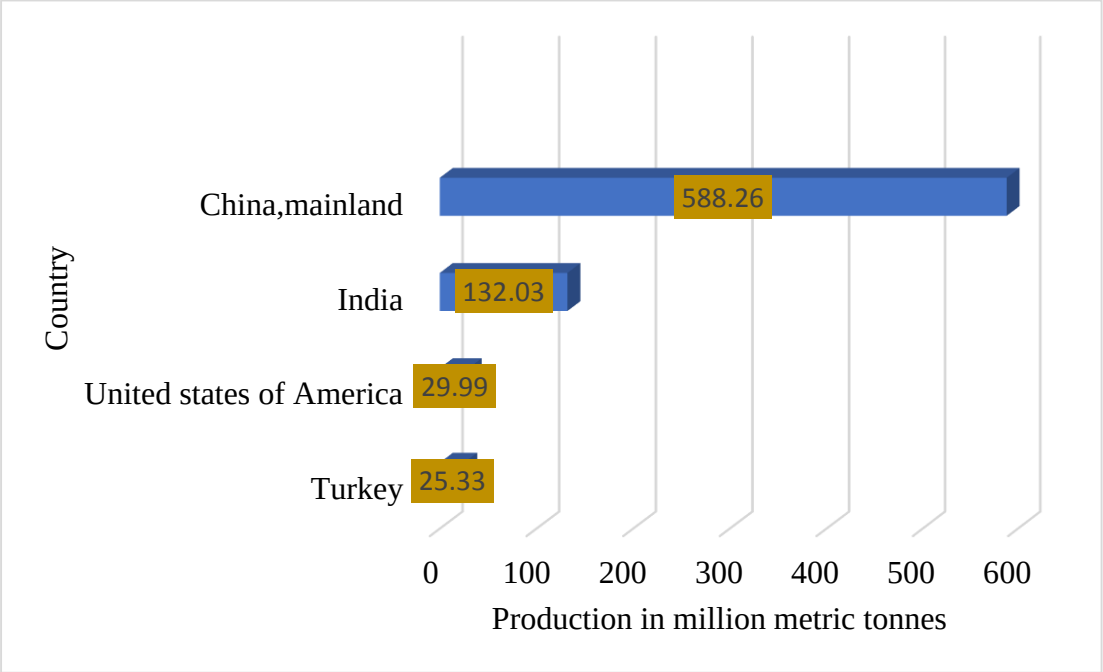



**Figure 1.3 vegetable scenario at global level**

## 1.6 MARKETING SCENARIO OF HORTICULTURE COMMODITIES IN INDIA

The traditional farm-market linkages in the agriculture value chain are dominated by multiple layers of brokers and intermediates, resulting in slow and inefficient market movement of agriculture products, inflated price spread and post-harvest losses. The farmers, who should be the central focal point of agriculture value chain suffer the most and get lower profit/price margin for their produce, whereas the brokers/traders enjoy the highest margins.

About 95 per cent of the sale of fresh produce, especially in the horticulture sector occurs through traditional value chain. The various stakeholders of the agriculture value chain, namely the farmers, wholesalers, processors and retailers work

more in isolation rather than in an integrated or coordinated manner. The critical concept of concerted demand forecasting, production planning and backed information sharing is missing in agriculture value chain, causing much inefficiency in the system. While the middleman and brokers charge exorbitant margins for the services they render and cause delays in the transaction, small farmers are largely unorganized, lack the power of negotiation and get a low share of consumer in rupee. At times, even the brokers or middleman have no sufficient incentive to work efficiently, as the wholesale markets are very poorly planned and crowed.

The retailers are basically roadside vendors or those stalls and push carts to deliver the farm produce to the end consumer, the last link in the marketing chain. The consumer normally does not have much control on the quality of the marketed farm products and consumers whatever is available. If a consumer wants to buy fresh produce of a specific quality, it is extremely difficult to get the same.

The post-harvest loss of fruits and vegetables is estimated to be about 30 per cent which is mainly due to lack of proper facilities for storage, handling and processing, coupled with the absence of clear marketing channels for these perishable commodities. On an average, fruits and vegetables pass through six to seven middlemen before reaching the final consumer.

### 1.6.1 Vegetable Marketing

Progress in the production of horticultural products depends critically on the marketing infrastructure available to the farmers. Efficient marketing with a dynamic supply chain is essential for the development of the horticulture sector.

The efficiency of marketing for fruits and vegetables in India has been of significant concern in the recent years. Poor efficiency in the marketing channels and inadequate marketing infrastructure are believed to be the cause of not only high and fluctuating consumer prices, but also too little of the consumer rupee reaching the farmer. Indian farmers typically depend heavily on middlemen particularly in fruits and vegetable marketing. The producers and the consumers often get a poor deal and the middlemen control the market, but do not add much value.

There is also massive wastage, deterioration in quality as well as frequent mismatch between demand and supply both spatially and over time. In the light of these concerns, this study seeks to examine the market environment for vegetables in Kaprada

taluka of Valsad district, Gujarat state of the country. It examines 45 per cent 14 per cent 14 per cent 14 per cent 9 per cent 6 per cent Potato Tapioca Tomato Brinjal Cabbage Cauliflower5 various aspects of vegetable marketing such as market infrastructure, marketing channels, marketing practices, marketing costs, marketing margin, marketing efficiency etc. in the wholesale and local markets in the selected area. The study also tried to identify the prevailing value chain from the Farmer→ Commission Agent → Wholesaler → Retailer → Consumer of costs, prices and their shares in the selected vegetable markets.

## 1.7 SUPPLY CHAIN VERSUS VALUE CHAIN

The concept of Supply Chain Management (SCM) emerged in 1980s as an integrated philosophy to manage the total flow of goods from suppliers to ultimate user. This evolved to consider a broad integration of business processes along the chains of supply. Keith Oliver coined the term "supply chain management" in 1982 to develop an integrated inventory management process to balance trade-offs between his clients' desired inventory and customer service goals. The original focus was management of a chain of supply as though it were a single entity, not a group of disparate functions, with the prime objective of fixing the suboptimal development of inventory and capacity caused by conflicts between functional groups within the company.

The value chain approach was developed by Michael porter in the 1980s in his book "Competitive Advantage: creating and sustaining superior performance". The value chain framework of porter is "an interdependent system or network of activities, connected by linkers ". 'Value Chain Management" is about creating the added value at each link in the chain and a sustainable competitive advantage for the businesses in the chain. How value is created is a major concern for most businesses.

Porter indicates that value can be created by differentiate along every step of the value chain, through activities resulting in products and services that lower buyers' costs or raise buyers' performance. To conduct the value chain analysis, the company is split into primary and support activities. Primary activities are those that are related with production, while support activities are those that provide the background necessary for the effectiveness and efficiency of the firm, such as human resource management.

## 1.8 THE CONCEPT OF VALUE CHAIN ANALYSIS

Two core elements are embedded in the definition of a value chain: Chain and Value. Value chain refers to a supply chain in which value is added to the product as it moves through the chain. It is described by the series of activities and actors along the supply chain. In other words, value-chain analysis depicts where, how, and why value is added and created along the chain. Its objective is to understand why the value chain is structured as it is and how it could be leveraged for change.

Value chains can be highly complex, involving multistage production systems with multiple types of actors in multiple locations, or they can be very simple. In all cases, however, the term chain implies an interlinked system in which the different components are interconnected, with a change in one part of the chain affected by a range of cross-cutting inputs and processes, including natural and human resources, capital, technology and policy. Creating a profitable value chain requires alignments between what the consumer wants, i.e., the demand chain, and what is produced via the supply chain. Value chain analysis is essential to explain the connection among all the actors in a particular chain of production and distribution and it shows who adds value and where, along the chain. It helps to identify pressure point and make improvement in weaker links where returns are low.

Agriculture value chain in India is characterized by poor logistics, delays, wastage, and highly fragmented marketing chains often with six to ten intermediaries that weaken farmers incentives to improve quality. High delivery costs increase the burden of traffics as they are imposed on the final product price. India's international transportation costs are 20-30 per cent higher than those faced by other countries. No value addition, broken marketing linkages and low productivity reduces the profit share that goes to the growers.

Support activities support primary activities and other support activities. They are handled by the organization's staff's functions and include.

a) Procurement- purchasing of raw materials, supplies and other consumable items as well

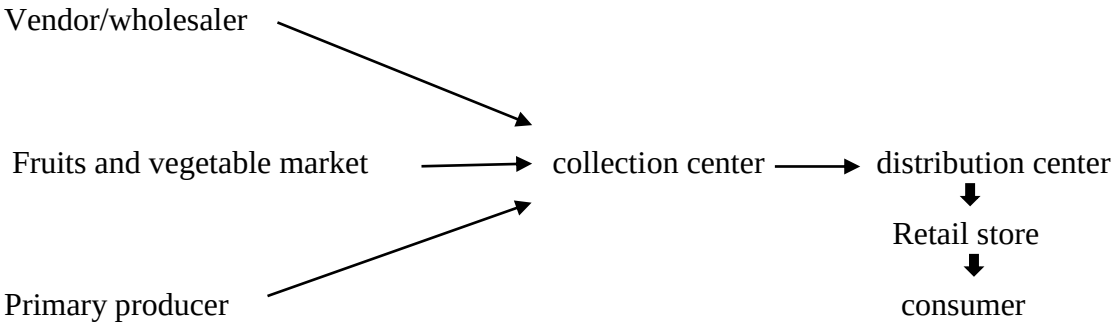
b) Technology development- know –how, procedures and technological inputs needed in every value chain activity.

c) Human resource management- selection, promotion and placement; appraisal;

rewards; Management development; and labor employee relations; and

d) Firm infrastructure- general management, planning, finance, accounting, legal, government affairs and quality management.

### 1.8.1 Value Chain Flow




### 1.8.2 Value Chain Phases

Our analysis reveals the following findings with respect to workforce development and upgrading in this sector. The main stages of the horticultural value chain are as follows:

**1. Inputs:** elements needed for production, such as seeds, fertilizers, agrochemicals, farm equipment, and irrigation equipment.

**2. Production for export:** includes the production of fruit and vegetables and all processing related to the growth and harvesting of the produce, such as planting, weeding, spraying, and picking.

**3. Packing and cold storage:** grading, washing, trimming, chopping, mixing, packing, and labelling are all processes that may occur in this packing stage of the value chain. Once the produce is ready for transport, it is blast chilled and placed in cold storage units ready for export.

**4. Processed fruit and vegetables:** it includes the dried, frozen, preserved, juices, and pulps. Many of these processes add value to the raw product by increasing the shelf life of the fruit and vegetables.

**5. Distribution and marketing:** the produce is distributed to different channels; including supermarkets, small scale retailers, wholesalers, and food services.

Due to the fragile and perishable nature of the product, this industry requires a high degree of coordination between the different actors along the chain and each stage

requires a strong emphasis on workforce development to drive both productivity and upgrading, logistics and transportation are key supporting activities in the global fruit and vegetable value chain. These functions ensure the perishable product reaches its 7 destinations in good condition. Cool storage units are used throughout the chain to keep the produce fresh, and both air and sea freighting supported by the cold chain are key elements to ensure timely delivery.

## 1.9 COMPANY OVERVIEW

The BAIF Development Research Foundation is a charitable organisation based in Urali Kanchan near Pune in Maharashtra, India, that pioneers agricultural development. It was founded in 1967 by Manibhai Desai as the Bharatiya Agro Industries Foundation. BAIF has been a pioneer in cross breeding of high yielding European cattle such as Holstein Friesian and Jersey with the sturdy Indian breeds such as Gir from Gujarat. Later BAIF expanded the scope of activities to include animal health, nutrition, afforestation wasteland development, and tribal development.

In 1997, the organization received the Adivasi Seva Sanstha award from the State Government of Maharashtra.

BAIF is a parent organisation for a youth organisation in Maharashtra, named as Nirman. VAPCOL (Vasundhara Agri-Horti Producer Co. Ltd.) is a multi-state former organisation registered as a producer company under company's Act. VAPCOL is a for profit organisation promoted by BAIF. Currently VAPCOL has its independent website, Facebook page and sales through distribution network as well as online sales. BAIF's scientific initiatives have helped to transform rural India.

The BAIF Programmes are in the form of a nexus between various rural development initiatives and a strong applied research programme.

- **Sustainable Rural Development** through generating **rural livelihoods** and through **management of natural resources**: this is achieved through various core thematic area programmes and various **cross-cutting components**.
- **Research for Development:** to study contexts and develop appropriate technologies and solutions for rural development.

  BAIF Team also works on various **emerging thematic areas** and these programmes are then mainstreamed.

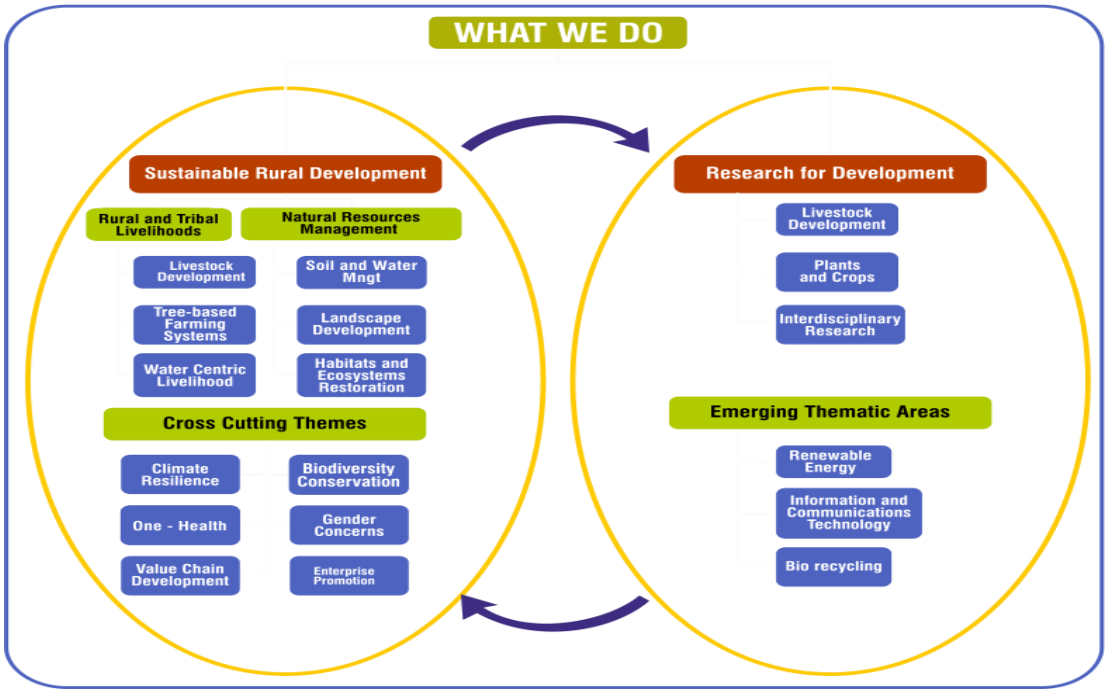



**Figure 1.4 BAIF working process**

### 1.9.1 Baif's Programme Coverage States

Reaches out to more than 53,93,223 families in 1,64,835 villages in the following states spanning over 318 districts

- Maharashtra
- Gujarat
- Karnataka
- Madhya Pradesh
- Rajasthan
- Andhra Pradesh
- Telangana
- Uttar Pradesh
- Bihar
- Uttarakhand
- Haryana
- Odisha
- Jharkhand

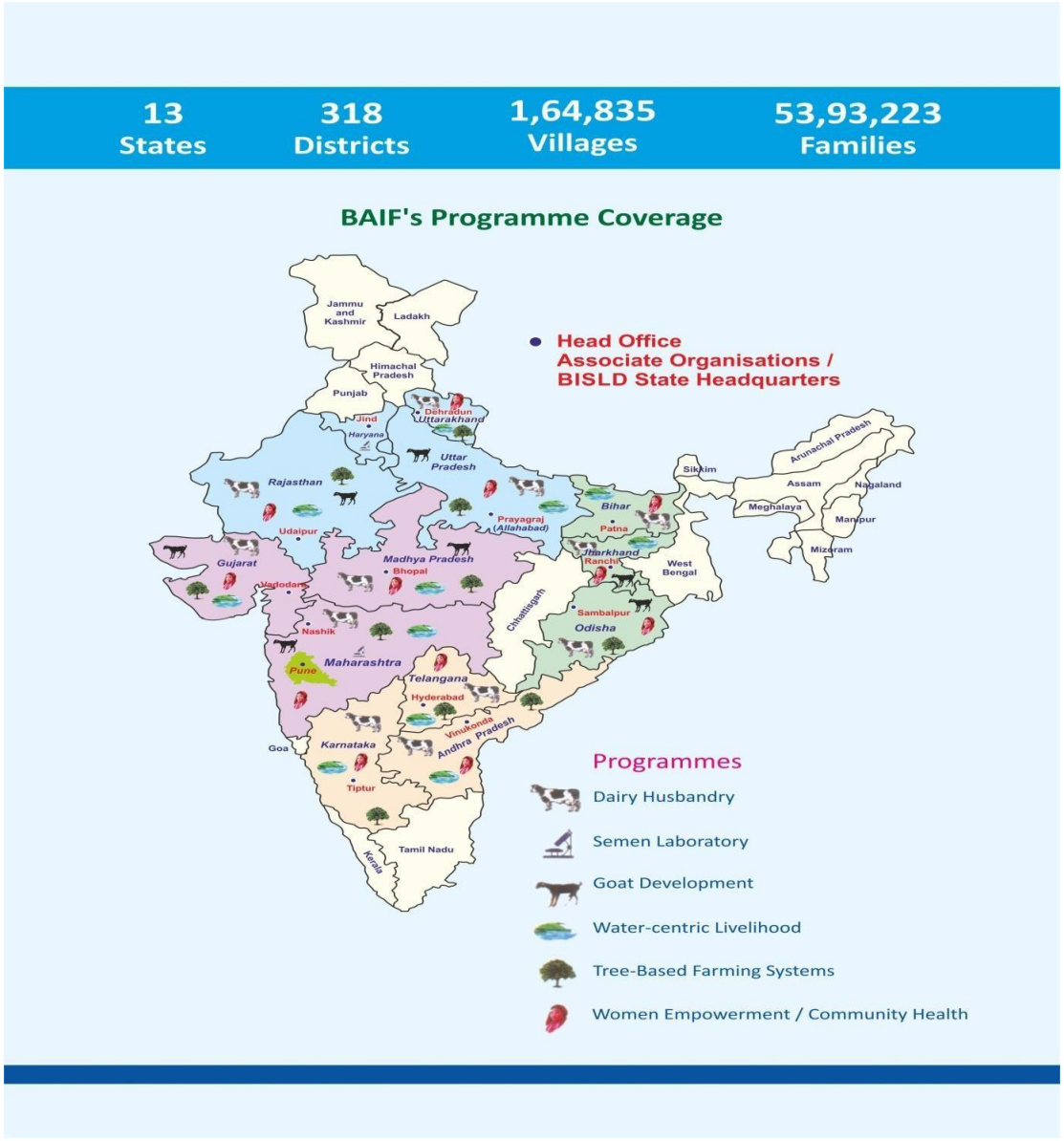



**Figure 1.5 BAIF Programme coverage area in India**

## 1.10 SCOPE OF VEGETABLE CULTIVATION

- In a vast country like India there is an immense scope of vegetable cultivation as mentioned below.
- Sufficient technical manpower is available in our country and apart from it, there are many unemployed agriculture graduate and post graduate degree holders.
- There is varying agro-climatic condition temperate to subtropical, in different regions of the country and variety of vegetables can be grown all over the country.
- There is abundance of rainfall and no scarcity of water for vegetable cultivation in many parts of the country.

- There is large scope for area expansion under vegetable crops.
- There is high potential for high value low volume crops as purchasing power of population in India is very high.
- The export potential of vegetable crops is extremely high.
- Comparatively vegetables are short duration, therefore, a greater number of crops can be taken from unit area in a year.

## 1.11 IMPORTANCE/SCOPE OF THE STUDY

The area coverage of this study was Kaprada taluka, Valsad District in Gujarat state, with specific focus on Tomato, turmeric, bottle gourd and sweet-potato crops. These vegetable crops account for the major proportion of vegetable production in the villages and pass through several marketing stages especially selected. The value chain management commodity approach to market study was used to analyse marketing chains of vegetables, the study emphasized different roles of market players in the marketing channel, market direction, price formulation and bargaining power of producers, traders buying and selling strategies, storage, transport, information, involved in vegetable marketing and factors determining supply of vegetable in the villages was the focus of the study. The study will provide us the factors responsible for the poor production and marketing facilities in the hills which can be compared with the plain area to suggest a model to overcome these problems.

## 1.12 CONCEPT OF THE PROBLEM

The marketing of vegetable produce in hills is more complicated. Most of the farmers are marginal and small, largely illiterate, unorganized, and scattered. They do not have time, knowledge, skills, and access to marketing of their produce. Further, they do not have strong bargaining strength due to their financial conditions, and they are forced to sell their marketable surpluses immediately after the harvest at a low price.

## 1.13 SIGNIFICANCE OF THE STUDY

This study generated important information useful to formulate vegetable marketing development programs and guidelines for interventions that would improve efficiency of the vegetable marketing system in the hills and uplift the economic conditions of the area. The potential users of the results of this study

would be farmers, traders, and policy makers, governmental and nongovernmental organization, who want to introduce interventions in vegetable marketing system. Furthermore, this study could be used as source material for further study.

## 1.14 OBJECTIVES OF THE STUDY

- Identify existing distribution channel of selected vegetable
- Developing a business plan focusing on procurement, value addition and vegetable distribution network
- Developing and refining various processes of the vegetable value chain
- Facilitating sales of vegetables for the respective cooperative

# 2. REVIEW OF LITERATURE

**Thakur *et al*. (1997)** It is the quantity of produce left out after meeting farmers‟ consumption and utilization requirements for kind payments and other obligations (gifts, donation, charity, etc).

**Gereffi *et al*. (2001)** where firms move into new but often related industries. This occurs when firms apply the competence acquired in a particular function of a chain (e.g., competence in producing inputs, or in export marketing) to a new sector. For example, a company or a cluster of companies that specialize in graphite materials could move from making golf clubs and tennis rackets to racing bikes, fishing rods, and even airplane components.

**Somayajulu and Venkataramana (2002)** in a study on "Issues and Challenges for Organized Retailing in India" found that the most important challenge that the organized retail industry was facing in India was competition from the unorganized sector. In contrast, larger organized retailers had substantially higher expenses to meet and yet had to keep prices low enough to be able to compete with the traditional sector of real estate (as high as 40- 70 per cent of the total investment), much bigger premises, cost of providing facilities such as air conditioning and backup power supply, high cost of capital, high levels of taxation, *etc*. These forced the larger modern formats on wafer-thin margins. They also found that the retail margins for fast moving consumer goods in India ranged between 10- 12 per cent, while it was in the range of 25- 30 per cent in many other countries.

**Gondalia *et al.* (2008)** conducted a study on problems of regulated markets in Gujarat. They found that major constrains felt by farmers in regulated market were shortage of labour, delay on market process, lack of insurance facilities, lack of grading facilities and lack of market finance. The constrains of traders were inadequate storage facilities, irregular power supply and inadequate transport facilities.

**Rao *et al.* (2008)** studied various marketing channels in existence in marketing of kharif and rabi sorghum grain. Marketing cost, marketing margin and marketing efficiency in Mahbubnagar district of Andhra Pradesh were worked out. Most of the farmers expressed improper weighing, high commission charges and low prices as the problems. Collusion among the traders in marketing of grain was perceived as major problem.

**Reddy *et al.* (2010)** worked on value chains and retailing of fresh vegetables and fruits in Andhra Pradesh. The study indicated that in case of vertical distribution in the traditional value chain, 19.8 percent of the gross value goes to farmers, 11.3 percent goes to village merchant, 14.3 percent goes to middlemen, 15.3 percent goes to wholesalers, 12.0 percent goes to commission agent, 16.8 percent goes to rythu bazars and the remaining 10.8 percent goes to traditional retailers. It also indicated that the number of players was less in modern retailing than in traditional retailing, where farmers rank first in the percent of total gross value followed by middlemen, wholesalers, whereas in modern retailing, supermarkets received much of the total gross value.

**Trienekens (2011)** conducted a study on framework for developing country value chain analysis made up of three components. The first consists of identifying major constrains for value chain upgrading market access restrictions, weak infrastructures, lacking resources and institutional voids. In the second component three elements of a value chain are define: value addition, horizontal and vertical chain-network structure and value chain governance mechanism. Finally, upgrading options are defined in value addition, including the search for markets, the value chain network structure and governance form of the chain.

**Aparna and Hanumanthaiah (2012)** in their study on "Are Supermarket Supply Channels More Efficient than Traditional Market Channels?" revealed that the net price received by vegetable producers associated with supermarket was high for the two selected vegetables (brinjal and bhindi) and the marketing cost incurred at the producer's level was higher in the traditional channels than in supermarket channel. The marketing efficiency was found to be higher in supermarket channel than in the traditional channel which implies that super marketing system works with a higher efficiency in view of the perishable nature of the crop.

**Aparna and Hanumanthaiah (2013)** Conducted a study on organized retailing of vegetables, a farmer retailer and consumer perspective in India. The marketing cost and marketing margin on three vegetables i.e., Tomato, Brinjal and Bhindi was calculated. The study was conducted to assess the impact of the upcoming supermarkets on farmers, consumers and three different marketing channels in Hyderabad city. The net price received by the farmers was more in supermarket channel for all the three vegetables when compared to traditional channel farmers. Marketing cost and

marketing margin was higher in traditional channels. Price spread was highest in supermarket channel-I for all the vegetables when compared to traditional channels. Marketing efficiency of supermarket channel was higher than the traditional channels.

**Dastagiri *et al.* (2013)** estimated marketing efficiency by following Acharya's modified method for different vegetable crops in the study area. The results showed that for most of the crops the marketing efficiency was more than one. The highest marketing efficiency channels were found to be producer to consumer. Hence, government policies should promote direct marketing models for horticultural marketing.

**Hanumanthaiah *et al.* (2013)** found that in case of most of the commodities marketing cost, marketing margins, transport cost and labour charges were found adversely affecting the marketing efficiency. Whereas, open market price, volume of the produce handled and net price received by the producer were found to improve the marketing efficiency.

**Mazhar *et al.* (2019**) conducted study on Improving Vegetable Value Chains in Pakistan for Sustainable Livelihood of Farming Communities. This study was conducted to examine options to improve the livelihood of these communities, particularly women and youth, on a sustainable basis. This included structured interviews with value chain participants; data validation by focus group discussions and a consultative workshop; and data analysis. The findings confirmed the inconsistent quality and quantity of vegetables supplied to the market. If addressed, this represents significant potential for improved financial returns for small-scale vegetable producers and other value chain participants.

# 3. RESEARCH METHODOLOGY

The study entitled "A study of value chain of vegetable produces in villages under Mandva and Karjun cooperative (Kaprada) in south Gujarat" was carried out from January to April 2021 (120 days). The title was provided by BAIF Development Research Foundation following specific objectives of the survey are Identify existing distribution channel of selected vegetable, developing a business plan focusing on procurement, value addition and vegetable distribution network, Developing and refining various processes of the vegetable value chain, facilitating sales of vegetables for the respective cooperative.

The research includes interviewing respondents through Schedule based on the mentioned objectives and analysing their responses with the help of suitable statistical tools. The research has covered the selected villages of the Valsad district of Gujarat. The surveyed areas were recommended by BAIF Development Research Foundation.

## 3.1 SAMPLING PROCEDURE

Sampling is a method of selecting a fraction of the population in such a way that the selected sample represents the population. For the selection of the sample, a three-stage sampling method namely, selection of district, selection of tahsils and selection of respondents was followed.

### 3.1.1 Selection of Respondents

As the sampling technique is purposive sampling, a subset of the population to represent the whole population or to inform about (social) processes that are meaningful beyond the cases, individuals or sites studies.

### 3.1.2 Selection of District

The total number of districts in Gujarat is 33 out of total district Valsad district was selected purposively for present study. It was so because Valsad district is one of the major vegetables growing district of Gujarat and have a rich availability of vegetables. From Valsad district one taluka namely, Kaprada was selected purposively. From the selected taluka 20 villages were selected randomly.

### 3.1.3 Selection of Villages

From Kaparada taluka two co-operatives namely, Karjun and Mandva were selected purposively. From each co-operative 10 villages were selected randomly.

Area of study is Kaparada block of Valsad district and 20 villages which are covered in study are:

**Table 3.1 Villages of Cooperatives**

| **Karjun Cooperative** | **Mandva Cooperative** |
|---|---|
| Karjun | Kaprada |
| Lavkar | Mandva |
| Niloshi | Varoli |
| Varvat | Chand vegan |
| Aamba Jungle | Jogvel |
| Dabhadi | Panas |
| Khadkvad | Balchondi |
| Karchond | Moti Palsan |
| Dabkhal | Tukvada |
| Amdha | Suliya |

### 3.1.4 Selection of Vegetables Growers

A list of vegetables growers from each selected village was prepared. Thereafter from each selected village five vegetable growers were selected randomly, thus a total of 100 respondents were selected.

## 3.2 SOURCE OF DATA

Primary as well as secondary data were collected for meeting the stipulated objectives of the study.

### 3.2.1 Primary Data

The primary data forms an important component of any research investigation. The data pertaining to the source of seed materials, fertilizers and plant protection chemicals, finance, technology, information, etc., along with production technology, volume and marketing were collected from the farmers. Information pertaining to marketing channel, costs and margins, facilities provided, and value addition was collected from market intermediaries such as wholesalers and retailers, through primary survey. Data was also collected regarding the constraints faced by the farmers and the market intermediaries. Primary data was collected using a pre-structured questionnaire encompassing several variables which would help to arrive at the conclusions. The data was collected randomly covering most of the villages.

### 3.2.2 Secondary Data

Present study focuses on the aspects of marketing of the vegetables in the study area. Hence, the secondary data required was collected from Department of Horticulture, www.indiastat.com,National Horticulture Mission data base, journals, published reports, websites, related govt. departments, research stations, records of the marketing societies like NCMS and the farmer's market.

## 3.3 SAMPLING DESIGN

Data has been collected both from farmer and marketing functionaries. Multistage sampling was used for sampling procedure.

### 3.3.1 Selection of Market

Nana Pondha is one of the largest vegetable markets of Kaparada block and being patronized by vegetables growers of Kaparada block and nearer area were selected.

### 3.3.2 Marketing Channels

A marketing channel is a set or activities necessary to transfer the ownership of goods. Direct channel: when a producer and ultimate consumer deal directly with each other. Indirect channel: when intermediaries are inserted between the producer and consumers and perform numerous channel functions.

## 3.4 SAMPLING METHOD

The non-probability sampling method was used throughout the survey to collect information from the respondents.

### 3.4.1 Non-probability Sampling Method

The Non - probability Sampling was used to collect the data, in which the researcher depends upon the personal judgment than rely on the probable selection of samples. Non-probability sampling represents a group of sampling techniques that help researchers to select units from a population that they are interested in studying. Collectively, these units form the sample that the researcher studies. A core characteristic of non-probability sampling techniques is that samples are selected based on the subjective judgment of the researcher, rather than random selection (i.e., probabilistic methods), which is the cornerstone of probability sampling techniques.

## 3.5 ANALYTICAL TOOLS

The following statistical tools were used to analyse the data:

### 3.5.1 Mean

The arithmetic mean is the sum of scores divided by their number. This measure was used to categorize the dependent and independent variables into low, medium and high categories.

### 3.5.2 Frequency

This measure was used to know the distribution pattern of respondents variable wise.

### 3.5.3 Percentage

This measure was used for simple comparisons.

### 3.5.4 Tabular Analysis

The data collected was presented in tabular form to facilitate easy comparison. The simple tabular analysis was employed for analysis of costs and returns of the farmers, marketing costs and margins of the intermediaries and the constraints faced by farmers and intermediaries for the data gathered by the opinion survey method. The data collected was subjected to statistical analysis.

## 3.6 SELECTION OF MARKETING FUNCTIONARIES

### 3.6.1 Selection of Wholesalers

Out of total number of wholesalers available in the nana pondha, ten wholesalers were selected randomly.

### 3.6.2 Selection of Retailers

Ten retailers were selected randomly from the list of retailers obtained from the wholesaler.

## 3.7 LIMITATION OF THE STUDY

- The results have been totally derived from the respondent's answers. There might be a difference between the actual and projected results.
- The sample size for the survey will be limited to 100 respondents, which might not be representing the whole scenario.
- Uneven availability and limited amount of secondary data from various sources will be another limitation of the study.
- There may be bias in response of respondent due to several reasons such as social prestige, prejudices, and suspicion etc.
- A small amount of bias on part of the researchers may also exist. Given all these constraints, an effort will made to minimize all limitations and to make this study more meaningful and objective

# 4. RESULT AND DISCUSSION

## 4.1 AREA OF THE STUDY

Gujarat has been consistently clocking impressive agricultural growth rates. This has been possible because the government has focused on improving not only irrigation, quality of seeds and power but also subsidiary sectors like horticulture. The growth of the horticulture sector has resulted not only in increased fruits and vegetable production but has also provided a boost to the overall agriculture-economy of the state. The horticulture sector in Gujarat has achieved a remarkable success during last four decades due to collective efforts of government organizations, non-government organization and the fruits and vegetable producers.

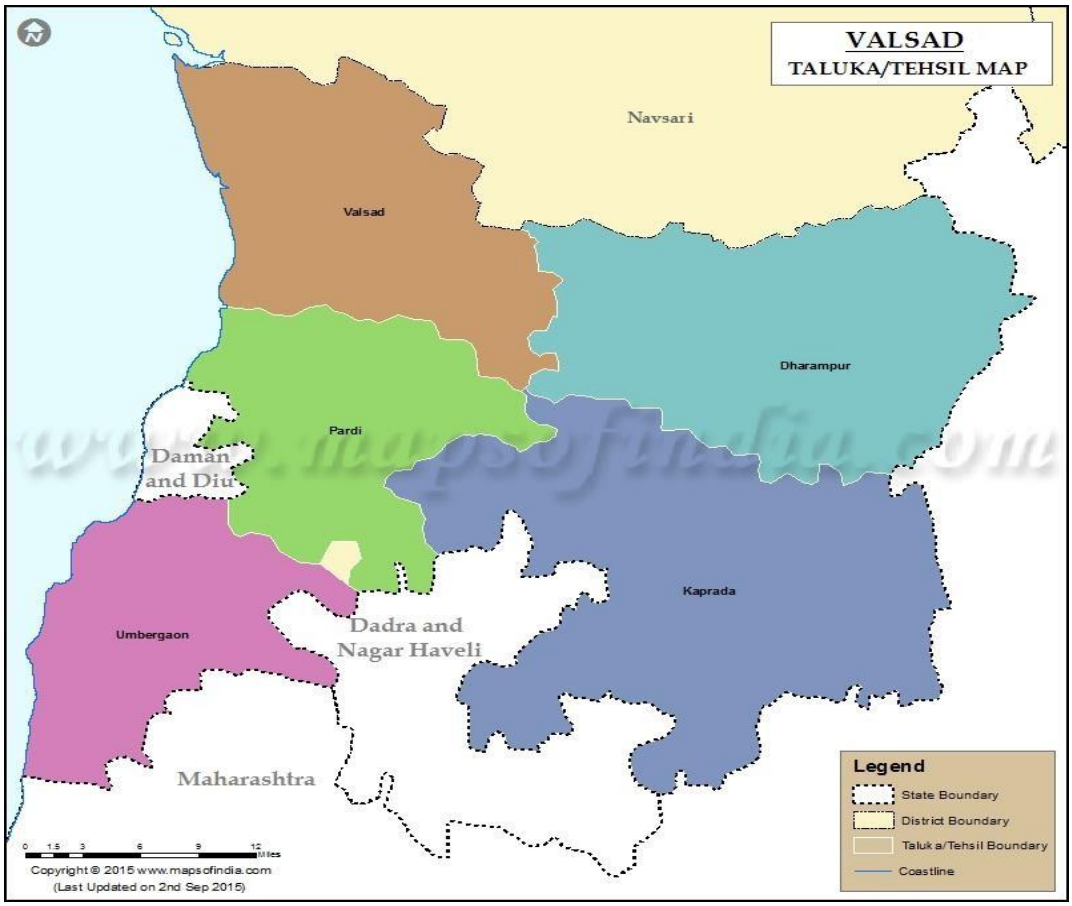



**Figure 4.1 Valsad Tehsil Map**

**Source: Valsad Tehsil Map, Valsad Taluka ( www.mapsofindia.com )**

## 4.2 LAND HOLDING

**Table 4.1 Land Holding of Farmers**

| Sr. No. | Types of Farmes | No. of Farmers |
|---|---|---|
| 1 | Marginal | 20 |
| 2 | Small | 50 |
| 3 | Medium | 20 |
| 4 | Large | 10 |

The total land holding of the farmers is a crucial factor on which the consumption of agriculture inputs and the risk-taking ability depends. As per the survey result 50 per cent of small farmers were having land between 1 to 2 Ha, followed by 20 per cent medium and marginal each having land between 2 to 4 Ha, remaining 10 per cent large farmer.

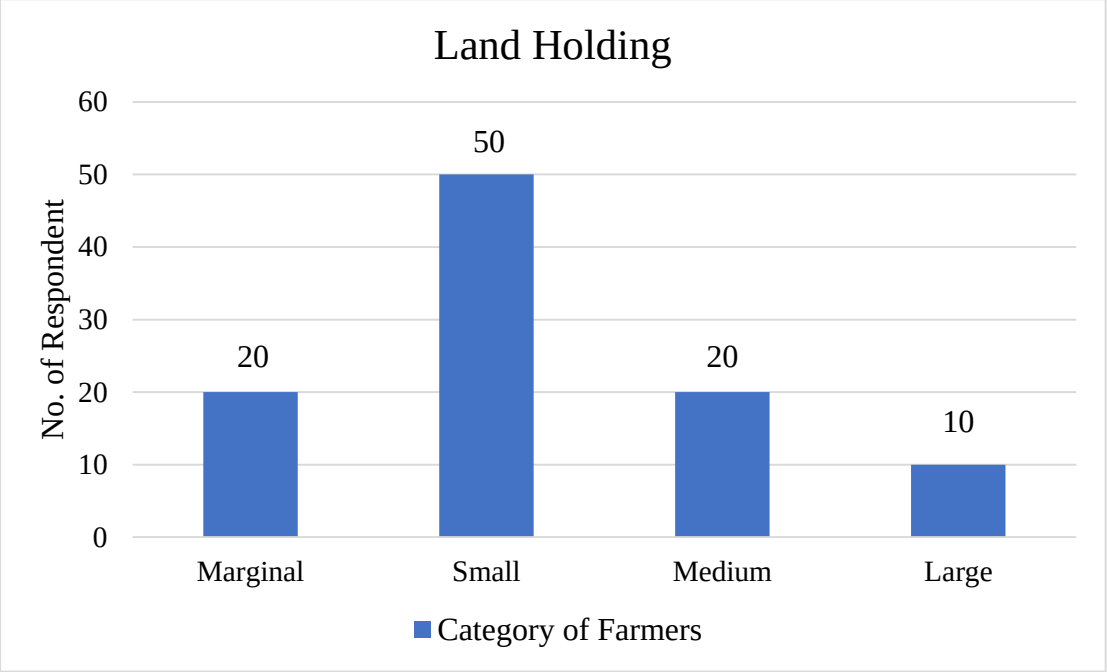



**Figure 4.2 Land Holding of Respondent**

## 4.3 TYPES OF VEGETABLE GROW BY FARMERS

**Table 4.2 Type of vegetables grow by farmers**

| Sr. No. | Type of Vegetables | No. of Farmers | Percentage (%) |
|---|---|---|---|
| 1 | Sweet Potato | 20 | 20 |
| 2 | Tomato | 20 | 20 |
| 3 | Turmeric | 15 | 15 |
| 4 | Bottle Guard | 20 | 20 |
| 5 | All four Vegetables | 25 | 25 |

In survey area farmers grow many vegetables but in summer season most of farmers grow these four vegetables namely, sweet potato, Tomato, Turmeric, Bottle guard. From Table 4.2 and Figure 4.3 sweet potato, tomato and bottle gourd had 20 percent farmers each while all four vegetables together had 25 percent.

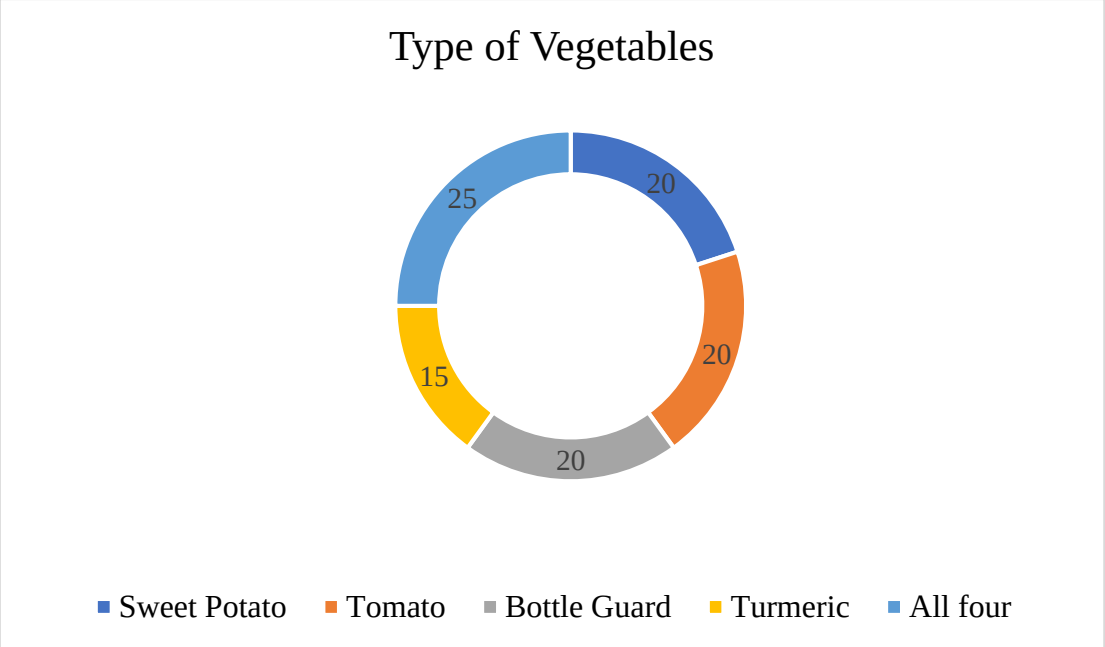


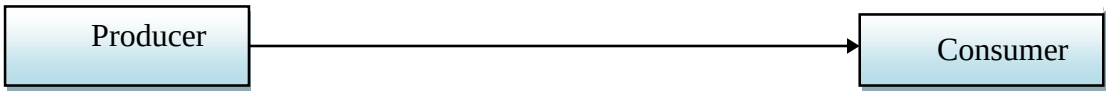

**Figure 4.3 Type of Vegetables Grow by Respondents**

## 4.4 MARKETING CHANNEL FOLLOWED BY UNORGANIZED MARKET

Channel of distribution is the path through which products move from the place of producer to ultimate consumption. It is the connecting link between the producer and the consumer to sell the products. It creates the utilities of time, place and possession by bringing the gap between the point of production and the point of consumption. During the study only four channels were prevailing in Nana Pondha market. These channels are discussed under sub heads below.

### 4.4.1 Channel-1 (Producer-Consumer)

In this channel commodity moved from producer to consumer directly. It was the shorter possible channel with two players in the chain. The price received by the farmers was as more as compared to other channels because in this channel there are no intermediaries. In this channel marketing efficiency was more due to direct transaction between producer and consumer.

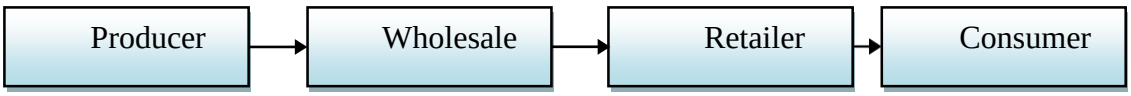



### Channel-2 (Producer-Retailer-Consumers)

In this channel the commodity moved from producer to retailer and then it reaches to consumer. The price received by the farmers was less than the price received by the farmer was less than the price received by the farmer in channel-1, due to the presence of intermediary. The marketing cost and margin were involved in this channel.


### Channel-3 (Producer-Wholesalers- Retailer-Consumers)

In this channel the commodity moved from producer to wholesaler and then retailer and then it reaches to consumer. The price received by the farmer is less than the price received by the farmer in channel-1 and channel-2, is due to the presence of intermediaries. In this channel, marketing cost and margin are high and marketing efficiency is relatively poor.




**Channel-4 (Producer-Commission Agent-Retailer-Consumers)**

In this channel the commodity moved from producer to commission agent and the retailer and then it reached to consumer. The price received by the farmer was less than the price received by the farmer in channel-1, channel-2 and channel-3, due to presence of more intermediaries. In this channel, marketing cost and margin was very high and marketing efficiency was very poor because of high price charged by the commission agent.


**4.4.2 Function of Distribution Channel**

**1) Sorting:** The middleman collects goods from various sources. These goods are different in quality, size, nature, colour etc. The intermediaries sort these goods into homogeneous groups based on the size, quality, colour, nature etc.

**2) Accumulation:** This function involves accumulation of goods into larger homogeneous stocks, which maintain continuous flow of supply.

**3) Allocation:** Allocation involves breaking homogeneous stock into smaller marketable lots.

**4) Assorting:** Middlemen procure variety of goods from different sources and deliver them in combinations desired by the customers.

**5) Product promotion:** the middlemen advertise the product kept with them. They also do certain sales promotion activities like demonstration; special display etc. to increase the sale of products.

**6) Negotiation:** They negotiate and try to reach agreement on price and other terms of sale.

**7) Risk taking:** They bears the risk of changes in demand, damage in transit, theft, spoilage, destruction etc.

### 4.4.3 Importance of Channel Members

Many producers lack of financial services to carry out direct marketing; these direct marketing would require many producers to become middlemen for the to achieve mass-distribution economies.

The use of retailer or middlemen largely boils down to their greater efficiency in making goods available to target markets. Through their contacts, experience, specialization and scale of operation, middlemen usually offer the firm more than it can achieve on its own.

From the economic system's point of view the role of middlemen or a retailer is to transform the assortment of products made by producers into the assortments wanted by consumers, Producers make narrow assortment of products in large quantities, but consumer want broad assortments of products in small quantities. In the distribution channels, middlemen buy the large quantities of many producers and break them down into the smaller quantities and broader assortments wanted by consumers. Thus, middlemen play an important role in matching supply and demand.

## 4.5 DISTRIBUTION CHANNEL

**Table 4.3 Distribution Channels in Kaprada Tahsil**

| Sr. No. | Distribution Channel | No. of Respondent | Percentage |
|---|---|---|---|
| 1 | Channel-1 | 10 | 10 |
| 2 | Channel-2 | 60 | 60 |
| 3 | Channel-3 | 20 | 20 |
| 4 | Channel-4 | 10 | 10 |

Existing distribution channels are different channels in that intermediatory play vital role in marketing. In the survey area it was found that most of the farmers prefer channel-2 (60 per cent) followed by channel-3 and channel-4 (20 and 10 per cent).

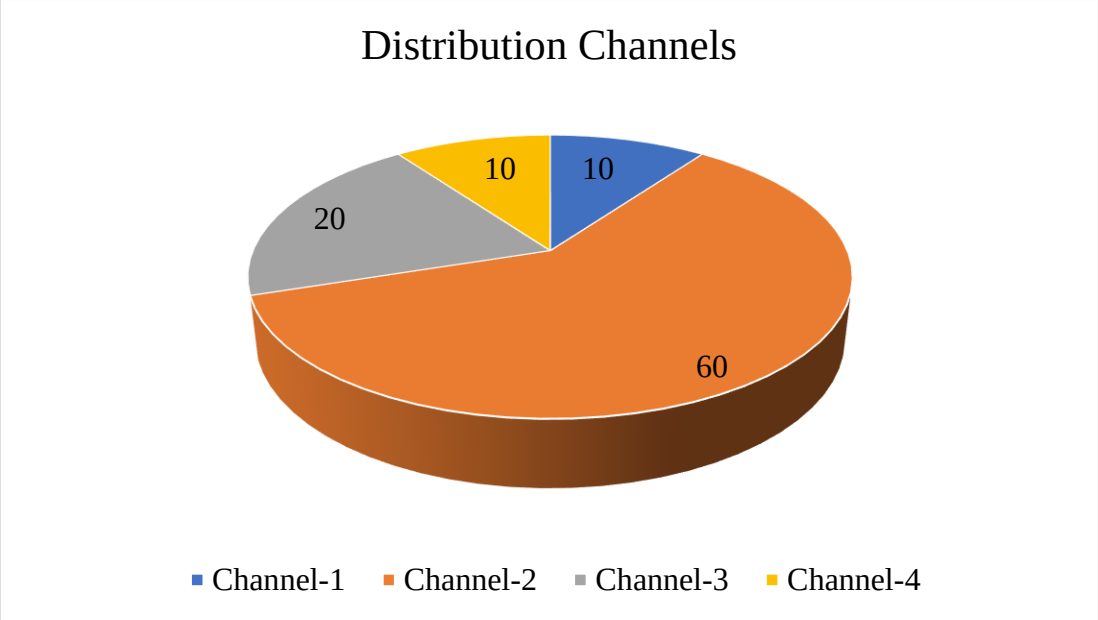



**Figure 4.4 Distribution Channel of respondent**

## 4.6 MARKET PLACE TO SELL PRODUCE

**Table 4.4 Market Place**

| Sr. No. | Market Place | No. of Farmers | Percentage (%) |
|---|---|---|---|
| 1 | Nana Pondha | 70 | 70 |
| 2 | Dharampur | 15 | 15 |
| 3 | Khergam | 10 | 10 |
| 4 | Nasik | 5 | 5 |

Vegetable is a perishable crop so, it cannot store for a long duration. In survey majority (70%) of farmers sell their produce in Nana pondha, followed by Dharampur, Khergam and Nasik represents 15, 10 and 5 percent, respectively.

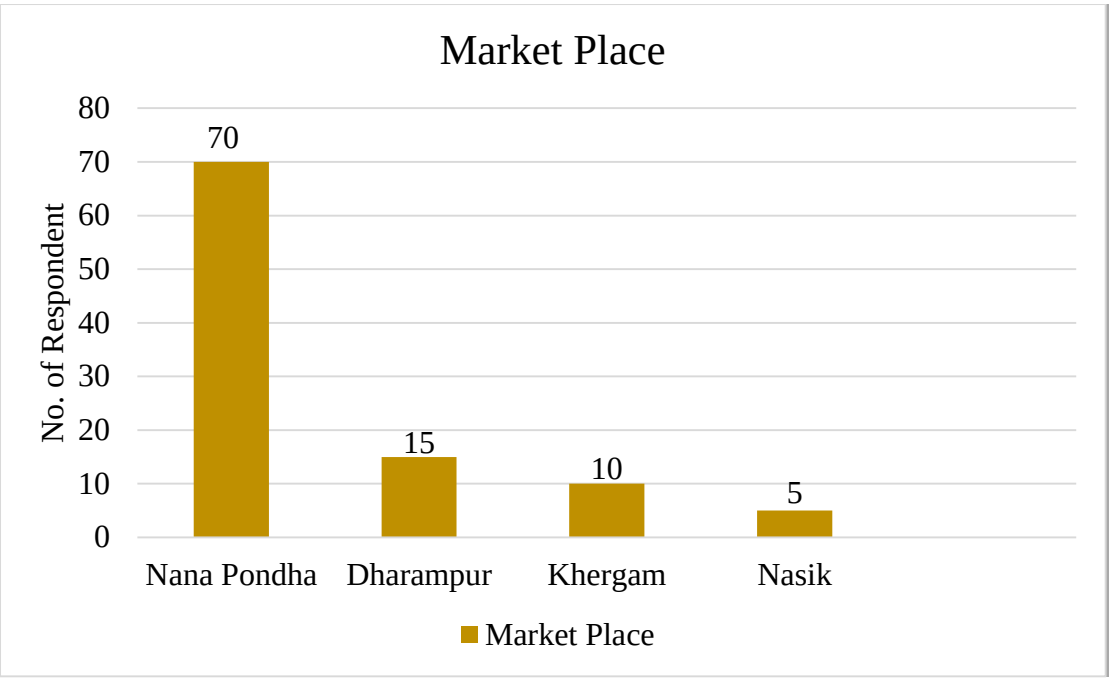



**Figure 4.5 Market Place of vegetables**

### 4.7 ESTIMATED PROJECT COST

**Location:** The project may be located anywhere in the country suitable either near the producing farms or consumer canters.

**Table 4.5 Estimated project cost**

| Sr. No. | Particular | Unit | Quit. | Rate (Rs.) | Amount (Rs. lakh) |
|---|---|---|---|---|---|
| 1 | Land | Acre | 0.5 | 500000.00 | 2.5 l |
| 2 | Land development | Sq. ft | 20000.00 | | 5 |
| 3 | Civil work | Sq. ft | 3850.00 | 600.00 | 23.10 |
| 4 | Plant and Machinery | | | | 40.23 |
| 5 | Miscellaneous Fixed Assets | | | | 2.00 |
| 6 | Preliminary and Preoperative Expenses | | | | 1.95 |
| | **Total** | | | | **74.18** |

## 4.8 MANPOWER REQUIRED FOR VEGETABLE PROCESSING UNIT

**Table 4.6 Manpower required for vegetable processing unit**

| **Particulars** | **Number** | **Salary (Rs. Per Month)** | **Total (Rs. lakh)** |
|---|---|---|---|
| Plant manager | 1 | 15000 | 1.80 |
| Manager-Technical | 1 | 10000 | 1.20 |
| Supervisor | 3 | 7000 | 2.52 |
| Accountant | 1 | 8000 | 0.96 |
| Electrician | 2 | 6000 | 1.44 |
| Peon | 1 | 5000 | 0.60 |
| Gourd | 2 | 5000 | 1.20 |
| **Total** | | | **9.72** |

## 4.9 TRANSPORTATION

All transportation vehicles must be suitable for the purpose, in good physical condition, dry (no dripping or standing water), well maintained and clean. Inspect all vehicles and containers for debris, soil and odours prior to loading.

Farmer---Collection centre---Distribution centre---Retail outlet---Consumer

In this channel, vegetables are purchased by the employees of a collection centre as per the indent under the supervision of a quality assessment in-charge. Quality standards for vegetables are defined in respect of their size, weight, colour and appearance. The standardized produce of each member farmer is pooled and sent to the distribution centre, where it is rechecked and categorized into three grades, viz. A (best), B (medium), C (low) based on its quality.

The packed material is then moved to retail outlets by operation team. Due to perishable nature of the produce, it is transported within 2-3 hours from a collection centre to the distribution centre from where it is distributed to retail outlets twice a day, at 7 am and 5 pm. The marketing cost, transportation cost and other labour charges involved to transport the produce from a collection centre to retail outlets are borne by the procuring agencies. From these retail outlets, the leftover stock is taken back to the

distribution centre backyard and is sold at low cost or dumped out. In the survey area all farmers used pickup and bike for transportation.

- Temperature is the single most important factor in maintaining quality after harvest.
- Refrigerated storage retards the following elements of deterioration in perishable crops: again, due to ripening, softening and textural and colour changes.
- Undesirable metabolic changes and respiratory heat production.
- Moisture loss resulting to wilting.
- Spoiling due to invasion by bacteria, fungi and yeast.
- Undesirable growth, such as sprouting of potatoes.

### 4.9.1 Distribution of Growers Based on Their Mode of Transportation of Vegetables

It was revealed from Table 4.6 that majority of growers i.e., 70 per cent respondents were found to be using pickup for transporting their vegetable produce at the collection centre of Veg Fresh. It was further revealed that Auto was found to be the second most preferred vehicle for growers for carrying vegetables in huge quantity. Some of the growers used to bring their vegetables by Bike and Tractors, who were coming from little, long distance.

**Table 4.7 Distribution of growers based on their mode of transportation of vegetables**

| Sr. No. | Transportation Mode | No. of Growers | Percentage (%) |
|---|---|---|---|
| 1 | Pickup | 70 | 70% |
| 2 | Auto | 10 | 10% |
| 3 | Bike | 10 | 10% |
| 4 | Tractor | 10 | 10% |

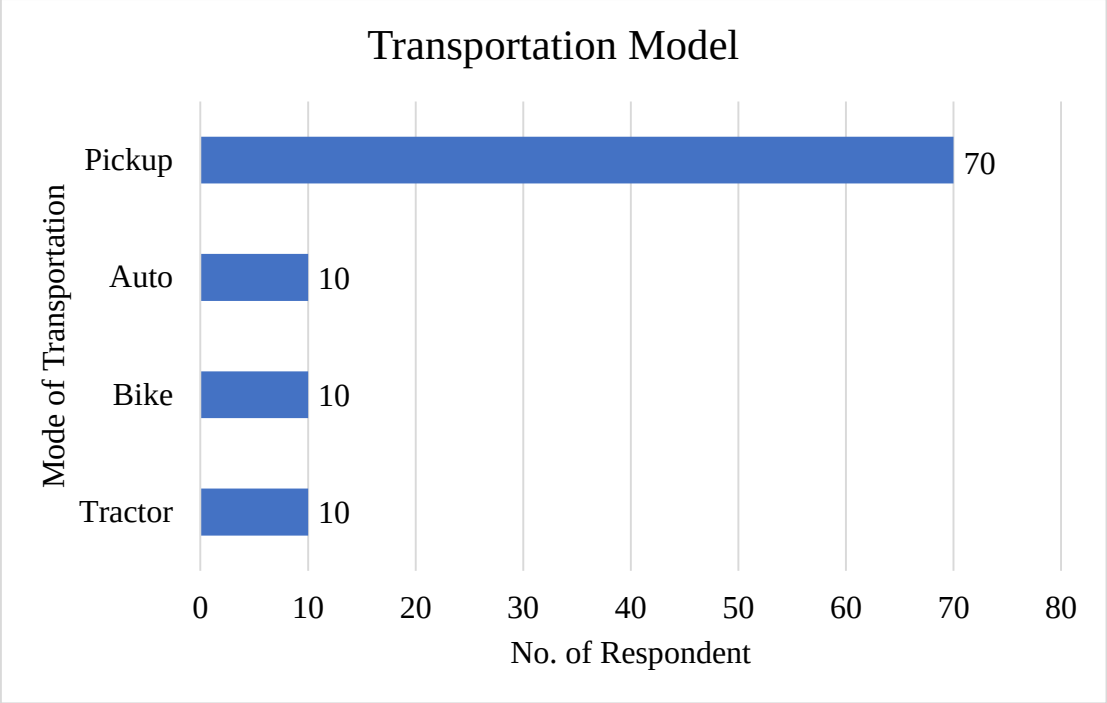



**Figure 4.6 Distribution of growers based on their mode of transportation**

### 4.9.2 Transportation Cost of Farm to Market

**Table 4.8 Transportation cost of different market**

| Sr. No. | Market Place | Transportation Cost (per 20 Kg) |
|---|---|---|
| 1 | Nana Pondha | 20 Rs. |
| 2 | Nasik | 50 Rs. |
| 3 | Dharampur | 30 Rs. |
| 4 | Khergam | 30 Rs. |

Transportation cost is most important factor that consider making business plan. Transportation of vegetables have reliable and comfortable because vegetable is a perishable crop, we have not store long duration. In the survey, most of the farmers sell their produce in Nana pondha market cost were 20 Rs/20Kg for all the vegetables. Followed by nasik market cost were 50 Rs/20 Kg, another Dharampur and Khergam cost were 30 Rs/20 Kg.

## 4.10 MARKETING COST, MARKETING EFFICIENCY AND PRICE SPREAD

Marketing cost, Marketing efficiency and Price spread of Tomato, Sweet potato and Bottle gourd under all the marketing channels prevailing in Nana Pondha market is estimated and presenting below.

### 4.10.1 Marketing cost, Marketing efficiency and Price Spread of Tomato (per quintal).

Total marketing cost incurred on marketing of tomato was highest in channel-3 (276 Rs/qt) followed by channel-4 (241 Rs/qt), channel-2 (175 Rs/qt) and lowest in channel-1 (110 Rs/qt). The price spread was observed highest in channel-3 (25.06%) and lowest in channel-1 (11.76%). It means channel-3 has inefficient and most efficient channel has channel-1.

Marketing efficiency has been worked out and presented in Table 4.9 for tomato since the marketing cost and price spread in channel-3 was higher, the marketing efficiency was very low for channel-3. For channel-1 due to saving of marketing in absence of market intermediaries and relatively low consumer's price, the marketing efficiency was higher. It was highest for channel-1 (8.50%) and lowest in channel-3 (3.98%). Thus, channel-1 is mor efficient than all other channels in case of marketing of tomato in Nana Pondha market.

**Table 4.9 Marketing cost, Marketing efficiency and Price spread for Tomato**

| Sr. No. | Particular | C-1 | C-2 | C-3 | C-4 |
|---|---|---|---|---|---|
| 1 | Farmer's price (Rs/qt) | 825 | 825 | 825 | 825 |
| 2 | Marketing cost (Rs/qt) | | | | |
| 2.1 | Producer's | | | | |
| | Loading & unloading | 25 | 25 | 25 | 25 |
| | Transportation | 40 | 50 | 40 | 45 |
| | Others | 45 | 40 | 40 | 35 |
| | Sub total | 110 | 115 | 115 | 105 |
| 2.2 | Commission agent | | | | |

| | | | | | |
|---|---|---|---|---|---|
| | Commission (6%) | | | | 49 |
| | Sub total | | | | 49 |
| 2.3 | Wholesaler | | | | |
| | Grading & Packaging | | | 30 | |
| | Loading charges | | | 15 | |
| | Commission charges | | | 5 | |
| | Transportation cost | | | 30 | |
| | Market fee | | | 6 | |
| | Storage & Spoilage | | | 15 | |
| | Sub total | | | 101 | |
| 2.4 | Retailer | | | | |
| | Weighing charges | | 15 | 15 | 15 |
| | Packing | | 20 | 20 | 20 |
| | Market fee | | 06 | 06 | 06 |
| | Commission | | 04 | 04 | 04 |
| | Storage & Spoilage | | 15 | 15 | 15 |
| | Sub total | | 60 | 60 | 60 |
| 2.5 | Grand total | 110 | 175 | 276 | 241 |
| **2.6** | **Consumer's price** | **935** | **1000** | **1101** | **1039** |
| **2.7** | **Price spread** | **11.76** | **17.5** | **25.06** | **20.59** |
| **2.8** | **Marketing efficiency** | **8.5** | **5.71** | **3.98** | **4.85** |

### 4.10.2 Marketing Cost, Marketing Efficiency and Price Spread of Sweet Potato (per quintal)

**Table 4.10 Marketing cost, Marketing efficiency and Price spread for sweet potato**

| Sr. No. | Particular | C-1 | C-2 | C-3 | C-4 |
|---|---|---|---|---|---|
| 1 | Farmer's price (Rs/qt) | 2300 | 2300 | 2300 | 2300 |
| 2 | Marketing cost (Rs/qt) | | | | |
| 2.1 | Producer's | | | | |
| | Loading & unloading | 20 | 20 | 20 | 20 |
| | Transportation | 30 | 30 | 25 | 40 |
| | Others | 50 | 45 | 35 | 35 |
| | Sub total | 100 | 95 | 80 | 95 |
| 2.2 | Commission agent | | | | |
| | Commission (6%) | | | | 27 |
| | Sub total | | | | 27 |
| 2.3 | Wholesaler | | | | |
| | Grading & Packaging | | | 15 | |
| | Loading charges | | | 10 | |
| | Commission charges | | | 05 | |
| | Transportation cost | | | 15 | |
| | Market fee | | | 06 | |
| | Storage & Spoilage | | | 06 | |
| | Sub total | | | 57 | |
| 2.4 | Retailer | | | | |
| | Weighing charges | | 12 | 12 | 12 |
| | Packing | | 10 | 10 | 10 |
| | Market fee | | 06 | 06 | 06 |
| | Commission | | 05 | 05 | 05 |
| | Storage & Spoilage | | 08 | 08 | 08 |
| | Sub total | | 41 | 41 | 41 |
| 2.5 | Grand total | 100 | 136 | 178 | 163 |
| **2.6** | **Consumer's price** | **2400** | **2436** | **2478** | **2463** |
| **2.7** | **Price spread** | **4.16** | **5.58** | **7.18** | **6.61** |
| **2.8** | **Marketing efficiency** | **24** | **17.91** | **13.92** | **15.11** |

Total highest marketing cost was observed in channel-3 (178 Rs/qt) and lowest in channel-1 (100 Rs/qt). Price spread was highest in channel-3 (7.18%) and lowest in channel-1 (4.16%) for sweet potato in nana Pondha market.

Marketing efficiency has been worked out and presented in Table 4.10 for sweet potato. Since the marketing cost and price spread in channel-3 was higher, the market efficiency was very low for channel-3. In channel-1, due to absence of market intermediaries and relatively low consumer's price, the marketing efficiency was found to be higher as compared to other channels. Thus channel-1 is more sufficient than other channels of marketing of sweet potato in Nana Pondha market.

### 4.10.3 Marketing Cost, Marketing Efficiency and Price Spread of Bottle gourd (per quintal)

It was observed that the total marketing cost incurred by highest in channel-3 (237 Rs/qt) and lowest in channel-1 (110 Rs/qt). The price spread was highest for chnnel-3 (47.21 %) and lowest in channel-1 (29.33 %) for Bottle gourd in Nana Pondha market.

Marketing efficiency has been worked out and presented in Table 4.11 for Bottle gourd. Since the marketing cost and price spread in channel-3 was highest, the marketing efficiency was very low for channel-3. The saving of marketing cost due to absence of market intermediaries and relatively low consumer's price, the marketing efficiency was highest in channel-1. The highest marketing efficiency was observed in channel-1 (3.40) and lowest in channel-3 (2.11). Thus channel-1 has more efficient than all other channel of marketing of Nana Pondha market.

**Table 4.11 Marketing cost, Marketing efficiency and Price spread for Bottle gourd**

| | **Particular** | **C-1** | **C-2** | **C-3** | **C-4** |
|---|---|---|---|---|---|
| 1 | Farmer's price (Rs/qt) | 265 | 265 | 265 | 265 |
| 2 | Marketing cost (Rs/qt) | | | | |
| 2.1 | Producer's | | | | |
| | Loading & unloading | 25 | 25 | 25 | 25 |
| | Transportation | 40 | 40 | 35 | 40 |
| | Others | 45 | 40 | 30 | 35 |
| | Sub total | 110 | 95 | 90 | 100 |
| 2.2 | Commission agent | | | | |
| | Commission (6%) | | | | 42 |
| | Sub total | | | | 42 |
| 2.3 | Wholesaler | | | | |
| | Grading & Packaging | | | 25 | |
| | Loading charges | | | 10 | |
| | Commission charges | | | 05 | |
| | Transportation cost | | | 30 | |
| | Market fee | | | 06 | |
| | Storage & Spoilage | | | 10 | |
| | Sub total | | | 96 | |
| 2.4 | Retailer | | | | |
| | Weighing charges | | 15 | 15 | 15 |
| | Packing | | 15 | 15 | 15 |
| | Market fee | | 06 | 06 | 06 |
| | Commission | | 05 | 05 | 05 |
| | Storage & Spoilage | | 10 | 10 | 10 |
| | Sub total | | 51 | 51 | 51 |
| 2.5 | Grand total | 110 | 146 | 237 | 193 |
| **2.6** | **Consumer's price** | **375** | **411** | **502** | **458** |
| **2.7** | **Price spread** | **29.33** | **35.52** | **47.21** | **42.13** |
| **2.8** | **Marketing efficiency** | **3.40** | **2.81** | **2.11** | **2.37** |

## 4.11 VEGETABLES LOSS PERCENTAGE OCCURRED IN STORAGE

As vegetables have their little shelf life and it takes a time gap from its collection point to arrival point which affects its freshness. Everyone wants to purchase fresh and good quality vegetables, hence consumer coming in stores used to select vegetables by their own and during selection the vegetables also get damaged which results in wastage. Also, it is not compulsory that all the vegetable arrived, must sell out in same day and the left over were somehow deteriorate, which finally results in dumping.

**Table 4.12 Vegetable loss percentage occurred in stores**

| Sr. No. | Name of Vegetables | Loss Percentage |
|---|---|---|
| 1 | Tomato | 1.9% |
| 2 | Brinjal | 1.8% |
| 3 | Cucumber | 1% |
| 4 | Bitter gourd | 1% |
| 5 | Chilly | 1% |
| 6 | Beans | 1% |
| 7 | Okra | 1% |
| 8 | Turmeric | 1.5% |
| 9 | Bottle gourd | 1.5% |
| 10 | Sweet Potato | 0.5% |

## 4.12 POST HARVEST LOSSES AND VALUE ADDITION

In the primary survey, it was observed that average post-harvest loss in all the vegetables varied between 6-10 percent. Almost 95 percent of the farmers are performing value addition at field level by sorting and grading. As per the data of surveyed farmers, the Table 4.13 shows extent of post-harvest losses which varies from crop to crop as mentioned below:

**Table 4.13 Post Harvest losses of major Vegetables**

| Sr. No. | Crop Name | Post-Harvest Loss (%) |
|---|---|---|
| 1 | Tomato | 9.4 |
| 2 | Brinjal | 9.8 |
| 3 | Cucumber | 6.9 |
| 4 | Bitter gourd | 6.3 |
| 5 | Chilly | 10 |
| 6 | Beans | 6.7 |
| 7 | Okra | 8.2 |
| 8 | Turmeric | 8.5 |
| 9 | Bottle gourd | 6.5 |
| 10 | Sweet Potato | 9.5 |

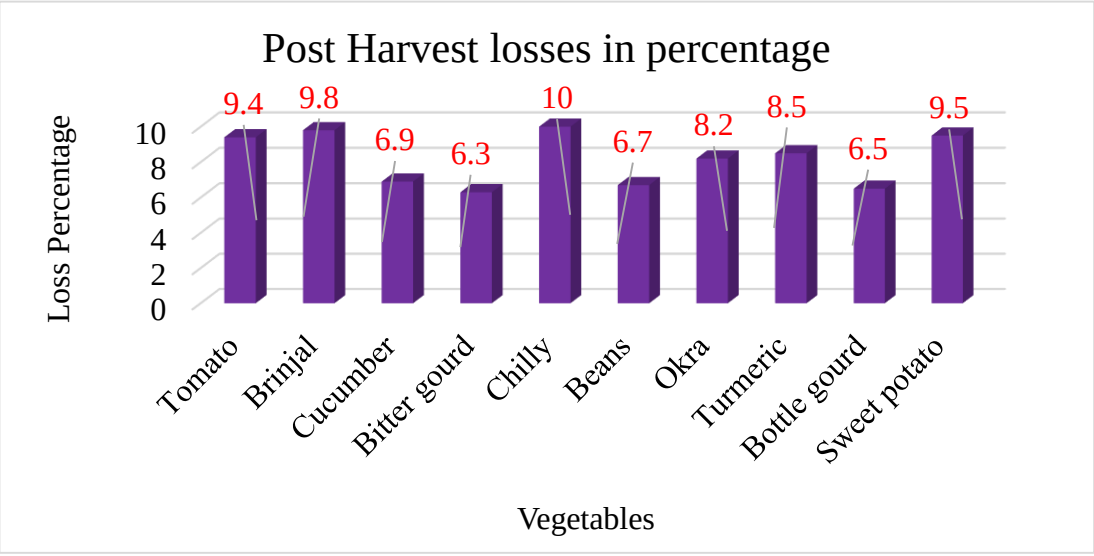



**Figure 4.7 Post Harvest losses of different vegetables**

## 4.13 QUALITY RELATED

Fresh Veg maintain specific criteria to purchase vegetables from farmers, so that it can maintain its quality, but due to quality specification farmers have to suffer from some difficulties regarding shape, size, colour, bundling etc.

It was observed that 60 percent growers have problems in size of vegetables while shape & colour related problems are less in comparison to size.

## 4.14 MARKET INFORMATION

It was observed that most of the farmers feel trouble regarding the information, as Fresh Veg do not place regular demand for quantity of vegetables and growers do not get the idea that what quantity they have to supply at collection centre. Also due to some or other reasons the price of vegetables fluctuate every day and fresh veg place demand before a day, so sometime farmers bear losses and sometimes get benefited. So, both the cooperative has to provide some information to the farmers.

## 4.15 Various processes of vegetable value chain:

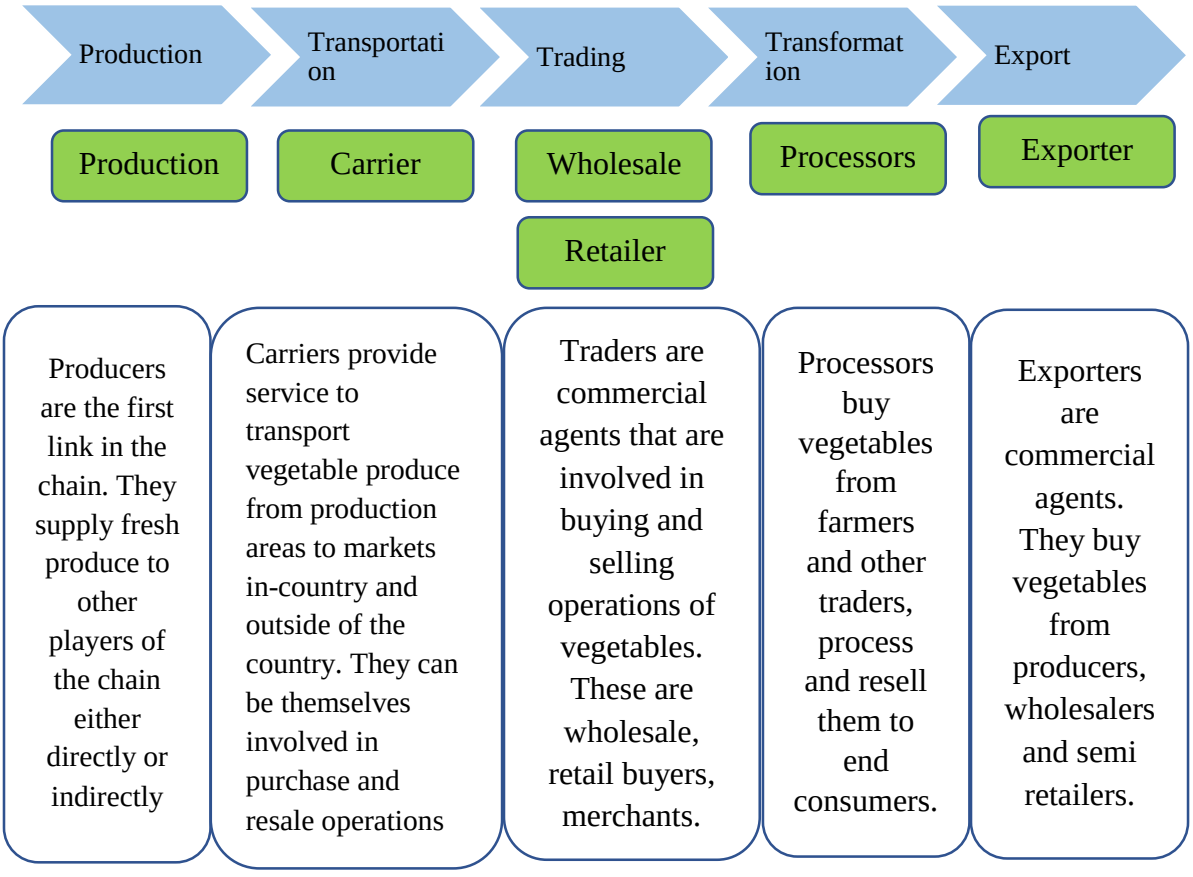



**Figure 4.8 Various processes of vegetable value chain**

### 4.15.1 Market Costs:

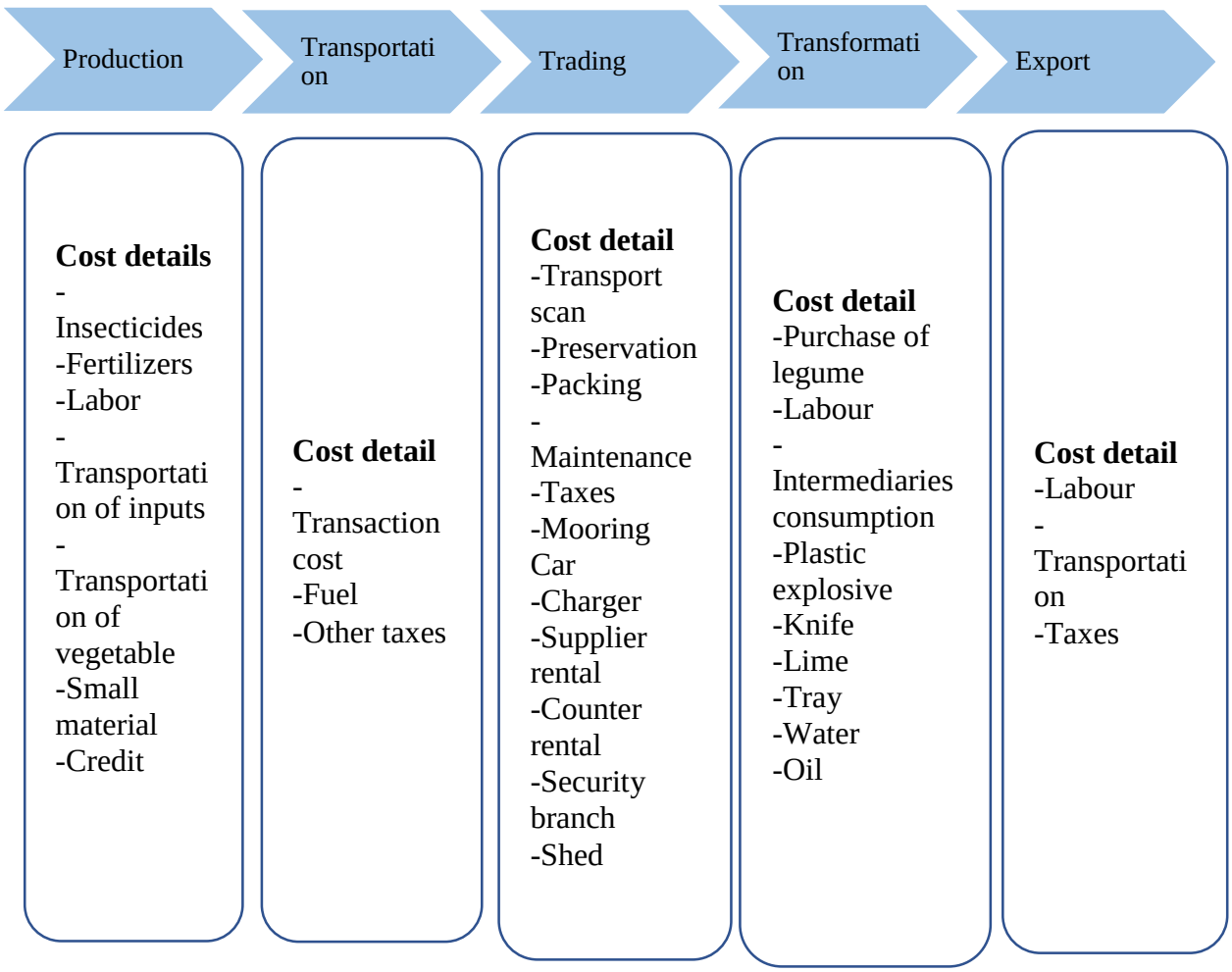



**Figure 4.9 Market cost of vegetables at various processes**

Every stage of the value chain involves costs that may correspond to the value added. Figure gives the details of the descriptions of these costs at each stage of the value chain. Costs are lower for transportation and export compared to other stages, such as production, trading and transformation. The latter seems to have a much higher cost expenditure. Costs include transportation; cleaning, grading, sorting and packing; loading; storage; marketplace maintenance; payment of gourds; withholding tax; counter rental; mooning; and other market taxes. The various costs supported by vegetable value chain actors are summarized in figure 4.9.

### 4.16 TECHNICAL SUPPORT

Capital building and training programs for package of practices on different aspects of vegetable cultivation, protected cultivation, seasonal training of crops is provided. Training is provided by local resource persons, experts from BAIF

development research foundation and Navsari agriculture university.

Monthly meetings are organized with district officials. Potential FIG (Farmer's interest group) members have been identified based on shared interest. Weekly meetings of the FIGs are organized and the function, issues and common interest are discussed. Subject matter of the training is based on all aspects like FIG/FPO formation, record keeping and account keeping, aggregation of product, joint purchasing of inputs and joint marketing of produce, cultivation aspects, product quality improvement and value addition activities. Farmers have perceived a positive impact of the initiative by increase in production and availability of inputs and decrease in post-harvest losses.

## 4.17 OPPORTUNITIES OF WHOLESALER AND RETAILER

- Increase the number of new networks
- Increase in road network
- The number of vegetables producers and area of cultivation was increasing
- Transportation facilities are increasing
- High demand of vegetables all over the year
- It was low investing and immediate income enterprise
- High potential for the promotion of agro based micro- enterprises industry

## 4.18 TO SUGGEST FUTURE SCOPE FOR IMPROVING THE VEGETABLE VALUE CHAIN

India is the world's largest producer of many fruits and vegetables but there still exist huge gap between per capita demand and supply due to enormous waste during post-harvest storage and handling. This is caused by improper bagging without crating, lack of temperature-controlled vehicles, unavailability of cold chain facilities in various parts of country for preserving the produce, along with significant processing of the agricultural produce which results in immense losses to the nation. Hence a proper supply chain management in fruits and vegetables has to be improved in all the stages of the supply by adopting best global practices in storage, packaging, handling, transportation, value added service etc. to meet the country's demand of fruits and vegetables.

### 4.18.1 Pre-Harvest

- **Input procurement and Irrigation**
  - Establish linkages with providers for input services like dealers to farmers.
  - Empanelment of specialized companies for inputs like seeds, fertilizers, etc. to farmers.
  - Provision of borewell and pump set + linking the farmers with existing irrigation sources.
  - Linkage with micro financing institutions for provision of credit to producers.

### 4.18.2 Post-Harvest

- **Post-harvest storage and processing**
  - Provision of temperature control transit warehousing facility for farmers.
  - Provision of central processing center facility.
  - Common packaging facilities for market ready produce.

### 4.18.3 Marketing:

- **Marketing**
  - Facilitating transportation service to supply produce.
  - As per grade, size and color sell according and add value to get more price.
  - Provide daily updates of market like supply and demand and prices.

As per the survey important drawbacks of the current supply chain are high level of wastage, quality degradation, poor infrastructural facilities, and high cost. Government and private operators must join hands to improve the physical infrastructure, information sharing, and the service required for quality improvement of the supply chain.

# 5. SUMMARY AND CONCLUSIONS

The present study has made an attempt to A study of value chain of vegetable produces in villages under Mandva and Karjun cooperative (Kaprada) in south Gujarat. As Mandva and Karjun cooperative is in the farmer's mobilization stage, so the study was conducted by BAIF development research foundation which is acting as promotional organization for the social service. Objective of the study is identified existing distribution channel of selected vegetable, developing a business plan focusing on procurement, value addition and procurement of vegetable distribution network, developing and refining of various processes of vegetable value chain, facilitating sales of vegetables for the respective cooperative.

## 5.1 SUMMARY

- Average operational size of the surveyed farmer's area is around 1.5 Ha.
- The major source of irrigation is tube well.
- Production of sweet potato and cucumber is higher whereas productivity of tomatoes is quite high among all vegetables cultivated. Cucumber is cultivated in nearly majority of the total area taken into consideration for vegetable production.
- Post-harvest loss of sweet potato and brinjal are highest i.e., about 10%.
- Maximum growers (70%) use pickup to carry their vegetables at the APMC market.
- Majority farmers were use distribution channel-2 to sell their produce.
- Transportation cost of Nasik is higher as compared to other nearest market.
- Majority farmers are preferring Nana Pondha market for sell their produce.
- The loss percentage of vegetables during storage is highest in tomato and brinjal i.e., about 2%.
- Farmers are carrying their produce to market in loose packaging.
- Farmers feel trouble regarding the market information of demand and supply.
- Farmers have no value addition in fresh produce they directly sell in market.
- Due to quality specification farmers must suffer from some difficulties regarding shape, size, colour, bunding etc.
- Farmers purchase inputs from respective cooperative.
- Training to all the farmers has been provided on regular intervals.

- Retailers get profit (Rs 5/kg) from selling of sweet potato and (Rs 3/kg) from selling of tomato.
- Absence of Central Processing Centre (CPC).
- Non-availability of storage facility for short term storage.
- Growers get profit of 30 per cent on tomato, cucumber and bottle gourd on selling them in other market which comparatively higher than Nana Pondha market.
- Major problem faced by farmer is marketing.

## 5.2 CONCLUSION

Fresh produce market has immense influence on the socio-economic conditions. The existing supply chain is not effective. All the stakeholders have to join hands to improve the supply chain to take produce from farmers to consumers. This would not only improve the economic and social status of consumers, but also facilitates the consumers to get quality produce at economical rates. The intermediaries and all the stakeholders in the supply chain benefit from the improved supply chain infrastructure. In a country like India, where majority of population lives in rural areas, Government has to join hands with private players in building infrastructure which require huge investment uses like roads and communication technologies.

There are four types of distribution channels were found in marketing of sweet potato, bottle gourd, tomato and turmeric. These are: channel-1 (producer-consumer), channel-2 (producer-retailer-consumer), channel-3 (producer-wholesaler-retailer-consumer) and channel-4 (producer-commission agent-wholesaler-retailer-consumer).

The major constraints faced by farmer is marketing of vegetables as majority farmers sell their produce at Nana Pondha market because in other market were transportation cost was higher. The study area were farmers have no value addition accept sorting and grading. In tomato and brinjal maximum loss was in storage further sweet potato and brinjal were observed to have greater post-harvest loss. Channel-2 is most preferred channel by farmers in Kaprada area.

Vegetable value chain process is producer-transportation-trading-transformation-export. Where production and trading cost is higher as compared to other stage. In this process intermediary plays vital role and get more profit. So, farmer is aware about price, market, demand and supply then it is useful to farmer and consumer. The major constrains of wholesaler and retailers during the marketing of

vegetables in the study area were high competition in market among the wholesaler and retailers. The major opportunities for wholesaler and retailers were fast growing demand of vegetables and new markets.

Farmers are keen to participate and learn latest package of practices realizing its advantage. Continuous efforts and timely training of farmers have helped in percolation of scientific methods of cultivation to a remarkable level. Practical training provided on field has helped in improved knowledge of scientific farming techniques. Farmers are participating in groups for learning and applying these techniques.

Today, the organisation is in search of the competitive edge over the competitors to survive in the market. The performance of the procurement and marketing (supply chain) is a key factor in the success of retail chain. The Indian retail cannot be competitive until the supply chain is made integrated, efficient and customer centric. For inclusive development of the entire process from production to marketing, emphasis must be given mainly on timely procurement of inputs and availability of product for market. To facilitate this entire chain of process i.e., linkage of farmers with financial institutions, collection centre and technical guidance need to be improved.

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# ANNEXURE

**1) Interview schedule for vegetable buyer (Retailer)**

Name:

Address:

1) which vegetables are you selling now?

2) what is your per day selling capacity?

3) what do you do for the addition of value on selling product in your shop?

Cleaning ☐

Grading ☐

Packaging ☐

Processing ☐

4) which market channel do you follow?

Farmers- collection centre-wholesaler-Retailer-consumer ☐

Farmers-collection centre- Retailer- consumer ☐

Farmers- Retailer- consumer ☐

Farmers- consumer ☐

5) what is marketing cost of one-kg product of major vegetables?

vegetables weighing Transportation and management packaging Load-unload

Total cost ☐

Tomato ☐

Turmeric ☐

Sweet potato ☐

Bottle gourd ☐

6) what is buying price, Loss, Margin and selling price of one kg product of vegetables?

| Vegetables | Buying Price | Loss | Margin | Selling Price |
|---|---|---|---|---|
| Tomato | | | | |
| Turmeric | | | | |
| Sweet potato | | | | |
| Bottle gourd | | | | |

7) what is the source of market information?

Phone ☐

News paper ☐

Direct contact ☐

Websites ☐

8) what is source of business skill?

AO own experiences ☐

NGOs district cooperative ☐

9) what is the source of finance for your business?

Bank loan ☐

own income ☐

subsidy borrowing in the village ☐

**2) Interview schedule for vegetable producers (farmers)**

Name:

Address:

1) what is the source of income?

Vegetables ☐

livestock ☐

employment ☐

Business ☐

2) what vegetable you use to grow?

3) what is per acre production cost of vegetables?

| Vegetables | Seed | Chemicals | Labour | Other Cost |
|---|---|---|---|---|
| Tomato | | | | |
| Turmeric | | | | |
| Sweet Potato | | | | |
| Bottle Gourd | | | | |

4) what is processing cost of vegetables?

| Vegetables | Grading &Sorting | Packaging | Transportation | Total |
|---|---|---|---|---|
| Tomato | | | | |
| Turmeric | | | | |
| Sweet Potato | | | | |
| Bottle Gourd | | | | |

5) what is the post-harvest loss of vegetables?

| Vegetables | Loss (%) |
|---|---|
| Tomato | |
| Turmeric | |
| Sweet Potato | |
| Bottle Gourd | |

6) what is the source of finance for your business?

Bank loan ☐

own income ☐

borrowing in the village ☐

7) what is the source of technical information?

AO ☐

KVKs ☐

Kishan mela ☐

news paper ☐

8) what is the source of market information?

Phone ☐

news paper ☐

Govt. websites ☐

9) which market channel follow?

Farmers – consumer ☐

Farmers-retailer–consumer ☐

Farmers-wholesaler-retailer-consumer ☐

Farmers-collection centre-wholesaler-retailer-consumer ☐