Chapter III

Conceptual Frame Work and Methodology

3.1 Conceptual Framework

This chapter provides us the framework in which the study is carried out. It defines and explains the main concepts used in the study that include concepts, types of markets, market players, types of marketing channels, marketable surplus, determinants of marketable surplus, concept of price spread and market efficiency. Each of these concepts is explained in detail as follows.

3.1.1 Types of Markets

On the basis of competition markets are classified as perfect market and imperfect market. Perfect market is one where large number of buyers and sellers prevails. There must be one price for one standardised commodity is exchanged in the market. There should be no restriction on the movement of goods. In a perfect market all the potential sellers and buyers are aware of the prices at which transaction takes place and at that price the whole lot of a commodity is exchanged in that market. A market is imperfect when different prices are charged for one commodity at the same time. The buyers and sellers are not aware of each other’s intentions regarding price offers and also the quantities offered.

On the basis of time duration markets are classified as very short period, short period and long period market. Very short period market represents the limited time period during which the buying and selling is to complete. In a short period, market demand is always more than market supply. In a long period market demand always matches supply.

Vegetables and Fruits markets are very short period markets due to perishability nature. These markets also possess some features of perfect market and imperfect market. So it is a blend of both perfect and imperfect markets.
3.1.2 Market Stakeholders

Market stakeholders are those individuals who perform various marketing functions involved in purchase and sale of goods and move goods from producers to the consumers.

Wholesaler

A distributor or middleman is one who sells fruits and vegetable mainly to retailer or institutions, rather than to consumers.

Commission agent

Commission agent is one who solicits and procures commodity from potential producers on behalf of one or more consumers, usually against payment of a percentage of the realized sales revenue as commission.

Retailer

A retailer buys fruits and vegetable in large quantities from trader or commission agents either directly or through a wholesaler, and then sells all quantities to the general public or end user customers, usually in a shop, also called a store.

Consumer

Consumer is one who purchases goods and services for satisfying his needs. The major objective of the consumer is buying better quality goods at lower price. The consumer looks at marketing from the point of view of goods, their timely availability and the prices at which they are offered.

3.1.3 Marketing channels

Marketing channels are the alternative routes through which agricultural products move from producers to final consumers. Marketing channels varies from commodity to commodity and even for some commodity, channels varies with the type of farmer, producer, quantity of produce to be marketed, nature of the product, type of consumer demand, degree of regional specialization in production etc..

Marketing channels for agricultural commodities could be divided into different categories. They are

1) Producer – Consumer
2) Producer – Processor-- Wholesaler – Retailers -- Consumer
3) Producer – Primary Wholesaler – Processor – Retailer – Consumer
4) Producer – Retailer – Consumer
5) Producer – Primary Wholesaler – Retailers/Hawkers – Consumer
6) Producer – Village Trader / Local Assembler – Wholesaler – Retailer/Hawkers – Consumer
7) Producer – Procurement Centres – Retail Outlets – Consumer

The price received by the farmer in absolute terms as well as in terms of farmers' share in consumer’s price varies greatly from channel to channel.

3.1.4 Producers’ Surplus of Agricultural Commodities

Producer surplus of agricultural produce plays a significant role in developing countries. Producer surplus refers to the quantity which is actually made available to the non-producing population of the country. Surplus of agricultural commodities depends on family consumption, payment in kind, religious offers (priests, temples, etc), gift to relatives, field loss (damage), crop loss, transport loss, storage loss, reduction in weight due to loss of moisture.

However in particular the producer surplus is of two types.

1. Marketable surplus
2. Marketed surplus

(i) Marketable Surplus

Marketable surplus is that quantity of the produce which can be made available to the consumers of the country. It is the residual left with producer after meeting his requirements for family consumption farm needs for seeds, feed for cattle, payment to labour in kind, payment to servicemen like artisans-carpenter, blacksmith, potter and mechanic- payment to the landlord as rent, social and religious payments in kind.

Marketable surplus may be expressed as follows

\[ MS = P - C \]

Where \( MS \)=marketable surplus, \( P \)=total production, and \( C \)= total requirements.
(ii) Marketed Surplus

It is that quantity of the produce which the producer-farmer actually sells in the market irrespective of his requirements for family consumption, farm needs and other payments.

Baumol writes that there is only one term Marketable surplus. This may be defined subjectively or objectively. Subjectively the term marketable surplus refers to surplus available for sale with the producer-farmer after he has met his own genuine consumption requirements and the requirements of his family. Objectively the Marketable surplus is the total quantity of arrivals in the market out of the new crop.

The marketable surplus differs from region to region within the same region, from crop to crop. It is determined by the size of holding, production, price of the commodity, nature of the commodity, consumption habits and requirements of seed and feed.

In case of major food crops marketable surplus varies from 50 percent to 85 percent of the production. In case of plantation crops it is about 95 to 100 percent. In case of fruits and vegetables it varies from 85 to 100 percent. In case of other crops like cotton sugarcane etc., it is about 100 percent.

3.1.5 Marketing Costs

The marketing costs include costs incurred on weighing, loading, unloading, marketing fees and transportation charges, which were paid by the farmers and market functionaries per bag or quintal.

3.1.6 Marketing Margin

Marketing margin is the difference of the total payment and total receipts for a unit of the commodity by the middlemen. Three alternative measures of marketing margins are as follows.

(a) Absolute margin of the $i^{th}$ middleman

$$ A_{mi} = P_{Ri} - (P_{pi} + C_{mi}) $$

(b) Percentage margin of the $i^{th}$ middleman

$$ P_{mi} = \frac{P_{Ri} - (P_{pi} + C_{mi})}{P_{Ri}} \times 100 $$. 

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(c) Mark-up of the $i^{th}$ middleman

$$M_i = \frac{P_{R_i} - (P_{pi} + C_{mi})}{P_{pi}} \times 100$$

$A_{mi} = $ Absolute margin of $i^{th}$ middleman.

$P_{mi} = $ Percentage margin of $i^{th}$ middleman.

$P_{R_i} = $ Total sale value of good of $i^{th}$ middleman.

$P_{pi} = $ Total purchase value of good of $i^{th}$ middleman.

$C_{mi} = $ Costs incurred in marketing by $i^{th}$ middleman in the process of buying and selling.

3.1.7 Price Spread

The term price spread has been defined and understood differently according to its usage.

The term price spread means the difference between the price paid by the ultimate consumer and price received by the producer. The difference is often called farm retail spread or price spread.

Price spread includes marketing margin, costs of assembling, storage, transportation packing and handling charges, the margins earned or loss incurred in the process of marketing of vegetables.

3.1.8 Producer Share in Consumer Rupee

$$PS = \frac{P_f}{P_r} \times 100$$

Where,

$P_f$ is price received by the farmer,

$P_r$ is retail price (consumer price)

3.1.9 Marketing Efficiency

Marketing efficiency is the degree of market performance. It is the ratio of marketing output to marketing input. The following methods were used for measuring marketing efficiency.

a) Shepherd Formula

$$E = \frac{O}{I} \times 100$$

Where, $E$ is index of marketing efficiency
O is value added by the marketing system
I is cost + margin of market intermediaries

b) Acharya’s Modified Marketing Efficiency

MME = FP/(MC+MM)

Where MME is modified measure of marketing efficiency
FP is price received by farmers
MC is marketing cost
MM is marketing margin

c) Conventional Method

Value added by the marketing system / The total marketing cost

3.1.10 Farmer’s Net Price

This refers to the price that the farmer realizes after deducting the marketing costs from the sale price, which is the price that he receives from the market intermediaries to whom he sells his produce.

3.2 Methodology

In research methodology the general characteristics of the study area, the methods adopted in selecting the sample and the analytical techniques employed for analyzing the data are presented.

The study confined to Raithara Santhe and other marketing system Sri Jayachamarajendra vegetable market situated at kalasipalyam, Singenaagrahara (special) sub market for fruits, hoskur cross, Horticulture Producers’ Co-operative Marketing and Processing Society Limited (HOPCOMS), Bangalore in rural and urban districts of Karnataka state.

- Area of Study Bangalore markets for fruits and vegetables
- Data Source
  o Secondary source – reports, market office register, district at a glance, etc.
  o Primary source
    ▪ Sample
    ▪ Sample size
- Sampling technique
- Tools – structured qnr, semi-structured qnr, FGD, etc.
- Techniques for analysis
- Limitations

3.2.1 General Characteristics of the Study Area

The study was conducted in the Bangalore rural and Bangalore urban districts in Karnataka State.

3.2.1.1 Bangalore Urban District

The district is situated in the south eastern portion of Karnataka, comes under eastern dry zone. It lies between 12.31° to 12.54° north longitude and 77.22° to 77.52° west latitudes with a total geographical area of 2,208 square kilometres and with 5,055 hectare under forest cover. The district at present comprises of four taluks viz. Anekal, Bangalore South, Bangalore North and Bangalore west, 17 hoblies and 86 grampanchayats. There are 699 villages in the district. In this 668 are inhabited and 31 uninhabited villages. According to 2011 census report total population was 95,88,910 persons with sex ratio of 941 per thousand. Average density of population is 4378 per square kilometre. The literacy rate was found to be 88.48 percent and the per capita income at constant prices (2004-05) was Rs.95,663. The normal rainfall of the district is about 896 mm that is scanty and erratic, mostly received from southwest monsoons. The climate is generally dry with a temperature ranges from 24°C to 36°C. Though the district has witnessed significant industrial development in past few decades, the economy of the district particularly rural areas still depends on agriculture. An important feature of Bangalore urban district is declining cultivable land in agriculture. It has declined from 58,884 hectares in 2007-08 to 50,372 hectares in 2011-12. The important food crops are ragi, jowar, paddy, millets and pulses. Among non-food crops, oil seeds and mulberry deserve special mention. During 2011-12 area under cultivation was 53,132 hectares of land, 31,286 hectares of land (59%) under food crops and 21,846 hectares of land (41%) under non food crops. Bangalore urban district is also known for horticulture crops. The important horticulture crops are coconut, banana, mango, sappota, grapes, watermelon, papaya, potato, tomato, brinjal, beans, lemon, carrot and okra. Cultivable lands are mainly rain
fed and dry farming is the characteristic feature of the district. The irrigation potential of the district is quite low.

### 3.2.1.2 Bangalore Rural District

Bangalore Rural District is one of the 30 districts in Karnataka. It was formed in 1986, when Bangalore district was divided into Bangalore Rural and Bangalore (Urban). Bangalore rural district lies to the south east of Karnataka state. The district lies between the latitude parallel to 12.15° to 13.35° North and the longitude and meridians 77.05° to 78° east. Presently in Bangalore Rural district, there are 2 divisions, 4 Taluks, 17 Hoblis (cluster of villages), 951 inhabited and 101 uninhabited villages, 4 towns, and 98 Gram Panchayats. The district comprises of Devanahalli, Doddaballapura, Hoskote, and Nelamangala taluks. Chikkaballapur and Tunkur district lies to the North of this district. Bangalore urban lies to the south. Kolar district lies to the west and Tumkur, and Ramanagara districts lies to the east. The geographical area of the district is 3.02 per cent of the total area of the state and occupies 16th place in the state. There are 1052 villages in Bangalore rural district. All the villages come under the administration of village panchayath. According to the 2011 census, the total population of the district was, 9, 87,257 of which 5, 07,514 were males and 4, 79,743 were females. The sex ratio of the district was 945 per thousand. The population density of district was 377 persons per km which is above the state average 276 per square km. In Bangalore Rural district 21.93% of population belonging to the Scheduled Caste and 5.13% belonging to Scheduled Tribe. The literacy rate was found to be 67.2 per cent and the per capita income at constant price (2009-10) was Rs.57, 889. The normal rainfall of the district was 790 mm, which is scanty and irregular. The climate and soil conditions in all parts of the districts are quite conducive for crops. Cultivable land in agriculture is declining year by year. It has declined from 1, 34,060 hectares in 2007-08 to 1, 30,615 hectares in 2011-12.

The economy of the Bangalore rural district has two features. The traditional economy with its root in the primary sector mainly sericulture and the modern economy characterized by a dominance of the secondary sectors. The agriculture economy of the district is almost totally dependent on good seasonal conditions that are adequate and timely rainfall. Cultivable lands are mainly rain fed and dry farming is a characteristics feature of the district. The important food crops grown are ragi,
jowar, paddy, millets, and pulses. Among the non food crops oilseeds and mulberry
deserve a special mention. The Bangalore rural district is known for vegetable and
fruit production. Important vegetables grown are tomato, onion, chillies, brinjal,
beans, okra and potato. Important fruits grown are mango, banana, grapes, papaya,
pomegranate and lemon. In recent years cultivation of sunflower has also gained
considerable popularity in the district.

3.2.2 Description of the Selected Markets

Description of the markets covers the details such as geographical coverage,
infrastructure facilities and concentration of marketing intermediaries. The present
study confined to Raithara santhe, yelahanka, Bangalore and other marketing systems
like fruit and vegetable (special) APMC, Kalasipalyam, Singenaagrahara (special)
sub market for fruits, hoskur cross, Horticulture Producers’ Co-operative Marketing
and Processing Society Limited (HOPCOMS), Bangalore, Lalabagh, Bangalore.

3.2.2.1 Raithara Santhe

Karnataka is predominantly an agricultural state. According to 2011-12 report
in Karnataka state horticultural crops are grown in an area of 19.83 lakh hectares. An
analysis of the figures of production and utilization of horticultural crops indicates
wastage of about 30 to 40 percent. Studies also indicate that the farmers receive only
50 to 60 percent of the price paid by the consumers. In order to ensure reasonable
price both to the farmers and the consumers a marketing system without middlemen
needs to be established. Attempts have been made in Punjab, Andhra Pradesh and
Tamil Nadu states. The first Raithu bazaar was established in January, 1999 in
Andhra Pradesh. Similarly ‘Uluvar santhais’ are established in Tamil Nadu in
November, 1999. Against this background ‘Raithara Santhegalu’ was established in
March, 2002 at Yelahanka Bangalore in Karnataka. Raithara Santhe in local language
(Kannada) means farmer’s market. Yelahanka town is located 15 km from the centre
of Bangalore city. Raithara Santhe in Yelahanka occupies an area of 1.27 acre with
180 shops of 10ft X 8ft dimension each. The facilities like drinking water, storage for
the unsold fruits and vegetables, administrative office, boards for exhibiting prices,
parking space for vehicles, to maintain cleanliness connected floor, tar roads, toilets
have been provided. The electricity has also been provided for lightening the shops
and yard nearly 90 lakh of rupees have been spent for providing these facilities. The
main objective of the market are to establish farmer’s markets without middlemen, to provide necessary infrastructural facilities to enable the growers of fruit and vegetables to sell their produce directly to consumers, to provide an effective platform not only in terms of selling and buying but also in terms of grading, clearing, packing etc., to ensure reasonable price to the growers and to increase their bargaining power, and to make growers as effective and successful salesmen. At present 2000 farmers were the members of the market bringing their produce to sell. Fruit and vegetables mainly arrives from Bangalore rural i.e., Devanhalli, Doddaballapura, Hoskote, and Nelamangala taluks and from Bangalore urban i.e., from Bangalore north and Anekal taluks. Majority of the farmers bring their produce to the market early in the morning through mini truck and autos and the same is sold to the wholesale purchasers like BSF hostel, CRPF, Canteen owners, Street vendors and consumers according to the board price fixed by the marketing committee.

3.2.2.2 Alternative Marketing Systems

Other marketing systems include APMC present in Kalasipalya (Jayachamarajendra vegetable market), Singena agrahara, Hoskur cross fruit market and Horticulture Producers’ Co-operative Marketing and Processing Society Limited (HOPCOMS), Bangalore.

Fruit and Vegetable (Special) Agriculture Produce Marketing Committee, (APMC), Bangalore

To provide better marketing facilities for fruits and vegetables and also to ensure competitive price to the growers of fruits and vegetables Government of Karnataka established Fruit and vegetable (special) APMC, at Bangalore on 05.10.1994 order No: C.M.W./138/M.R.E.1989(1). This is the first step in the country to regulate the operations of fruits and vegetables. This market covers the area of Bangalore north, Bangalore south, Bangalore west and Anekal taluks.

Submarkets: - Three sub markets were established in Bangalore for marketing fruits and vegetables. They are

1. Byatrayanapura sub market at Bellary Hyderabad national highway
2. Singena agrahara sub market for fruits at Bangalore Hoskur national highway
3. Anekal sub market
**Market yard and sub yards:** - Sri Jayachamarajendra vegetable market situated at Kalasipalyam was declared as whole sale market yard for vegetables. The following market centres were declared as sub yards for marketing fruits and vegetables at Bangalore.

I. Hopcoms, Lalbagh, Bangalore
II. Rassell market
III. Malleswaram market
IV. Yashwanthpur market
V. Rajainagar shopping complexes
VI. Indiranagar shopping complexes
VII. Binny market sub yard for banana

Among these markets of APMC, Bangalore Sri Jayachamarajendra vegetable market of Kalasipalyam and Singena Agrahara sub market for fruits situated at Hoskur cross were chosen for the study.

(i) *Sri Jayachamarajendra Vegetable Market, Kalasipalyam, Bangalore.*

It is situated at Kalasipalyam and declared as the yard for wholesale marketing of vegetables. It has an area of 2.00 acre hired from Bruhath Bangalore Mahanagara Palike (BBMP). The arrivals of major vegetables are tomato, beans, brinjal, chilly, okra, bitter gourd, pumpkin, white radish, lemon, ridge gourd, snake gourd, tindora, cucumber, mangalore cucumber and carrot. Vegetables arrive mainly from Bangalore rural, Chikkaballapura, Doddaballapura, Nelamangala, magadi, Kolar in lorries, mini trucks and autos in the early hours of the day. The same will be sold through open auction and also on understanding between the farmers and traders. The purchaser of vegetables has to pay five percent market cess. No collection of market cess from farmers. There are 340 shops in the market yard. Shops have been allotted to the commission agents and wholesale traders on rental basis.

(ii) *Singenaagrahara (Special) Sub Market for Fruits, Hoskur Cross, Bangalore.*

Earlier the fruit market in Bangalore was situated at Gundopanath Street behind Krishnarajendra market. The place was congested without proper facilities for transportation, handling, etc. The unhygienic conditions in the market had its impact
on the quality of fruits. In this respect for a fast growing Bangalore city a well
developed fruit market was considered as necessary. In this context Singena agrahara
sub market for fruits was established in 2004. It is situated at Bangalore Hosur
National Highway – 7, huskur gate. It has developed in an area of 27.15 acre with
well connected road transport facilities from all parts of the city. The planned
expenditure of the market was 2371.00lakh rupees. It has 240 shops of A, B, C, D, E,
and F of different dimensions. Shops are distributed to the commission agents and
traders on lease cum sale basis. There are 482 license holders engaged in day to day
transaction.

The arrivals of major fruits are papaya, sapota, grapes, pineapple, moosambi,
pomegrate, mango and apple. The fruits arrives mainly from bangalore, ramanagara,
chennapatna, srinivasapura, kolara hiriyur, bijapura, shimoga of Karnataka and also
from states like Kerala, Andhra Pradesh, Chennai, Kashnir and Himachal pradesh.
Fruits arrive in Lorries and mini trucks in the early hours of the day. The same will
be sold through open auction. The purchaser of fruits has to pay five percent market
cess. The traders purchase fruits from commission agents and wholesalers and supply
to all district and taluk centers of Karnataka and also to states like Kerala, Chennai,
Mumbai and Poona.

Source of Income

There are two major sources of revenue to the market committee viz.

1. The market cess levied on agricultural produce brought, brought and / or sold
   in the market.

2. The license fee collected from various market functionaries like commission
   agents, traders, weighmen and other licenses.

Weighing Facility

Only the weigh men licensed by the market committee are permitted to weigh
the produce in the market yard and charges collected as prescribed by the market
committee in the Bye-laws.
Payment

Immediately after the weighment, the sellers are paid the value of the produce by the commission agents. The commission agents are permitted to deduct only the prescribed charges of commission as per Bye-law.

3.2.2.3 Horticulture Producers’ Co-operative Marketing and Processing Society Limited (HOPCOMS), Bangalore.

This is another important market chosen for the study. Horticulture Producers’ Co-operative Marketing and Processing Society Ltd. (HOPCOMS) was founded in 1959 under a name of Grape Growers Marketing and Processing Society, under the guidance of Dr. M.H. Mari Gowda, the then Director of the Department of Horticulture under the Indian Co-operative Society Act. The society started handling fruits and vegetables apart from grapes since 1965. The name of the society was changed as “The Bangalore Horticultural Producers Co-operative Marketing and Processing society Limited” (BHOPCOMS) and subsequently in 1987 it became HOPCOMS. The HOPCOMS was established with the principal objective of establishing a proper system for the marketing of fruits and vegetables, to benefit both the producers the consumers. Prior to the establishment of HOPCOMS, no proper system marketing of horticulture produce was in existence. Farmers were in the clutches of the middlemen and the whole system was benefited the middlemen neither the farmers nor the consumers.

Aims and objectives of HOPCOMS

The main objective of HOPCOMS is to promote and encourage the development of horticultural produces with following support.

(a) By training & providing technical advised on Horticultural crop.
(b) By providing inputs implements plants and grafts etc,
(c) Providing marketing facilities and organize the proper studies to members of HOPCOMS.
(d) Supply of Horticultural products to all major Factories, Hostels, Hospitals, Clubs, and Social functions etc.,
(e) Providing internal commodities exchange facilities to co-op.societies & Branches
Organizational set-up

The HOPCOMS is being run by a managing committee. All branches are headed by managers except in Bangalore city. In Bangalore separate divisions are constituted for procurement and marketing, engineering, office accounts, administration and export that are controlled by the manager. The procurement and marketing managers look after institutional section, godown section, salesmen section, vehicle section and chemical and fertilized section.

Operations of HOPCOMS

Procurement of fruits and vegetables

The society procures fruits and vegetables from the following four sources.

Sources of procurement

1. Farmers’
2. Markets
3. Procurement centers
4. Other state purchase from farmers

The society purchases most of its requirements (95 percent) from the farmers. All varieties of fruits and vegetables, coconuts, eggs, dried fruits, ginger, garlic etc., are accepted. In case of non-availability of certain items, the society purchases them in open auction and also from different parts of the country with a view to avoid difficulties to ultimate consumers. Farmers from nearby places bring their produce on their own and supply at the head office. The cultivators have to take indent from the society for the supply of fruits and vegetables. Normally produce in excess of the indented quantity will not be accepted. The society bears the unloading charges and it makes payment to the cultivator’s immediately after procurement up to Rs.5000 in cash and if it is exceeds Rs.5000, then cheques are issued to them. Out of total procured quantity, about 80% is distributed & disposed of through outlets, 15% to institutions and the rest 5% to government Hostels. The retail outlets are being managed by the salesmen who are the employees of HOPCOMS. As incentives, they are allowed to absorb drriage and damage to the extent of 3.7% of the value of the produce besides wages. Every day the salesman will remit the sales proceeds of the
previous day and collect the materials required for the day’s sales from the Central procurement center.

At present HOPCOMS is operating in Bangalore urban, Bangalore Rural, Kolar, Chikkabalapura, Ramanagara, Mysore, Mandya, Tumkur, Mangalore, and Hassan, districts. The society has a network of 404 retail outlets, out of which 242 are in Bangalore urban, 14 in Bangalore rural, 46 in Mysore, 22 in kolar, 21 in Mangalore, 21 in Mandya, 18 in Tumkur, 13 in Hassan and seven in Chickmaglure. From these procurement centers horticultural produce are collected, weighted, stored and graded, payment for the suppliers is made immediately. These centers are open on all days except Sunday. Delivery of the produce at the procurement centre is the responsibility of the farmers. Middlemen are not permitted to make supply. These centers also provide inputs to farmers. Inputs required for the horticultural crops are supplied against cash payment on non-profit basis.

**Procurement from other states**

In addition to procurement from producers and from the market, the society gets a small quantity of the produce from other states. It gets apple from the National Co-operative Federation Limited (NAFED), Himachal Pradesh Dairy Development Board (HPDDB) and National Dairy Development Board (NDDB). The procurement of fruits and vegetables is made on consignment.

**Indent system**

The society follows indent system for procuring fruits and vegetables from the growers and helps the society in regulating the supply and demand. This is because the distribution of the produce is the major problem of the society and hence, in order to surplus, the society resorts to this system.

**Grading**

The HOPCOMS does not classify fruits and vegetables into grades like A, B, C, etc. The society claims that it maintaining the quality of fruits and vegetables by accepting only the good quality produce from the growers. It rejects the injured, damaged and decease affected ones.
Distribution of fruits and vegetables

The society sells fruits and vegetables in the following three methods.

1. Sales through retail outlets
2. Sales through institutional customers and processors
3. Sales through the societies/branches

Price policy

HOPCOMS has an approved policy of fixing the procurement price slightly higher than the prevailing wholesale price in the market and the stall (outlet) price at a slightly lower than the ruling retail price so as to maintain a margin of 25 percent.

3.2.3 Data Source:

3.2.3.1 Secondary Data

To analyse the arrival pattern and price of fruits and vegetables in Raithara santhe, every day data on arrivals and prices of beans, brinjal, tomato, papaya, sapota and lemon were collected from the registers maintained in Raithara Santhe office for the period of 36 months i.e. January 2010 to December 2012. Arrivals and prices of the same fruits and vegetables for the same period were collected from the alternative markets chosen for the study viz., Horticulture Producers’ Co-operative Marketing and Processing Society Limited (HOPCOMS), Bangalore. Singena agrahara (special) sub market for fruits, hoskur cross, Bangalore, and Sri Jayachamarajendra vegetable market, Kalasipalyam, Bangalore.

Effort was made to obtain time series data on price and arrival of the selected commodities from different marketing networks to arriving at appropriate price for estimating the costs, margins and efficiency.

3.2.3.2 Primary Data

Sample, Sample Size and Sampling Design

In this study, purposive sampling was employed to select the sample farmers. Yelahanka Raithara Santhe of the Bangalore urban district has been purposively selected for the study because it is the only Farmers’ market functioning in Karnataka. The Raithara Santhe covers the village of both Bangalore urban and Bangalore rural
districts. For 2000 farmer’s identity cards were issued based on crops grown, area, irrigation sources etc,

The list of villages coming under the jurisdiction of the Raithara Santhe is obtained from the Raithara Santhe office, Yelahanka. From this list a total of 10 villages were selected at random. Out of 12 villages, a total of 180 vegetable and 120 fruit farmers selling in Raithara santhe were selected. Vegetable farmers include 60 farmers selling Beans, 60 farmers selling Brinjal, 60 farmers selling Tomato in Raithara Santhe. Fruit growing farmers include 40 farmers selling Papaya, 40 farmers selling sapota and 40 farmers selling Lemon in Raithara santhe were selected. Another 180 farmers of cardholders but not selling in Raithara Santhe selling in alternative markets chosen for the study were selected, thus forming a total of 480 farmers’ in the final sample. Further, sample of 30 commission agents, 30 Wholesalers, 30 retailers who were buying and selling vegetables and fruits also selected to examine marketing channels and to study the price spread and middleman’s margin.

Selection of Vegetables and Fruits for the Study

Among vegetables Beans, Brinjal and Tomato and in fruits papaya, Sapota and Lemon were selected. These are the vegetables and fruits grown in all season and marketed by most of the farmers in the study area.

Period of Study

The secondary data collected was for the period of 36 months i.e. January, 2010 to December 2012. The primary data was collected during May- December 2013 through sample survey method

3.2.4 Tools for the Study

The tool for the primary data source was through personal interview with selected farmers using a structured questionnaire. To analyze the marketable surplus of fruits and vegetables, the primary data were obtained from the sample farmers through personal interview by using pre-tested and structured schedule. The schedule covered information on name, age, education, family size, farm size, type of vegetable and fruits grown, source of irrigation, total production in quintal, quantity used for
family consumption, quantity given as wage payment, gifts to friends and relatives, transport mode, loss of produce during handling and marketable surplus in quintals.

To list out the problems faced by the farmers in marketing fruits and vegetables at Raithara Santhe the primary data were obtained from the sample farmers through personal interview by using pre-tested and structured schedules. The schedule covered information on quantity handled, price paid, extent and usage of Raithara Santhe by farmers, item wise data regarding the infrastructure facilities provided by the officials at Raithara Santhe was obtained and also a schedule included information on problems faced by the farmers in marketing fruits and vegetables like non availability of cold storage facilities, daily additional expenses in marketing, non availability of shop as desired, timely transportation not available, no knowledge of retail sale, lack of grading and standardization, price fluctuation, high cost of production, lack of rest houses, existence of fake traders, high transport cost and presence of middleman.

To analyze the price spread in Raithara Santhe and other alternative marketing systems, the primary data were obtained from the sample farmers, wholesalers, commission agents, retailers through personal interview by using pre tested and structured schedules. The data on costs of marketing, price realized and proportion of produce sold through different marketing channels obtained from the sample farmers for selected fruits and vegetables. A separate schedule was prepared for eliciting information from the market functionaries involved in fruit and vegetable marketing. Information on the trade aspects and the cost and sale price, wastage and other were obtained from traders and other market intermediaries.

3.2.5 Techniques of Data Analysis

A brief description of the analytical tools employed in the study is provided in the following sections.
Tabular analysis
Compound growth rate
Time series analysis
Logit Analysis
Regression analysis
Garrett’s Ranking Technique
3.2.5.1 Tabular Analysis

To analyse the price spread of fruits and vegetables in different identified marketing channels tabular analysis is used.

3.2.5.2 Compound Growth Rate

Growth rate analysis was undertaken with a view to study the changes in area, production and yield or productivity of fruits and vegetables in India and Karnataka from 1991 to 2012. An exponential function of the following type was employed to estimate.

\[ y = ab^t \]

\[ \log y = \log a + t \log b \]

Where
- \( y \) = indicator / variable
- \( a \) = constant
- \( b \) = regression coefficient
- \( t \) = time (year)

Average compound growth rates in percentage

\[ R = (b-1)*100 \]

3.2.5.3 Time Series Analysis

Time series analysis was used to examine the variations in the arrivals and price of fruits papaya, sappota, lemon and vegetables beans, brinjal and tomato at raithara santhe during the period 2010-2012. A time series is a complex mixture of four components namely, Trend(T), Seasonal (S), Cyclical(C), and Irregular (I). These four types of movements are frequently found either separately or in combination in a time series. The relationship among these components is assumed to be either additive or multiplicative, but the multiplicative model is commonly used method in economic analysis which can be represented as

\[ O_t = T*C*S*I \]

Where, \( O_t \) = Original observation at time \( t \)

\( T \) = Trend component

\( S \) = Seasonal variation
C = Cyclical element  
I = Irregular fluctuations

In the present study only seasonal indices were computed to study the behavior of arrivals of fruits and vegetables. The seasonal indices were calculated by employing twelve month’s ratio to moving average method. All the components comprising the time series were considered as multiplicative form.

The seasonal indices were calculated by adopting the following steps.

1. Generate a series of 12 months moving averages.
2. Generate a series of centered 12 months moving averages. This step involves taking of pairs of two subsequent 12 months moving averages and centering between each pair, there are no corresponding moving averages for the first six and last six months.
3. Express each original value as a percentage of corresponding centered moving average. The percentage of moving average represents indices of seasonal and irregular components combined. The next step involves removing the irregular component.
4. Arrange the percentage of moving averages in the form of monthly array. Next, the average index for each month is calculated.
5. These averages are to be adjusted in such a way that their sum becomes 1200. This can be done by working out of correction factor. The correction factor (K) is worked out as follows.

\[ K = \frac{1200}{S} \]

Where K is correction factor and S is a sum of average indices for 12 months. Multiply K with the percentage of moving average for each month to obtain the linear indices.
3.2.5.4 Logit Analysis

The logit analysis is used to analyse the choice made by the farmers between Raithara Santhe and alternative marketing systems.

The farmer’s decision to choose a particular marketing system follows a binary choice, since farmer has option to select Raithara Santhe or alternative marketing systems. The response variable takes value one, if farmer selects Raithara Santhe and takes zero, if farmer selects alternative marketing systems.

Independent variables considered for farmers are:

X1 = Age: The current age of the respondent farmer in number of years is considered for the analysis. The age of the respondent farmer reflects the experience in the activity and ability in decision making. Thus higher the age, higher is the ability in decision making.

X2 = Education: education of the respondent farmer in number of years of education reflects the ability in obtaining information, implementation and decision making. Thus higher the education, higher is the decision making ability.

X3 = Family size: Family size is represented by the actual number of persons living as one household. Higher the family size, higher would be the consumption of the commodity produced. Thus the marketable would be reduced accordingly. Hence, higher the family size, lower is the marketable surplus and vice versa.

X4 = Farm size: The farm size is measured in acres, and represents the total area operated by the respondent farmer. Thus higher the farm size, larger would be the choice of market.

X5= Price: Price represents the average price of fruits and vegetables in Rs/qtl. The choice of market would depending on the prevailing price of the commodity in the market. Market with higher prevailing prices of the commodity would be chosen by the respondent farmer.

X6 = Proximity: Proximity represents the distance between the farm and the market and measured in kilometers. Market with lesser distance from the farm would be the choice to reduce transport costs.

X7 = Area under the crop: Area under the crop reflects the production levels of the commodity. The choice of the market will depend on the production levels.
X8 = Number of working members: The number of working members reflects on the different activities that can be taken up by the family members. More number of working members reflects higher manpower available to travel even long distances for marketing of the commodity to obtain higher prices.

X9 = Marketable Surplus: The marketable surplus of the commodity is measured in quintals. The choice of market would depend on the quantity of the marketable surplus available with the farmer. Higher the marketable surplus, larger would be the size of the market chosen.

For Education scores were given as illiterate-0, primary school-1, SSLC-2, PUC-3, Graduate -4.

3.2.5.5 Regression Analysis

Multiple linear regression analysis was carried out to ascertain the responses of marketable surplus to a given change in education, farm size, family size, distance and price. The equation fitted for the purpose was specified as follows.

\[ Y_i = a + b_1x_1 + b_2x_2 + b_3x_3 + b_4x_4 + b_5x_5 + u_i \]

Where

\( Y_i = \) Marketable surplus; \( X_1 = \) Education; \( X_2 = \) Farm size; \( X_3 = \) Family size; \( X_4 = \) Distance
\( X_5 = \) Price; \( U_i = \) error term; \( a = \) intercept; \( b = \) regression or slope parameter; \( i = 1, 2 \ldots n \)

The Marketable surplus \((y_i)\) were assumed to be the dependent variable and educations \((x_1)\), farm size \((x_2)\), family size \((x_3)\), distance \((x_4)\), and price \((x_5)\) were taken as independent variable.

3.2.5.6 Garrett’s Ranking Technique

Constraints in fruit and vegetable marketing at Raithara santhe were prioritized by using Garrett’s ranking technique in the following manner.

\[ \text{Per cent position} = \frac{100 \ (R_{ij} - 0.50)}{N_j} \]

Where, \( R_{ij} \) is the rank given by ith item by jth individual
\( N_j \) is the number of items ranked by the jth individual
The percentage position of each rank was converted into scores using Garrett table. For each constraint, score of individual respondents were added together and were divided by total number of respondents for whom scores were added. Thus, mean score of each constraint was ranked by arranging them in the descending order. In the same manner, opinion about the problems and prospects was obtained and then Garrett’s ranking technique was used for prioritizing the constraints. An excel macro was developed to automate the components.

Table 3.1: Sampling Design of the Study

<table>
<thead>
<tr>
<th>Name of the districts</th>
<th>Name of the taluks</th>
<th>Name of the villages</th>
<th>FSRS (Number)</th>
<th>FSOMS (Number)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bangalore urban</td>
<td>Bangalore north</td>
<td>Tarunse</td>
<td>50</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Jakkur</td>
<td>20</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Kolipura</td>
<td>20</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Chikkanahally</td>
<td>30</td>
<td>10</td>
</tr>
<tr>
<td>Bangalore rural</td>
<td>Devanhally</td>
<td>Ardeskhanahally</td>
<td>30</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Doddajala</td>
<td>40</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Jalige</td>
<td>20</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mallenahally</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Biduri</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Prasanahalli</td>
<td>20</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Doddaballapur</td>
<td>Majrthosahalli</td>
<td>30</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Hosakote</td>
<td>Panjenagrahara</td>
<td>20</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td></td>
<td>300</td>
<td>180</td>
</tr>
</tbody>
</table>

Note: FSRS: Farmers Selling in Raitharasanthe
FSOMS: Farmers selling in other marketing systems

Table 3.2: Sample Size of Intermediaries in Alternative Marketing System

<table>
<thead>
<tr>
<th>Crop</th>
<th>Middlemen</th>
<th>Wholesalers</th>
<th>Retailers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beans</td>
<td>30</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>Brinjal</td>
<td>30</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>Tomato</td>
<td>30</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>Papaya</td>
<td>20</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>Sapotta</td>
<td>20</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>Lemon</td>
<td>20</td>
<td>20</td>
<td>20</td>
</tr>
</tbody>
</table>