PRODUCTION AND MARKETING MANAGEMENT OF ORGANIC VEGETABLES-A CASE OF BENGALURU

VANI N

DEPARTMENT OF AGRIBUSINESS MANAGEMENT
COLLEGE OF AGRICULTURE, DHARWAD
UNIVERSITY OF AGRICULTURAL SCIENCES,
DHARWAD- 580 005

JUNE, 2015

PRODUCTION AND MARKETING MANAGEMENT OF ORGANIC VEGETABLES-A CASE OF BENGALURU

Thesis submitted to the
University of Agricultural Sciences, Dharwad
in partial fulfilment of the requirements for the
Degree of

MASTER OF BUSINESS ADMINISTRATION
in

AGRIBUSINESS

By

VANI N

DEPARTMENT OF AGRIBUSINESS MANAGEMENT
COLLEGE OF AGRICULTURE, DHARWAD
UNIVERSITY OF AGRICULTURAL SCIENCES,
DHARWAD- 580 005

JUNE, 2015

DEPARTMENT OF AGRIBUSINESS MANAGEMENT
COLLEGE OF AGRICULTURE, DHARWAD
UNIVERSITY OF AGRICULTURAL SCIENCES, DHARWAD

CERTIFICATE

This is to certify that the thesis entitled "PRODUCTION AND MARKETING MANAGEMENT OF ORGANIC VEGETABLES – A CASE OF BENGALURU" submitted by Miss VANI N for the degree of MASTER OF BUSINESS ADMINISTRATION in AGRIBUSINESS to the University of Agricultural Sciences, Dharwad, is a record of research work done by her during the period of her study in this University under my guidance and supervision and the thesis has not previously formed the basis of the award of any degree, diploma, associate ship, fellowship or other similar titles.

DHARWAD
JUNE, 2015

(SONNAD J. S.)
CHAIRMAN

Approved by :

Chairman : _____
(SONNAD J. S.)

Members : 1. _____
(S. B. MAHAJANSHETTI)

2. _____
(JAYASHREE A HANDIGOL)

3. _____
(Y. N. HAVALDAR)

ACKNOWLEDGEMENT

I place on record with utmost sincerity my deep sense of gratitude and heartfelt respect to Dr. SONNAD J S, professor of department of agribusiness management and chairman of advisory committee, for his valuable guidance, constant encouragement and keen interest throughout the course of this investigation. I consider it an honor to have worked with my advisory committee members, Dr. S. B. MAHAJANA SHETTI, Professor and Head, Department of Agribusiness management, UAS Dharwad, Dr. JAYASHREE A. HANDIGOL Professor, Department of Agricultural Economics, UAS Dharwad, and Shri HAVALDAR, Associate Professor, Department of Agricultural Statistics, UAS Dharwad, the discussions with whom have been insightful and without this team, this thesis would not have materialized.

I place on record my deep sense of gratitude and heartfelt respect to my teachers Dr. H. S. Vijaykumar, Dr. N. N. Karnool, Dr. S. B. Mahajanashetti, Dr. J. S. Sonnad, Dr. R.A, Yeledahalli Dr. N. M. Kerur, Dr. Basavaraj Banakar, Dr. A. D, Naik and Dr. C.Murthy, for their valuable guidance and suggestions throughout the course of my degree programme.

I owe my heartfelt gratitude to my seniors for their constructive comments, enormous help and warm encouragement. Special thanks to all my extraordinarily supportive and lively seniors and friends, Srikanth H S, Mamata, Netravati Ashok Patil, Shridevi, Jyothi, Prathima, Jayashree Mekali and Pavitra who stood beside me selflessly and motivated me throughout my endeavor.

I would like to thank all my brothers for being there with me at the time data collection. I also thank the District Statistical Office, Bengaluru Urban and Bengaluru Rural for providing me with the necessary secondary data.

I have no words to express my heart full love and affection for persistent encouragement and blessings of my father Shri. Narayana Reddy, mother Smt. Devamma, Brother Bhaskar Reddy and Sister Girija for their never ending support, affection, love and sacrifice that forms the soulfor this body and is responsible for what i am today. I am eternally grateful to them for all that they have done for me.

I am also thankful to Mr. Ranjithkumar and Mr. Bayya Reddy for their support during my data collection.

I am also thankful to M/s Anup Computers, Dharwad for their invaluable assistance in bringing out the thesis in present form.

As said, “Dearest is the friends love” whose volunteered help at the time of need for achieving my cherished goal and pave me to offer my lovable and debted thanks to Vijayalaxmi M Belavanaki, Sri Vidya Rani S Sajjan, Sowmya S Biradar, Naveen Yeraguppi, Shyavanth Angadi, Sanidev patil, Lingangowda, Mallur, who have been with me in my endeavor for their constant help during work helped me to pursue my research work with precision.

DHARWAD
JUNE, 2015 (VANI N)

CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

1. INTRODUCTION

India has a wide variety of climate and soils on which a large number of horticultural crops such as fruits, vegetables, ornamentals, medicinal and aromatic plants, plantation crops and spices are grown. After attaining independence in 1947, the Government of India assigned a major emphasis on achieving self-sufficiency in food production especially in cereals. After the Green Revolution of the 1960's, it was realized that Indian topography and agro-climatic conditions are well suited for horticultural crops also and these crops would help in achieving sustainability of farmers with small holdings. However, the need for diversification was acknowledged by Government of India only in the mid 1980's to make agriculture more profitable, through efficient land use options, expansion in irrigation institutional development for creating gainful employment for rural masses and women and optimizing the utilization of natural resources. Past efforts initiated during planning process have been rewarding at present in terms of increased production and productivity of horticultural crops

India is the fruit and vegetable basket of the world. India being a home of wide variety of fruits and vegetables holds a unique position in production figures among other countries. Over 90 per cent of India's exports in fresh products goes to West Asia and East European markets. However, it needs to augment its food and processing industry at a mega scale.

Importance of vegetables in Indian economy

India is being one of the largest producers of vegetables next only to China. The total area under vegetable cultivation is around 9.23 million hectares which is about 3.34 per cent of the total area under cultivation in the country (2013-14). In case of vegetables, potato, tomato, onion, cabbage and cauliflower account for around 60 per cent of the total vegetable production in the country. Vegetables are typically grown in India in field conditions, the concept is opposed to the cultivation of vegetables in green houses as practiced in developed countries for higher yields (www.agricoop.co.in).

Presently, India is the second largest producer of vegetables. India, China, United States of America (USA) and Turkey are the major vegetables producing countries in the world. While, India is the highest in okra and vegetable pea producing country in the world. Vegetables are grown in almost all the states in the country under varied agro-climatic and soil conditions in plains as well as in hilly regions. At present, out of leafy, fruity and starchy tuber varieties of vegetables, the major vegetables grown in India are Onion, Potato, Tomato, Brinjal and Cucumber *etc.*

India's diverse soil and climatic conditions has traditionally helped to grow a large variety of vegetables. The production of vegetables during 2013-14 in India 277352.0 metric tonnes in 2013-14. Karnataka has 10 Agro-Climatic Zones suitable for growing vegetables crops. The area under vegetable crops is 24,198.5 thousand hectares in 2013-14. Dharwad, Belgaum, Kolar, Hassan, Chitradurga, Haveri, Bijapur and Bangalore (R) are the major vegetable crops (Onion, Potato, Tomato, Chilli, Brinjal and Gourd varieties growing districts in Karnataka.

It is not enough just to produce a vegetable; it must be produced efficiently and marketed successfully. It is necessary to improve the marketing system to accelerate development for two reasons: firstly, if additional produce does not fetch additional revenue in the market, it may work as a disincentive for increased production; secondly, if the market does not supply consumers with produce at reasonable prices and at the time and in the form place needed, then increased production has no meaning in the welfare of the society .Like any marketing system, vegetable marketing is a process which begins with the decision to produce a saleable commodity and involves all aspects of market structure, functions and institutions, based on technical and economic considerations. It also includes pre- and post-harvest operations/ marketing functions like – assembling, grading, storage, transportation and distribution. Increased production results in a greater percentage increase of marketable surplus, accompanied by an increased demand from the urban population which ultimately calls for rapid improvements in

the existing vegetable distribution and business structure. As a link between producer and consumer, marketing plays a very crucial role, not only in stimulating production and consumption but also increasing the rate of economic development in general and farm economy in particular. Its dynamic functions are thus of primary importance in promoting economic activities and thus described as the most important factor in the development of the vegetable business, Since vegetables being perishable commodity their timely distribution play a crucial role towards achieving higher marketing efficiency and decides due to producers share in consumer rupee.

Organic Farming

Organic farming is the successful management of resources of agriculture to satisfy the changing needs while maintaining or enhancing the quality of environment and conserving natural resources.

Organic agriculture includes all agricultural systems that promote the environmental, social and economical production of food and fiber on a sustainable basis. This system takes local soil fertility as a key to successful production. By respecting the natural plants, animals and the landscape, it aims to optimize quality in all aspects of agriculture and the environment. Organic agriculture dramatically reduces external inputs by refraining from the use of chemical/synthetic fertilizers, pesticides and pharmaceuticals. Instead, it allows the powerful laws of nature to increase both agricultural yields and disease resistance. Organic agriculture is also a rule based agricultural system in which the operator has to follow the standards of organic farming set by the certification organization

Emergence of Organic Farming in India

India bestowed with lot of potential to produce all varieties of organic products due to its various agro-climatic regions. In several parts of the country, the inherited tradition of organic farming is an added advantage. This holds promise for the organic producers to tap the market which is growing steadily in the domestic market related to the export market.

The Government of India has implemented the National Programme for Organic Production (NPOP). The National Programme involves the Accreditation Programme for Certification bodies, Standards for Organic Production, Promotion of Organic Farming etc. The NPOP Standards for Production and Accreditation System have been recognized by European Commission and Switzerland as equivalent to their country standards. Similarly, USDA has recognized NPOP conformity assessment procedures of accreditation as equivalent to that of US. With these recognitions, Indian organic products duly certified by the Accredited Certification Bodies of India are accepted by the importing countries.

Principles of Organic Farming

- To work as much as possible within a closed system, and draw upon local resources.
- To maintain the long-term fertility of soils
- To avoid all forms of pollution that may result from agricultural techniques.
- To produce foodstuffs of high nutritional quality and sufficient quantity.
- To reduce the use of fossil energy in agricultural practice to a minimum.
- To give livestock conditions of life that confirm to their physiological need.
- To make it possible for agricultural producers to earn a living through their work and develop their potentialities as human being.

Present Status of Organic Farming

Growing awareness of health and environmental issues associated with the intensive use of chemical inputs has led to interest in alternate forms of agriculture in the world. Organic agriculture is a holistic production management system which promotes and enhances agro-ecosystem health, including biodiversity, biological cycles and soil biological activity.

Organic farming is gaining gradual momentum across the world. Based on the global survey on organic farming carried out in 2012 (FIBL-IFOAM), world wide data on organic agriculture are available from 164 countries. There are 37.5 million hectares of agricultural land in 2012, including in conversion areas. The regions with the largest areas of organic agricultural land are Oceania (12.2 million hectares 32 percent of the world's organic agricultural land) and Europe (11.2 million hectares, 30 %). Latin America has 6.8 million hectares (18%) followed by Asia (3.2 million hectares, 9%), North America (3 million hectares, 8%) and Africa (1.1 million hectares, 3%). In 2012, the organic agricultural land increased almost by 0.2 million hectares or 0.5 percent. There were more than 1.9 million producers in 2012.Thirty –six per cent of the world's organic producers are in Asia, followed by Africa (30 %) and Europe (17%). The countries with the most producers are India (6.00 lakhs), Uganda (1.90 lakhs) and Mexico (1.70 lakhs).

National Scenario of Organic Farming

Currently India ranks tenth among the top ten countries in terms of cultivable land under organic certification. The certified area includes 10 per cent cultivable area with 0.50 million hectares and rest 90 per cent (4.71million hectare) is forest and wild area for collection of minor forest produces. The total area under organic certification is 5.21 million hectares (APEDA, 2013). India produced around 1.34 million metric tonnes of certified organic products which includes all varieties of food products namely Sugarcane, Cotton, Basmati Rice, Pulses, Tea, Spices, Coffee, Oilseeds, Fruits and their value added products. The production is not limited to the edible sector but also produces Organic Cotton Fiber, Functional Food Products etc. (APEDA, 2013). Among all the states, Madhya Pradesh has covered largest area under organic certification followed by Rajasthan and Uttar Pradesh. Madhya Pradesh has highest area under organic farming (1.1mha or 52%), Maharashtra is at second (0.96 mha or 33.6%) and Orissa is at third (0.67mha or 9.7%) while Uttrakhand and Sikkim are Organic States.

Organic farming scenario in the state

Agriculture is the main livelihood of people living in Karnataka for 65 percent of the state population. Karnataka stands ninth place with respect to total land area (191.8 lakhs ha) and 5.50 percent of the total population in the country. About 75.8 lakhs ha of land is suitable for agriculture and total cultivated land in the state is 123.8 lakhs hectares.

Organic farming is more popular in the districts of Belgaum, Dharwad, Uttara Kannada, Dakshina Kannada, Kodugu, Chikkamagaluru, Chamarajanagar, Mysore, Bidar and Bijapur districts etc. There are more than 35,000 certified organic farmers in the state with 60,000 hectares of certified organic land. There are more than 60 organic outlets in the state mainly located in Bengaluru.

In recent years, organic vegetables are gaining more popularity among the farmers because of getting high prices for organic vegetables than conventionally growing vegetables. Tomato, Potato, Cabbage, Cauliflower, Beans and Chilli are the major organic vegetables growing in the taluks of Nelamangala, Devanahalli and Doddaballapura of Bengaluru (Rural) district. The present study has been undertaken to study the supply chain analysis, consumer awareness, consumer preference and constraints in production and marketing of Organic Vegetables.

Keeping all this in view, following Specific objectives were considered

1. To analyze the supply chain in organically grown vegetables
2. To ascertain the awareness of consumers towards organically grown vegetables
3. To ascertain the factors influencing consumer preference for organically grown vegetables
4. To document constraints in production and marketing of organically grown vegetables

Presentation of the study

The study is presented under the following chapters.

Introduction: In the introductory chapter, the nature and importance of research problems, specific objectives of the study have been presented.

Review of Literature: It deals with the review of the relevant past studies related to the present study.

Methodology: This chapter highlights overview of the study area, the nature and sources from where relevant data have been collected, the analytical tools employed for evaluating the objectives of the study and definitions of various concepts used in the study.

Results: The results of the study and their analysis have been presented in this chapter after using various methodological statistical tools and presented in the forms of Tables.

Discussion: It emphasizes on interpretations of the results and attempts to establish relationships between certain variables and their outcomes.

Summary and Policy Implications: Brief summary of the main findings of the study along with policy implications drawn from the findings have been presented.

References: The list of the referred theses, books and journals are presented in this section.

2. REVIEW OF LITERATURE

A review of past research helps in identifying the conceptual methodological issues relevant to the study. This would enable the researcher to collect information and subject them to sound reasoning and meaningful interpretation. A brief review of the earlier research work related to the present study is presented in this chapter. Keeping in view, the specific objectives of the study, the reviews are presented under the following headings

2.1 Supply Chain in Organic Vegetables

2.2. Consumer Awareness towards Organic Vegetables.

2.3. Factors influencing for Organic Vegetable preference

2.4. Constraints in Production and Marketing of Organic Vegetables

2.1 Supply Chain in Organic Vegetables

Ricks (2000) conducted study on chain management and marketing performance in fruit industry, results reveled that the important area of need for fruit industry supply chain was consistent but not excessive supply of products to meet the market demand. This involved the supply of products balanced with demand in the same seasonal year and over a period of several years.

Wermund *et.al.* (2002) conducted study on key challenges facing the Cherry Supply Chain in the U.K. reported that irregular cropping, specification of export countries and high investment costs were the key challenges faced by the growers. Irregular cropping pattern, too many sales desks, lack of response in terms of uniform marketing strategies, lack of cooperation with the retailers and growers were the key challenges faced by marketing agents. Unreliable supply, customer pay premium were the challenges faced by the retailers and finally differences in purchase and consumption behaviour were the key challenges faced by the consumers in the UK Cherry Supply Chain.

Subha (2004) investigated the ways of managing a supply chain and reported that the requisites to manage a supply chain were creation of a logistics vision, tackling conventional organizational problems and developing a supply chain. She also indicated that open communication with the advent of Information Technology between supply chain partner management of supply chain.

Kledal and Paul (2005) studied the retailer growth prospectus for organic food chains in Denmark and conducted that for the organic vegetable chain the retailers were in search for new products, and new ways of creating outlets that could enhance or boost their image in an increasing international compitative environment. The organic products had well-respected brand of trust and quality and there by a very strong position to create new possibilities of gaining store space and growth among supermarkets and discounters.

Singh (2007) investigated on organic basmati paddy contract farming operations of the three players (Agrocel, Satlej and UCOB) in the Northen region of India (Punjab, Haryana and Uttaranchal) in terms of the nature of contracts, pricing mechanism, quality and certification issues, input supply and networking among agencies, based on case studies of the entire supply chains of organic basmati rice. These chains like their conventional basmati counterparts excluded small and marginal growers everywhere except when it was a development project run by an international or national agency. It was found that prices offered were in reference to conventional produce price, certification was with the agencies and the governance of the chain was totally with the companies. The contracts protected the company's interest at all costs to the farmer and did not cover farmer's production risks, e.g.,crop failure.

Kailash and Singh (2010) studied price spread in Mango in Lucknow district of UP. Data were collected from different marketing channels of mango. Three channels were identified in marketing of mango, viz;

Channel I: Producer- Post-Harvest Contractor- Commission Agent- Wholesaler- Retailer- Consumer

Channel II: Producer- Post-Harvest Contractor- Commission Agent- Retailer- Consumer

Channel III: Producer- Post- Harvest Contractor- Retailer- Consumer

The charges borne by the pre-harvest contractor in channel I, II and III was ₹ 302.86. The consumer price was the highest in channel I (₹ 2029.46) followed by channel III (₹ 1924.30) and was lowest in channel II (₹ 1682.14). The percentage share of the total marketing margin in consumer's rupee was the highest in channel III (32.79 %) followed by channel II (30.06 %) and channel I (28.32 %).

Abdul *et al.* (2011) investigated on Economics of Production and Marketing of Apple in Himachal Pradesh and Jammu and Kashmir. Kullu in Himachal Pradesh and Baramulla district in Jammu and Kashmir were selected purposively. This study involved Multi-stage random Sampling Technique for the selection of households. Channel I (Producer- Pre-Harvest Contractor- Commission Agent- Retailer- Consumer) was patronized by about 11 per cent of the sample orchardists in Himachal Pradesh and more than 17 per cent growers in J and K. Channel III (Producer- Commission Agent- Wholesaler- Retailer- Consumer) was popular channel through which 56 per cent of produce in HP and 64 per cent in J and K was sold.

Srikanth (2011) conducted a study on marketing channels of mango in Srinivasapura taluka of Kolar district found the different channels through which mango flowed from the point of production to the point of consumption were identified and they were categorized in the following channels.

Channel I: Producer–Consumer (Village sale)

Channel II: Producer–Trader–Consumer (Local sale)

Channel III: Producer–Pre-Harvest Contractor–Retailer–Consumer

Channel IV: Producer–Commission Agent–Retailer–Consumer.

Channel IV: Producer–Pre-Harvest Contractor–Commission Agent– Retailer–Consumer

Channel VI: Producer–Commission Agent–Secondary Wholesaler– Retailer–Consumer.

Thakare *et al*. (2011) conducted a study on economics of production and marketing of cowpea in Anjangaon tehsil of Amaravati district. Random sampling method was used to select 100 samples in study area. Data was analyzed through tabular analysis method. Results revealed that out-input ratio were greater than unity indicating that cowpea was a profitable crop in the selected area. Cowpea cultivation had certainly provided to be profitable. The study also revealed that in the district marketing of cowpea was more efficient.

Dhandhalya and Shiyani (2012) investigated on marketing of sapota in Saurashtra region. A sample of 100 sapota growers spread over 20 selected villages of four blocks of Bhavnagar and Junagadh districts were selected for the study. Data were elicited for the year 2008-09. The study revealed that sapota growers incurred the highest cost as commission charge (56.85%) followed transportation charges (16.25%), packing charges (11.68%), and grading charges (8.88 %). The total marketing cost per quintal amounted to ₹ 98.50. The net price received by the growers was ₹ 606.50 per quintal.

Koujalagi (2012) studied marketing of pomegranate. Three marketing channels were identified in the study area, they were

Channel I: Producer- Commission Agent- Retailer- Consumer

Channel II: Producer- Distant Wholesaler

Channel III: Producer- Exporter

The total marketing cost incurred by the producer in channel I was ₹ 1726.71 per tonne followed by channel II (₹ 234.93 per tonne) and channel III (₹ 33.86 per tonne) in Bagalkot district. Similar trend was observed in Koppal district accounting for ₹ 1751.17 per tonne in Channel I, ₹ 249.83 per tonne in channel II and ₹ 35.78 per tonne in channel III.

2.2 Consumer Awareness towards Organic Vegetables

Aaker (2000) opined that, brand awareness was remarkably durable and sustainable asset. It provided a sense of familiarity especially in low-involvement products such as soaps, a sense of presence or commitment and substance and it was very important to recall at the time of purchasing process. Apart from the conventional mass media, there were other effective means to create awareness viz., event promotions, publicity, sampling and other attention getting approaches.

Brown *et al*. (2000) reported that the need for effective nutritional education for young consumers had become increasingly apparent, given their general food habits and behaviour, particularly during adolescence and analyzed that the interaction between young consumers' food preferences and their nutritional awareness behaviour, within three environments (Home, School and Social interaction appears to be somewhat overshadowed by the young consumers, while developing an independence trait, particularly, during the adolescent years. The authors suggested that food preferences were often of a 'fast food' type and consequently the food habits of might young consumers might fuel the consumption of poorly nutritionally balanced meals. While young consumers were aware of healthy eating, their food preference behaviour did not always appear to reflect such knowledge, particularly within the school and social environments.

Beverland (2001) studied the level of brand awareness within the New Zealand market for ZESPRI kiwi fruit. The effectiveness of this branding strategy employed by kiwi fruit, New Zealand was studied. The implications of the findings for agribusiness in general using the data collected from surveys of kiwi fruit consumers (n=106) outside three major super market chains in Auckland, New Zealand suggested that the level

of brand awareness for ZESPRI was low among consumers. It was indicated that brand awareness could be increased through a relationship-making programme involving targeted marketing and supply chain management.

Yee and Young (2001) aimed to create awareness of high fat content of pies, studied consumer and producer awareness about nutrition labeling on packaging. For this, seven leading pie brands were analyzed for fat content and were ranged from 7.10 to 19.20 per cent fat. Potato topped or cottage pies had the lowest fat content (7.10 - 9.20% fat). Most pies did not display nutritional labeling on packaging. Over half of the consumers (52.00%) who responded to the survey (42.00% response rate) were aware of the campaign. The study was successful at raising consumer awareness about the high fat content of pies and influencing the food environment with a greater availability of lower fat pies. It was possible to produce acceptable lower fat pies and food companies should be encouraged to make small changes to the fat content of food products like pies. Potato topped pies were lower in fat and were widely available. Regular pie eaters could be encouraged to select these as a lower fat option.

Ramasamy *et al*. (2005) reported that, the buying behaviour was vastly influenced by awareness and attitude towards the product. Commercial advertisements over television was said to be the most important source of information, followed by displays in retail outlets. Consumers did build opinion about a brand on the basis of which various product features played an important role in decision making process. A large number of respondents laid emphasis on quality and felt that price was an important factor while the others attached importance to image of manufacturer.

Dipeolu *et al*. (2009) conducted a study on consumer awareness towards organic vegetables in S.W.Nigeria. Random sampling technique was used to select 152 respondents in the study area. Data were collected through

personal interview method using pre-tested questionnaire. The collected data were analyzed by using frequency tables and percentage method. The results of the survey revealed that about 89 per cent of the respondents had a prior knowledge of organic vegetables and 72 per cent had seen organic vegetables before. Further investigation however showed that about 56 per cent of those who indicated that they had seen organic vegetables before 2000. The knowledge was probably based on management practice of farmers in the area whereby vegetables were grown with little or no use of chemical fertilizers or pesticides. They certainly had little knowledge of certified organic vegetables.

Bigritroitner-schoberga *et al.* (2009) conducted a study on consumer perception of organic foods in Bangkok, Thailand. They surveyed 848 respondents through personal interview method using pre-tested questionnaire. The study was identified the main reason for purchasing organic produce were that consumers expected them to be healthier, that organic products were environmentally friendly. The respondents who had bought organic vegetables tend to be older, had a higher education level and higher family income than those who had not bought them. The main barrier to increasing the market share of organic vegetables was that consumers did not clearly differentiate between the various pesticide safe labels and organic labels.

Annunziata and Pascale (2009) conducted a study on consumer behaviour and attitude towards healthy food products: the case of organic and functional foods. Random sampling method was used to select 300 Italian consumers for the study. Data was collected through personal interview method. Data were analyzed through using cluster analysis. Results revealed that positive outlook for growth of both organic and functional foods which were gaining even if at a different pace and .more space in Italians households consumption moreover the consumer demand for foods to fit their specific health needs life style would continue to increase and would have an impact on all sector of food and manufacturing and also on the supporting industries.

Phnah *et al*. (2011) conducted study on consumer awareness and consumption intention towards green foods. A survey was conducted for 1355 respondents. Data were collected by using questionnaire method. Descriptive statistic and chi-square analysis were used to analyze the data collected. Results indicated most of the respondents had awareness of green foods. There were significant difference among the respondents awareness towards age, geographical area, education level and income. Thus, most respondents aware of green concept and this was a strong indicator of consumers intention to go green in food consumption

Aydin Basarir and Sherir Sheriff (2012) conducted study on consumer awareness of food labelling: a case of United Arab Emirates. A total of 500 respondents from all over the UAE were randomly selected and surveyed through face to face interviews. An ordered probit model was used to analyses the effect of social characteristic and attributes on the consumer awareness for food labelling. The results revealed that 89% of respondents indicated that they read the information provided on food labels. The results of ordered probit model showed that the probability of reading food labels more frequently increased with older, more educated and those who had more children under age of 18.

Mohamad (2013) conducted a study on consumer awareness towards organic food: a pilot study in Jordan. Analysis of the awareness level of consumers towards organic food products, using a structured survey of 384 respondents in major city Jordan. The total respondents surveyed 69 per cent of respondents had reported awareness on organic food. Results revealed that potential Jordanian consumers awareness of organic food was strongly affected by factors such as education, occupation, marital status, income, desire promotion, quality, health issues and product source. The awareness not affected by factors such as gender age and trademark, results of the study had great implication for promoting organic food markets domestically as well as globally.

2.3. Factors Influencing for Organic Vegetable Preference

Magnusson *et al*. (2001) reported demographic differences with respect to Swedish consumers' attitudes towards Organic foods (milk, meat, potatoes, and bread), purchase frequency, purchase criteria, perceived availability, and beliefs about organic foods. The majority of consumers, and particularly women and young respondents (18-25 years) reported positive attitudes, but purchase frequency was low. A total of 13 per cent stated that they regularly bought organic milk. Corresponding figures for organic meat, potatoes, and bread were 13, 16, and 8 per cent respectively. The most important purchase criterion was good taste, and the least important was organically produced. Approximately half of the respondents were satisfied with the availability of the organic foods. The organic foods were perceived to be more expensive and healthier than conventionally produced alternatives. A major obstacle to the purchase of organic foods was reported to be premium prices

Cicia and Giudice (2002) conducted an investigation on preferences of an important category of consumers of organic products (Regular Consumers of Organic Food or RCOF) allowing for preference heterogeneity. A survey instrument was developed to elicit preferences for important qualitative and quantitative attributes of extra virgin olive oil. Each respondent made eight choices to rank-order nine product profiles in terms of their individual preference. Product attributes included price, origin of production, type of certification and visual appearance. Results displayed significant preference heterogeneity for origin of production and price. It was also found that price played an important role as quality proxy, while visual appearance was not significant in preference modeling and the type of certification programme had a fixed effect.

Shivakumar (2004) conducted study on buying behaviour of consumers towards the product produced by SSI- Unit. The changing socio-cultural, political and economic orders had transferred people into sophisticated consumers. The thought of consumer undergone sea change. Many of Indian households were buying a number of forest durables like wooden furniture, cane furniture and handicrafts etc

Nagaraja (2004) opined that, buying behaviour was very much influenced by experience of their own and of neighbour consumers and his family. Above all, the quality of the product and its easy availability were the primary and the vital determinants of his buying behaviour. Consumers were influenced by touch and feel aspect of any promotional activity.

Narang (2006) opined that, a buyer did not stick to one brand in case of food purchasing. They should be able to recall different brand names when they went for purchase. Repetitive advertising could be used to promote brand recall. The product should be associated with style and trend, so that it appealed to the youth and the brand name should be developed as a fashion statement. Promotional schemes such as discounts and free offers with purchase were suggested to increase rates.

Vincent (2006) elicited that quality was an important factor that drawn consumer towards branded products. Branded products were accepted as good quality products. People did not mind paying extra for branded products, as they got value for money. Media was a key constituent in promoting and influencing brand. A child's insistence affected family's buying behaviour. Children were highly aware and conscious of branded items. Although unbranded products sometimes gave same satisfaction as branded products, customers would still prefer to purchase a branded product.

Banumathy and Hemamena (2008) in their study revealed that the companies manufacturing soft drinks must manufacture high quality soft drinks in order to compete with soft drinks of Multi-National Companies (MNC). They suggested demand promotion by effective advertising, improving quality by keeping a check on the taste and price. Study also revealed that there was no association between age, education, occupation and choice of brands but there was association between monthly income and brand preference and also there was close relationship between price and satisfaction level.

Renukagoudar (2008) conducted study on consumer behaviour towards ready to eat products in Hubli and Dharwad twin city. A random sampling method was used to select the 200 samples in Hubli and Dharwad city. The data were collected through personal interview method. The data were analyzed using tabular analysis method. The results indicated that the respondents were aware of Parle-G, Lays, Frooti and Amul brands in case of Biscuits, Chips, Fruit juice and Ice cream accordingly. The consumer behaviour varied from product to product

Radha Mohan Jangir (2010) conducted study on analysis of consumer preference for processed fruit and vegetables products in Jaipur city, Rajasthan. A simple random sampling method was used to select the 120 consumers in Jaipur city. The data were collected from the randomly selected consumers using pre -schedule through personal interview method. The data were analyzed through Tabular analysis and Garret's ranking method. The results indicated that the changing life styles, raising middle class population and easy availability of processed fruit and vegetables had led to increase the consumer preference for processed products. Consumer preference was more for homemade processed products

Deanna and Adrienne (2011) conducted study on determinates that influence food consumption among older members of a Mid-West community. A sampling technique was used to select 25 seniors in Mid-Western town in Indiana. The data were collected from the randomly selected respondents using pre-tested schedule through using personal interview method. The data

were analyzed using the constant comparative method. The results found that there were two factors influenced external (economics, market availability) and internal factor (convenience, health, status). The taste played major role especially among the women.

Jan *et al*. (2011) conducted study on determinants of willingness to purchase organic food. A purposive sampling method was used to select the 421 respondents in Kuching for study. Data were collected through personal interview method. The data were analyzed using exploratory factor analysis method. Results revealed that attitude and subjective norms excreted significant positive effects on WTP while the effect of affordability was not significant.

Andrei (2012) conducted study on factors influencing consumption of organic food in Romania. The study was conducted to gain the knowledge about the demographic characteristics of respondent and factor influence decision of organic food consumer in Romania. The study revealed the results that variable attitude, concern about health, environmental concern and knowledge about organic foods had the positive relationship with purchase frequency.

Alexandra Claudia Huber and Hons Joachim Mosler (2013) conducted study on determining behavioural factors for interventions to increase safe water consumption: a cross sectional field study in rural Ethiopia. Randomly 211 households were selected in Tuchigrogona for the study. The data were analyzed using regression analysis method. Study revealed the results that psychological factors that positively influenced safe water consumption and had the potential to be changed. The newly implemented community filter seemed to be widely accepted within the community.

Pearson David *et al*. (2013) conducted study on organic food: Exploring purchase frequency to explain consumer behaviour. Random sampling method was used to select 1011 respondents in Australia for the

study. Data were collected through online survey method using well structured questionnaire. Data were analyzed through tabular analysis method. Results revealed that, from a demographic perspective, consumers who were young, highly educated, and students were most likely to be regular purchasers of organic foods. Conversely there was a reduction in the frequency of organic food purchases amongst older consumers and those with lower levels of education.

Khallid and NawawIshak (2014) consumer perception, purchase intention and actual purchase behaviour of organic food products in Malaysia. Data were collected through questionnaire method from the respondents. Data were analyzed using Multiple Regression on Analysis method and Anova method. Results revealed that result of the study highlighted that consumers' perceived organic food products did affect their intention to purchase the products. The result indicated that safety (β = 0.196) had the greater effect on purchase intention in the context of organic food products followed by health (β = 0.132) and environmental friendly and animal welfare (β = 0.107).The significant effect of perceived health, safety and environmental concern on purchase intention suggested that consumers were willing to purchase organic food products because they perceived the products were more environmental friendly, safe and good for their health.

Shanmugapriya *et al*. (2014) conducted a study on consumer preference of organic vegetables in the Coimbatore city of Tamil Nadu: An Application of logistic regression model. A multistage sampling technique was used to select 60 respondents in the study area. Data were collected through personal interview method by using pre-tested well structured schedule. The data were analyzed through using percentage analysis, logistic regression analysis and Garrett's Ranking Technique. Results revealed that Survey results showed that almost 60 per cent of the sample respondents fall in the age group of above 45 years which indicated that older consumers tend to make preventive health decisions, partly because of health vulnerability and an awareness that they were generally at higher health risk than younger

individuals. About 60 per cent of the sample organic vegetable consumers had completed collegiate level of education and this implied that higher education was more likely an important factor influencing the purchase motive of organic vegetables. Around 42 per cent of the sample organic consumers had a monthly income of above ₹ 60,000 and it reflected that the consumers with high income often buy organic vegetables to reflect on their awareness and status. The logistic regression suggested that age, education, health, income, price, distance and availability were important factors in consumer preference of organic vegetables. Garrett's Ranking Technique suggested that price was the major constraints faced by the consumers in making purchase decisions of organic vegetables followed by limited or inadequate supply, lack of information and inadequate organic outlets.

Sanjay Kumar (2014) conducted study on Indian consumer attitudes towards on food safety: An exploratory study. Randomly 300 Indian adult women in New Delhi for study was selected. Data were collected through personal interview method. The data were analyzed using cluster analysis. Results revealed that risk of food hazards and increasing consumer trust in food chain actors were two important factors bringing changes in consumer attitude towards food safety. Communication and education strategies should include information about the structure the food safety system and what the government could and could not to ensure safe food supply.

2.4. Constraints in Production and Marketing of Organic Vegetables

Thimmareddy (2001) studied that the majority of the farmers (70.00%) of North Karnataka expressed the problems of there was no separate market for organically grown produce, followed by 40.00 percent of the respondents expressed the problems of decline in returns in the initial period (3-4 years) of organic farming. Similarly, the labour problem was expressed by 30.00 per cent of the respondents where as 20.00 percent of the respondents expressed the problem of non-availability of organic pesticides and lack of

information on organic farming and a less percent (10.00%) of the respondents expressed the problem of non- availability of good quality compost, no support and encouragement from sugarcane factory management to produce sugarcane by organic methods, no remunerative price for organic produce and discouragement by people in continued adoption of organic cultivation.

Sunder and Kombai Raju (2004) conducted study on economics of production of Gloriosa superba in Tamil Nadu identified and ranked the constraints in Gloriosa cultivation in the study area. Price fluctuations, require more skill, require more care, , shortage of labour, large investment on panthal erection and seed material, allergic problems to human being and wastage of tubers at planting were the identified constraints rank-wise.

Deorukhakar *et al*. (2005) in their investigation marketing of Arecanut in Ratnagiri district of Maharashtra identified the constraints in the production and marketing of arecanut in the study area. Under production constraints, water scarcity during summer season 33.33 percent, non-availability of agro-chemicals in villages 32.22 percent and non-availability of credit from the commercial banks 28.89 percent were found to be major. Under the marketing constraints payment recovery took long period 20.00 percent and monopoly of village merchants 12.22 percent were identified.

Briji (2006) conducted investigation on marketing system for apple in hills problems and prospects (A case study of Kullu district, Himachal Pradesh). They surveyed 120 apple growers. They identified many constraints faced by the growers such as lack of road facility, unawareness, inadequate storage facility, delayed payment and lack of market intelligence.

Hendge *et al*. (2007) conducted investigation to determine the constraints encountered by banana growers in Nanded district, Marathwada region of Maharashtra. It was reported that 97.50 percent growers observed the fluctuations in price of bananas. 96.66 per cent of growers mentioned that there were less cooperatives helping out of marketing of bananas. Further,

80.33 per cent of the growers reported inorganic fertilizers were costly. 75 per cent of the growers stated problem of extortion by middle man, 68.33 per cent of growers reported that non- availability of labour at proper time, 53.33 per cent of growers stated that lack of guidance and 50.83 percent of growers reported that lack of information regarding to improved practices. Moreover, less-pressing constraints also reported by the growers, including: lack of knowledge on disease control (35%), high cost of suckers (30%) and inadequate water supply (4.16%).

Ajjan *et al*. (2008) investigated the problems in cultivation and marketing of gloriosa in Tamil Nadu. Labour problem (30%), high cost of cultivation involved (28%), pest & disease problem (20%), were the cultivation problems. Fluctuation in price (74%), no market information (20%), and selling only to registered contractors (6%), were the identified marketing problems in gloriosa cultivation

Mallikarjun (2008) conducted a study on production and marketing management behaviour of organic vegetables growers in Belgaum district, Karnataka. The study revealed that all the respondents expressed that problems of non-availability of labour and lack of research support for providing rationality of traditional organic practices, fluctuation in prices of the commodities, lack of minimum support price and inaccurate weighing instruments used by the vegetable venders. While, majority of them expressed the need for fixing profitable minimum support price for organic produce (77.14%) and establishing separate market for the sale of organic produce (72.14%).

Naphade and Tingre (2008) investigated in Buldhana district of Maharashtra to find out the problems faced by the guava growers. The major problems faced by the growers were lack of market information (40%), high market commission (38.33%), lack of appropriate grader (36.67%) , lack of processing units, lack of storage facility, costly transportation *etc.*

Patil (2008) conducted a study on production and marketing management behaviour of organic vegetable growers in Belgaum district, Karnataka. The results revealed that all respondents expressed that problem of non-availability of labour and lack of research support for traditional organic practices, fluctuation in prices of the commodities, lack of minimum support price and inaccurate weighing instruments used by vegetable venders were most prominent, while majority of the respondents expressed the need for fixing profitable minimum support price for organic produce (77.14%) and establishing separate market for the sale of organic produce (72%).

Kerutagi *et al*. (2009) conducted a study in Belgaum and Dharwad districts of Northern Karnataka to identify the constraints in Sapota marketing. The study revealed that the major problems in Sapota marketing expressed by the farmers were lack of storage facility (94.44%), collection of higher commission charges (83.33%), higher transportation cost due to lack of markets and non-availability of proper market information.

Tamil Selven *et al*. (2009) conducted a study on pepper production prospectus 2009-10. They conducted the survey in the major pepper growing tracks of Karnataka, Kerala and Tamil Nadu using a pre-designed interview schedule through personal interview. They identified six major constraints in the production of pepper in Kerala as unstable market prices, disease affecting vines and pest affecting standards, vagaries of natural like drought, heavy rainfalls affecting the crop time to time, low coverage of high yielding varieties, non-availability of labour for the cultural operations in pepper plantations and better prices of agriculture commodities like rubber leading to conversion of pepper area.

Amalanathan and Antony Thanaraj (2011) conducted a study on marketing constraints of members of Primary Dairy Co-operative Societies in Pandicherry (PDCS). The researcher used the primary data for the study. The sample size was 300. Tabular analysis was employed for analyzing the data.

Study revealed that the New Economic Policy affected positively on services sector. There were many factors which created marketing problems. Members of PDCS could be provided loans for investment in cattle farming and refinance when necessary. The study suggested that the government might take necessary steps to fix up a standard price for milk- subject to the periodical changes. Liberal loans and advances might be granted to the dairy farmers so as to relieve them from debts and clutches of middlemen

Rao *et al*. (2011) conducted a study on problems faced by the farmers and traders of saffron and other species in Jammu and Kashmir. They identified production of quality planting materials, post -harvest management, quality standards, domestic price and marketing problems as the constraints for reduction in area and production of saffron.

Ruchira and Gupta (2011) conducted a study on market behaviour of chilli growers in Jaipur district of Rajasthan. They surveyed 120 chilli growers through personal interview schedule. The study revealed the constraints faced in production and marketing of chilli growers. The production constraints were high cost of fertilizers (98.33%). Problems of pest (88.33%), problems of disease (84.16%), high cost of plant protection chemicals (41.66%), and limited and irregular power supply (39.16%). The marketing constraints in Jaipur were fluctuation in price (84.16%), exploitation by middlemen (75.00%) and poor transportation facilities (83.33%).

Sanjay Kumar *et al*. (2011) conducted a study on economic analysis of Menthol Mint Cultivation in Barabanki district of Uttar Pradesh. They surveyed 60 farmers through personal interview method using pre-tested questionnaire. The study identified the major constraints faced by the mint growers as high input cost (85%), erratic supply of electricity (80%), lack of adequate market information (80%), infrastructural facilities and regulated markets (98%), and energy-efficient distillation units (75%).

Torben Tiedemann and Umelatacz Lohman (2013) conducted a study on production risk and technical efficiency on organic and conventional agricultural –A case study of arable farmers in Germany. This empirical analysis was conducted using a balanced panel-of-farm-records from 1999-2000 to 2006-2007 on 37 organic and conventional arable farms respectively. Euclidian distance matching was used to identity for each organic farm and conventional counterpart with similar structural features. Results identified that output variability in both production technologies was mainly caused by production risk. Land and labour were identified as risk increasing inputs in both farm types where as higher capital endowment, seed costs and soil quality had risk reducing effects.

3. METHODOLOGY

This chapter deals with the description of the study area, sampling procedure adopted, methods of data collection, nature and sources of data used and the statistical tools and techniques employed for analyzing the data. The methodology is presented under the following major heads.

3.1 Description of the study area

3.2 Sampling procedure

3.3 Nature and Sources of data

3.4 Analytical Techniques employed

3.5 Definition of Terms and Concepts used

3.1 Description of the Study Area

The study was conducted in two districts of Karnataka State namely Bengaluru (Rural) and Bengaluru (Urban). Especially Bengaluru Rural district was selected for analyzing the Supply Chain in organic vegetables and constraints in production and marketing of organic vegetables. As district was the important producer of organic vegetables. While Bengaluru Urban district was selected to study the awareness towards organic vegetables and factors influencing for preference of organic vegetables, as the district was having highest organic outlets.

3.1.1 Location and Area

Bengaluru Rural district lies between 12^0 $15^{'}$ and 13^0 $35^{'}$ North Latitude and 75^0 $5^{'}$ and 78^0 Eastern Longitude. The district surrounded by Kolar and Tumkur districts in North, Mandya district on the West, Chamarajanagar district on South and towards South-East by Tamil Nadu state. The district comprises of 4 taluks and total area of district is 2259 sq.kms. The district has 17 Hoblies, 951 inhabited and 101 un-inhabited villages. The demographical features of the area is represented in the Table 3.1.

Bangaluru Urban district leis between 12^0 $39^{'}$ to 13^0 $18^{'}$ North Latitude and 77^0 $22^{'}$ to 77^0 $52^{'}$ Eastern Longitude. The district surrounded by the Bengaluru rural district on the West, East and North and the Krishnagiri district of Tamil Nadu on the South. The district comprises of 4 taluks and total area of 2208sq. kms.

3.1.2 Population and literacy

The results of Table 3.1 indicated that Bengaluru Rural district has total population of 8,71,607 of which 4,64,256 (53.26%) are male and 4,07,351 (46.74%) are female. The overall Literacy percentage in the district is 75.16 percent and literacy with respect to male was more (83.06%) compared to literacy with respect to female (66.80%).

Bengaluru Urban district has total population of 87,49,944 of which 45,58,405(52.09%) are male and 41,91,539 (47.90%) are female. The overall Literacy percentage in the district is 85.37 percent and literacy with respect to male is more (89.57%) compared to female (80.95%).

3.1.3 Climate and Rainfall

Climate in Bengaluru Rural district is quite salubrious, with the three different seasons. The pre-monsoon starts from January to May. From April onwards erratic thunderstorms occur in the area which increase during May. The mean annual rainfall of district is 824 mm. Doddaballapura taluk receives the lowest rainfall of 680 mm where as Hoskote, Nelamagala taluks receive highest rainfall of 776 mm. The district having mostly are loamy soils, lateritic soils, lateritic gravelly soil and red sandy soils.

The mean average rainfall in Bengaluru Urban district is 831mm. The maximum temperature of district is 34^0c and the minimum temperature of district is 25^0C. The district is having mainly red sandy and red sandy loamy soils.

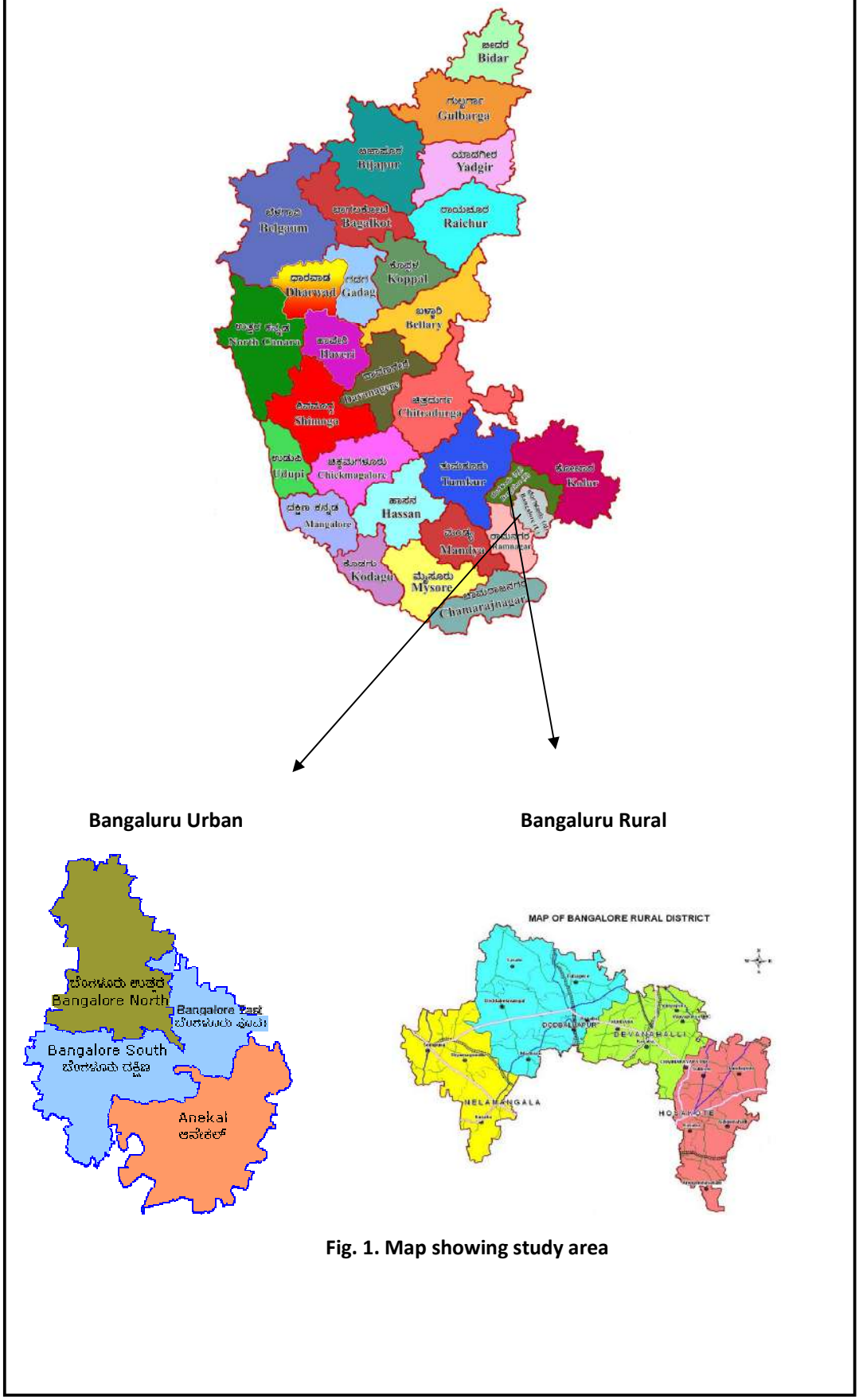

Fig. 1. Map showing study area

Table 3.1: Demographical features of the study area (2013-14)

Sl. No	Particulars	Bengaluru (Rural)	Bengaluru (Urban)
1	Total geographical area(ha)	2,29,519	2,17,410
2	Population (No.)		
	Male	464256 (53.26%)	4558405 (52.10%)
	Female	407351 (46.44%)	4191539 (47.90%)
	Total	871607 (100%)	8749944 (100%)
3	Literacy rate (%)		
	Male	83.06	89.57
	Female	66.80	80.95
	Overall	75.16	85.37
4	Population Density/km^2	431	380

Source : Source: District Statistical Offices, Bengaluru Rural and Urban.

3.1.4. Land use pattern

Land utilization pattern of Bengaluru Rural district (2013-14) is presented in the Table 3.2. The total geographical area of the district is 229519 hectares, out of which, area under forest is 11,322 hectares (4.93%, Non-agricultural area is 39978 hectares (17.41%) and cultivable barren land is 11,124 hectares(4.84%).the cultivable waste land 3898 hectares(1.79%).About 17,412 hectares (7.59%) of land is uncultivable land and 29,751 hectares(12.95%) is fallow land. The net sown area is 1,16,064 hectares (50.57%), the total cropped area is 1,19,586 hectares (52.10%) and 3525 hectares (1.54%) of area sown more than once.

Land utilization pattern of Bengaluru Urban district (2013-14) is presented in the Table 3.2. The total geographical area of the district is 2,17,410 hectares, out of which, area under forest is 5,055 hectares(2.33%) , non-agricultural area is 1,20,140 hectares (55.26%) and cultivable barren land is 4,911 hectares(2.26%).about cultivable waste 3889 hectares (1.78%) of land is uncultivable land 13,322 hectares(6.13%) and 25,106 hectares(11.55%) is fallow land. The net sown area is 44,990 hectares (20.69%), the total cropped area is 51,131 hectares (23.52%) and 6,141 hectares (2.83%) of area sown more than once.

3.2. Sampling procedure

Bengaluru Rural district had been selected purposively to study the supply chain and constrains in production and marketing of organic vegetables, since which is one of the major organic vegetable growing area. A multi-stage sampling procedure was adopted to the selection of 3 taluks namely Nelamangala, Devanahalli and Doddaballapura in each taluk two vegetables were selected randomly and 10 farmers were selected for each vegetable and 10 traders were selected randomly for the study.

Bengaluru Urban district had been selected purposively for the study of consumer awareness and factors influencing for consumer preference for organic vegetables since having more organic outlets in the area. Three

Table 3.2: Land utilization pattern in the study area (2013-14)

Sl. No	Particulars	Bengaluru Rural		Bengaluru Urban	
		Area (ha)	Percentage	Area (ha)	Percentage
1	Total geographical area	229519	100	217410	100
2	Area under forest	11322	4.93	5055	2.33
3	Non -Agriculture area	39978	17.42	120140	55.26
4	Cultivable barren land	11124	4.85	4911	2.26
5	Cultivable waste	3898	1.69	3889	1.78
6	Uncultivated land	17412	7.59	13322	6.13
7	Fallow- land	29721	12.95	25103	11.55
8	Net area sown	116064	50.57	44990	20.69
9	Total cropped area	119586	52.10	51131	23.52
10	Area sown more than once	3525	1.54	6141	2.83

Source: District Statistical Offices, Bengaluru Rural and Bengaluru Urban.

Note : Percentage figures of serial numbers 2 to 8 add up to 100. It is exclusive of total cropped area and area sown more than once.

locations namely Audigodi, Koramangala and Electronic city were randomly selected and in each location 30 respondents were selected for the study. Totally 90 consumers were selected and thus total sample size was 160.

3.3. Nature and Sources of data

The study was based on both primary and secondary data. For evaluating the specific objectives designed for the study, required primary data were collected from the respondents through personal interview method with the help of pre tested questionnaire. Majority of the farmer respondents did not maintain the records about cost and returns from the cultivation of organic vegetable crops. Hence the data were collected based on the memory of the respondents. The data collected was pertained to the agricultural year 2013-14. The secondary data were collected from the District Statistical Office to study the demographical feature of the study area.

3.4 Analytical Techniques

The data collected for the study was processed and analyzed by using suitable techniques. Tabular Analysis and Garret's Ranking Techniques were used to analyze the collected data. A detailed description of the analytical tools used in study was presented below.

3.4.1 Tabular Analysis

The data collected were presented in tabular form to facilitate easy comparisons. The tabular presentation technique was followed to study the economic characteristics of sample farmers, costs and returns in relation to production of Organic Vegetables, Marketing Cost and Margins and Consumer awareness and for analyzing the data elicited through opinion survey from the sample -respondents.

The data were summarized with the aid of statistical tools like averages, percentages to obtain the meaningful results.

3.4.2 Garret's Ranking Technique

1. Garret's Ranking Technique was adopted for studying the factors influencing consumer preference for organically grown vegetables and studying the constraints in production and marketing of organic vegetables.

Factors influencing for purchasing organic vegetables

1. Freshly available

2. Good taste

3. Good quality

4. Good service

5. Healthy and hygienically produced

6. Promoted by credit sales

7. Accessibility

8. Regular availability

9. Liked by Family members

10. Influenced by friends/relatives

Constraints in production of organic vegetables

1. Non- availability of information on organic vegetables
2. Non -availability of labor
3. Low productivity
4. Non -availability of organic insecticides
5. Non -availability of organic pesticides
6. Non - availability of organic manures
7. Incidence of pest and diseases
8. Limited and irregular power supply

Constraints in marketing of organic vegetables

1. Far off location of selling unit
2. Costly Transportation facilities
3. Lack of market information
4. Lack of grading facility
5. Lack of packing facility
6. Lack of storage facility
7. Malpractices of buyers
8. Faulty weighment
9. Lack of financial assistance from any company
10. Delay in payment and sale proceeds

Stage I: Ranking given by 90 respondents for each factor was analyzed.

Eg: Rank given by the respondents

Respondents No.	Factors									
	1	2	3	4	5	6	7	8	9	10
1	1	4	3	5	2	8	10	9	7	6
2	5	4	2	3	1	10	9	8	7	7
3	6	4	2	1	3	9	8	10	5	7
45	4	5	1	6	2	10	9	7	3	8
46	1	5	3	4	2	9	10	8	7	6

Stage II: Thus assigned ranks by the individual respondents were counted into percent position value by using the formula

$$\text{Percentage Position} = \frac{100\,(Rij - 0.5)}{Nj}$$

Where,

Rij= Rank given for ith item by jth individual

Nj= Number of items ranked by jth individual

The percent position value for the same assigned ranks by the respondents as follows

Respondents No.	Factors									
	1	2	3	4	5	6	7	8	9	10
1	5	35	25	45	15	75	95	85	65	55
2	45	35	15	25	5	95	85	75	55	65
3	55	35	15	5	25	85	75	95	45	65
45	35	45	5	55	15	95	85	65	25	75
46	5	45	25	35	15	85	95	75	65	55

Stage III: For each percent position scores were obtained with reference to Garret's Table and each percent position value was converted into scores by reference to Garret's Table (Appendix –I)

Eg: Garret's Table scores for the percent position value

Respondents No.	Factors									
	1	2	3	4	5	6	7	8	9	10
1	82	58	63	52	70	37	18	29	42	48
2	52	58	70	63	82	18	29	37	48	42
3	48	58	70	82	63	29	37	18	52	42

Stage IV: Summation of these scores for each factor was worked out for the number of respondents who ranked for each factor.

Respondents No.	Factors									
	1	2	3	4	5	6	7	8	9	10
1	82	58	63	52	70	37	18	29	42	48
2	52	58	70	63	82	18	29	37	48	42
3	48	58	70	82	63	29	37	18	52	42
45	58	52	82	48	70	18	29	42	63	37
46	82	52	63	58	70	29	18	37	42	48
Total	2856	2549	3108	2168	3141	1321	1462	1383	2295	1682

Stage V: Mean scores were calculated by dividing the total score by the number of respondents.

Respondents No.	Factors									
	1	2	3	4	5	6	7	8	9	10
1	82	58	63	52	70	37	18	29	42	48
2	52	58	70	63	82	18	29	37	48	42
3	48	58	70	82	63	29	37	18	52	42
45	58	52	82	48	70	18	29	42	63	37
46	82	52	63	58	70	29	18	37	42	48
Total	2856	2549	3108	2168	3141	1321	1462	1383	2295	1682
Mean	62.08	55.41	67.57	47.13	68.28	28.72	31.78	30.07	49.89	36.56

Stage VI: Overall ranking was obtained by assigning ranks I, II, III……X. in the descending order of the mean score

Respondents No.	Factors									
	1	2	3	4	5	6	7	8	9	10
1	82	58	63	52	70	37	18	29	42	48
2	52	58	70	63	82	18	29	37	48	42
3	48	58	70	82	63	29	37	18	52	42
45	58	52	82	48	70	18	29	42	63	37
46	82	52	63	58	70	29	18	37	42	48
Total	2856	2549	3108	2168	3141	1321	1462	1383	2295	1682
Mean	62.08	55.41	67.57	47.13	68.28	28.72	31.78	30.07	49.89	36.56
Ranks	III	IV	II	VI	I	X	VIII	IX	V	VII

3.5 Terms and Concepts used in the study

The terms and concepts used in the study and the procedure used to calculate the cost of different items are given below.

i. Organic farms

The farms which cultivate crops by using only organic sources of inputs without the use of any synthetic chemicals in the production process.

ii. Farm Yard Manure (FYM)

Farm yard manure was charged as per the prevailing market rates during the period of study in the study area.

iii. Bio-Fertilizers

The carrier based micro-organisms which are used for either seed or seedling treatments or mixing with vermicomposting in order to enrich soil microbial population. It includes *Rhizobium, Azatobactor, Azospirullum*,

Phosphate Solubilising Bacteria and Cellulose degraders. The purchase prices of these inputs were taken as their cost.

iv. Variable Costs

The variable costs include cost of Seed, Organic Manure, Bio-Fertilizers, Bio-Pesticides Wages of Human and Bullock Labour, Machine Labour, Plant Protection Components (PPC).

v. Interest on Working Capital

This was calculated on the entire working cost of the enterprise at the prevailing rate of interest of 7 per cent per annum on short term loans for the duration of the crop by organized financial institutions.

vi. Fixed Costs

These include depreciation on Farm Implements and Machinery, Interest on Fixed Capital, Land Revenue and Rental Value of Land.

vii. Depreciation Charges

Depreciation on each capital equipment and machinery owned by the farmer- respondents and used for cultivation of land was calculated for individual farmer based on the purchase value using the straight line method.

$$\text{Annual Depreciation} = \frac{\text{Purchase value} - \text{Junk value}}{\text{Economic life of the asset}}$$

viii. Interest on Fixed Capital

Interest on fixed capital was calculated at 12 per cent per annum, which is the prevailing rate of investment/term credit. The items considered under fixed capital are Farm Implements and Machinery.

ix. Land Revenue

Actual land revenue paid by the farmers to the Revenue Department was considered.

x. Land Rent

The prevailing land rent for agricultural enterprises were imputed for the sample farmers, since all land holdings were observed to be owner operated.

xi. Cost of Cultivation:

It is the sum of variable costs and fixed costs expressed on per acre basis.

xii. Gross Returns

It is obtained by multiplying the total main product with its sale price per tonne.

xiii. Net Returns

It is obtained by deducting the Total Costs incurred from the Gross Return.

ix. HOPCOMS

Horticultural Producer's Co-operative Marketing and Processing Society Limited

4. RESULTS

The necessary data collected from the sample farmers and consumers spread over the entire Bengaluru Rural and Bengaluru Urban districts of Karnataka were subjected to various statistical tools and techniques to derive the meaningful results. The major findings of the study were presented in this chapter under the following headings

4.1 Supply Chain Analysis of Organic Vegetables

4.2 Awareness towards Organic Vegetables

4.3 Factors influencing the purchasing of Organic Vegetables

4.4 Constraints in Production and Marketing of Organic Vegetables

4.1 Supply Chain Analysis of Organic Vegetables

4.1.1 Socio- economic characteristics of organic farmers in the study area

4.1.1.1 Age of Respondents

The overall average age of all the sample farmers producing different vegetables was 43.60 years (Table 4.1). While, the same farmers involved in the production of different vegetables ranged between 41 to 50 years.

4.1.1.2 Family size and type of family

The results presented in Table 4.1 family size of the respondents for all vegetable producers together indicated that, majority (38.83%) of them adopted medium sized family of 4 to 6 members each followed by 30.00 per cent and 25.00 per cent of them having small sized family (with an average of 1 to 3 members in family) and large sized family (on an average 7 to 9 members per family). While, only 6.67 per cent of sample farmers had very large sized family whose average number of members was more than nine.

Table 4.1 Socio - economic Status of Organic Growers in the study area

Sl. No.	Particulars	Unit	Tomato (n=10)	Potato (n=10)	Cabbage (n=10)	Cauliflower (n=10)	Chilli (n=10)	Beans (n=10)	Overall (n=60)
1	Age of the farmer	Years	41.14	40.6	49.95	43.15	45.12	41.65	43.60
2	Size of the family								
	Small size (1-3)	No	2 (20.00)	4 (40.00)	3 (30.00)	4 (40.00)	3 (30.00)	2 (20.00)	18 (30.00)
	Medium size (4-6)	No	5 (50.00)	3 (30.00)	5 (50.00)	4 (40.00)	2 (20.00)	4 (40.00)	23 (38.33)
	Large size (7-9)	No	2 (20.00)	2 (20.00)	2 (20.00)	2 (20.00)	3 (30.00)	4 (40.00)	15 (25.00)
	Very large size (>9)	No	1 (10.00)	1 (10.00)	0 (00.00)	- 0 (0.00)	2 (20.00)	0 (0.00)	4 (6.67)
3	Type of family								
	Nuclear	No	7 (70.00)	8 (80.00)	7 (70.00)	8 (80.00)	6 (60.00)	7 (70.00)	43 (71.67)
	Joint	No	3 (30.00)	2 (20.00)	3 (30.00)	2 (20.00)	4 (40.00)	3 (30.00)	17 (28.33)
4	Family composition								
	Male	No	1.8 (32.14)	2.0 (35.09)	2.0 (37.04)	1.8 (31.04)	2.0 (33.33)	1.8 (32.14)	1.90 (33.45)
	Female	No	1.7 (30.36)	1.8 (31.58)	1.8 (33.33)	2.0 (34.48)	2.0 (33.33)	1.7 (30.36)	1.83 (32.22)
	Children	No	2.1 (37.50)	1.9 (33.33)	1.60 (29.63)	2.0 (34.48)	2.0 (33.33)	2.1 (37.50)	1.95 (34.33)
	Total	No.	5.60 (100.00)	5.70 (100.000)	5.40 (100.00)	5.80 (100.00)	6.00 (100.00)	5.60 (100.000)	5.68 (100.00)
5	Occupational pattern								
	Agriculture	No	6 (60.00)	3 (30.00)	5 (50.00)	4 (40.00)	7 (70.00)	8 (80.00)	33 (55.00)
	Agriculture + other Subsidiary occupations	No	4 (40.00)	7 (70.00)	5 (50.00)	6 (60.00)	3 (30.00)	2 (20.00)	27 (45.00)
6.	Educational status								
a.	Illiterates	No	2 (20.00)	1 (10.00)	0 (13.33)	1 (10.00)	2 (20.00)	3 (30.00)	9 (15.00)
b.	Literates	No	8 (80.00)	9 (90.00)	10 (100.00)	9 (90.00)	8 (80.00)	7 (70.00)	51 (85.00)
	i) Primary school	No	2 (25.00)	3 (33.34)	2 (20.00)	1 (11.11)	2 (25.00)	1 (14.29)	11 (21.57)
	ii) Middle school	No	1 (12.50)	1 (11.11)	3 (30.00)	2 (22.22)	1 (12.50)	1 (14.29)	9 (17.65)
	iii) High school	No	2 (25.00)	2 (22.22)	2 (20.00)	3 (33.33)	2 (25.00)	1 (14.29)	12 (23.53)
	iv)Pre university	No	1 (12.50)	2 (22.22)	2 (20.00)	2 (22.22)	2 (25.00)	2 (28.57)	11 (21.57)
	v)Degree and above	No	2 (25.00)	1 (11.11)	1 (10.00)	1 (11.11)	1 (12.50)	2 (28.57)	8 (15.68)

The analysis on type of family indicated that majority of the farmers belonged to nuclear family 71.67 per cent and remaining 28.33 per cent adopted joint family type in the district.

4.1.1.3 Family Composition

The study on family composition indicated that average male members per farmer were marginally high 33.45 per cent compared to female members 32.22 per cent. Whereas, the average number of children accounted 34.33 per cent of the family size.

4.1.1.4 Occupational pattern

The occupational pattern of sample farmers revealed that among the sample farmers producing different organic vegetables in the district majority (55.00%) of them dependent on agriculture. The remaining 45.00 percent farmers depended on agriculture and other subsidiary occupations as a source of livelihood.

4.1.1.5 Educational status

With regard to educational status of the farmer -respondents results presented in the Table 4.1 revealed that on an average 85.00 per cent of organic vegetable sample farmers were observed to be literates and remaining 15.00 per cent were illiterates. Among the literates 15.68 per cent of organic farmers were graduates, Most of the literate farmers possessed primary school education *i.e.*, 21.57 per cent of organic farmers. The percentage of farmers who completed high school was 23.53 percent. The 17.65 per cent of the sample farmers were completed middle school education and the pre -university course was 21.57 per cent of organic farmers.

4.1.2 Costs and Returns structure in organic vegetables production

The cost incurred and returns realized from major vegetables cultivation are presented in Table-.4.2

Table 4.2 Cost and Returns structure in Organic Vegetables production

(₹/acre)

Sl. No	Particulars	Tomato		Cabbage		Cauliflowers		Potato		Beans		Green Chilli	
		Cost	Per cent	Cost	Per cent	Cost	Per cent	Cost	Per cent	Cost	Per cent	Cost	Per cent
I	Variable cost												
	Seedlings/seeds	7,550.00	12.19	6,770.00	17.52	8,090.00	17.98	11,840.00	18.99	3,575.00	8.27	4,410.00	7.95
	FYM	12,800.00	20.66	12800.00	33.13	13,850.00	30.77	19,200.00	30.79	8,550.00	19.78	10,500.00	18.92
	Bio-fertilizers	500.00	0.81	500.00	1.29	680.00	1.51	630.00	1.01	500.00	1.16	300.00	0.54
	Bio-pesticides	1,545.00	2.49	2500.00	6.47	3,500.00	7.78	750.00	1.20	950.00	2.20	6,750.00	12.16
	Micro nutrients	450.00	0.73	350.00	0.91	700.00	1.56	500.00	0.80	450.00	1.04	350.00	0.63
	Staking	3,565.50	5.75	-	-	-	-	-	-	2,565.50	5.93	-	-
	Human labour	25,500.00	41.16	6500.00	16.82	7,500.00	16.66	17,500.00	28.06	17,500.00	40.48	22,500.00	40.54
	Bullock labour	1,100.00	1.78	1910.00	4.94	2,260.00	5.02	1,950.00	3.13	1,500.00	3.47	1,500.00	2.70
	Machine labour	1,050.00	1.70	980.00	2.54	1,700.00	3.78	2,110.00	3.38	980.00	2.27	1,700.00	3.06
	Interest on working capital @ 7%	3,784.24	6.11	2261.70	5.85	2,679.60	5.95	3,813.60	6.12	2,559.94	5.92	3,360.70	6.06
	Total variable cost	57,844.74	93.38	34571.70	89.47	40,959.60	91.01	58,293.60	93.48	39,130.44	90.51	51,370.70	92.56
II	Fixed cost												
	Land revenue	11.00	0.02	11.00	0.03	11.00	0.02	11.00	0.01	11.00	0.02	11.00	0.02
	Depreciation	317.10	0.51	287.10	0.74	268.50	0.60	285.00	0.46	317.5	0.73	342.5	0.62
	Rental value of land	3,333.34	5.38	3333.34	8.63	3,333.34	7.41	3,333.34	5.35	3,333.34	7.71	3,333.34	6.00
	Interest on fixed capital @ 12%	439.36	0.71	435.77	1.13	433.54	0.96	435.52	0.70	439.42	1.02	442.42	0.80
	Total fixed cost	4,100.08	6.62	4067.21	10.53	4,046.38	8.99	4,064.86	6.52	4,101.26	9.48	4,129.26	7.44
III	Total cost of cultivation(I+II)	61,944.82	100.00	38638.91	100	45,005.98	100	62,358.46	100.00	43,231.70	100	55,499.96	100
IV	Returns												
	Yield (qtl)/acre	120.00		90.00		85.00		75.00		50.00		60.00	
	Price per qtl(₹)	1,966.00		1,500.00		2,600.00		2,000.00		4,500.00		2,600.00	
	Gross returns	2,35,920		1,35,000		2,21,000		1,50,000		2,25,000		1,56,000	
	Marketing cost	10,599.60		7,282.80		7,713.75		5,437.50		3,700.00		3,799.80	
	Net returns	1,63,375.58		89,078.29		1,68,280.27		82,204.04		1,78,068.30		96,701.00	
V	B: C ratio	3.81		3.49		4.91		2.41		5.21		2.81	

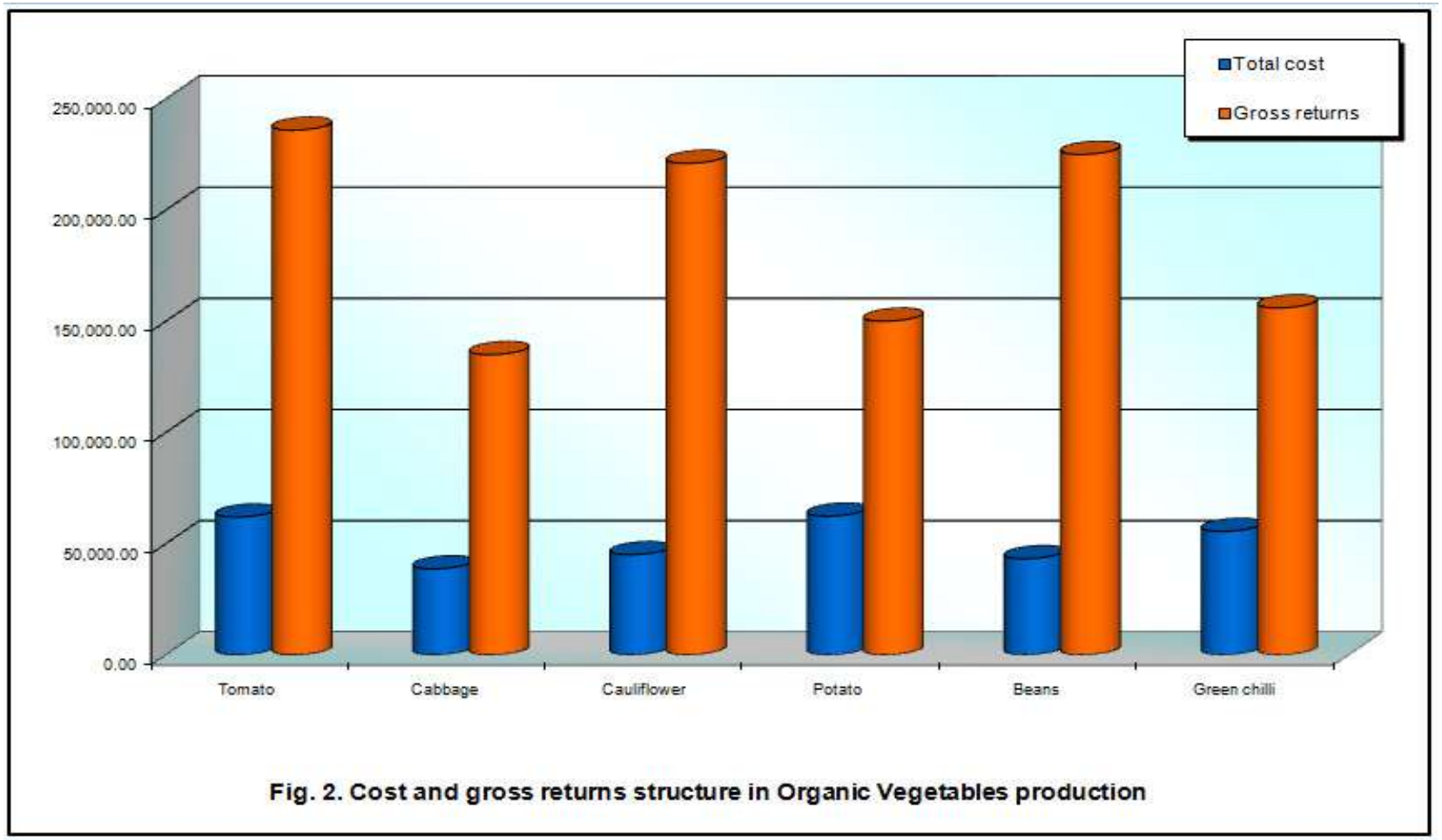

Fig. 2. Cost and gross returns structure in Organic Vegetables production

The total cost of Production for all the major organic vegetables was assessed by estimating per acre variable and fixed costs. Among the different major vegetable crops, the total variable cost incurred per acre in Potato crop cultivation was the highest (₹58,293.60/acre) accounting 93.48 per cent as compared to Tomato (₹57,844.74/acre) where it accounted 93.38 per cent of the total cost followed by Green Chilli (₹51,370.70./acre) which accounted 92.56 per cent of the total cost followed by Cauliflower (₹40,959.60/acre) which accounted 91.01 per cent of total cost, Beans (₹39,130.44/acre) which accounted 90.51 per cent of the total cost. Cabbage (₹34,571.70/acre) which accounted 89.47 per cent of total cost.

The distribution of pattern of operational cost for various inputs separately for each vegetable revealed that cost of seed material was accounted major share in case of Potato crop at (₹11,840.00/acre) with 18.99 per cent. Followed by Cauliflower seedlings (₹8,090/acre) with 17.98 per cent of the total cost, Tomato seedlings (₹7,550.00/acre) with 12.19 percent, Cabbage seedlings (₹6,770.00/acre) with 17.52 per cent, Green Chilli seedlings (₹4,410.00/acre) with 7.95 per cent and Beans seeds (₹3,575.00/acre) with the 8.27 per cent share of total cost. The cost of FYM was accounted highest share in case of Potato (₹19,200.00/acre) which accounted 30.79 per cent of the total cost followed by Cauliflower (₹13,850.00/acre) accounted 30.77 per cent, Tomato (₹12,800.00/acre) accounted 20.66 per cent, Cabbage (12,800.00/acre) accounted 33.13 per cent, Green Chilli (10,500/acre) accounted 18.92 percent and Beans (₹8,550.00/acre) which accounted 19.78 per cent of total cost. The cost of bio- fertilizers accounted highest share in case of Cauliflower (₹680.00/acre) accounted 1.51 per cent of total cost, followed by Potato (₹630.00/acre) accounted 1.01 per cent, Tomato, Cabbage and Beans (₹500/acre). Tomato accounted 0.81 per cent, Cabbage 1.29 percent, Beans accounted 1.16 per cent and Green Chilli accounted least share among all the crops with (₹300.00/acre) accounted 0.54 per cent of the total cost. The cost of bio -

pesticides share was highest in case of Green Chilli (6,750.00/acre) accounted 12.16 per cent and lowest share in Potato (₹750/acre) with the 1.20 per cent of the total cost. The cost of micro nutrients was highest share in case of Cauliflowers (₹700/acre) which accounted 1.56 per cent of the share of total cost, followed by Potato (₹500/acre) accounted 0.80 per cent, (₹450/acre) in case of Tomato and Beans accounted 0.73 and 1.04 per cent respectively, Green Chilli and Cabbage share were (₹350/acre) with 0.63 and 0.91 per cent respectively of the total cost. The cost of staking in Tomato (3,565.50/acre) accounted 5.75 per cent and in Beans (2,565.50/acre) accounted 5.93 per cent of the total cost.

The cost of human labour accounted the highest share in case of Tomato crop at ₹25500/acre (41.16%), when compared to Chilli (₹22,500/acre) that accounted for 40.54 per cent, Beans (₹ 17,500/acre) accounted 40.48 per cent while, Potato (₹17,500/acre) also accounted 28.06 per cent, Cauliflower (₹7,500/acre) accounted 16.66 per cent and Cabbage (₹6,500/acre) accounted 16.82 per cent. Whereas, bullock labour cost was highest at 5.02 per cent in the case of Cauliflower (₹2,260/acre) followed by Cabbage at 4.94 per cent (₹1,910/acre), Beans 3.47 per cent (₹1,500/acre), Potato accounted 3.13 per cent(₹1,950/acre) and Green Chilli (₹1,500/acre) accounted for 2.70 per cent of the total cost. The cost of machine labour was highest in case of Potato (₹2,110.00/acre) representing 3.38 per cent of the total cost and was lowest in Cabbage and Beans (₹980/acre) for each vegetable. Cabbage accounted 2.54 per cent and Beans accounted for 2.27 per cent of the total cost.

The share of fixed cost in the total cost of cultivation was also analyzed. The crop-wise analysis indicated that per acre fixed cost incurred for different vegetables was almost same but only small differences between from vegetable to vegetable. The fixed cost of Green Chilli was more (₹4,129.26/acre) accounted 7.44 per cent compared to Tomato (₹4,100.08/acre), with 6.62 per cent Cabbage (₹4,067.21/acre) with 10.53 per cent, Cauliflower (₹4,046.38/acre) with 8.99 per cent, Potato (4,046.86/acre)

with 6.52 per cent and Beans (₹4,101.26/acre) 9.48 per cent of the total cost. In fixed cost land revenue was same for all vegetables in the study area. The highest share of depreciation cost was in case of Green Chilli crop (₹342.50/acre) accounted 0.62 per cent and lowest share in case of Cauliflower crop (₹268.50/acre) accounted 0.60 per cent in total fixed cost.

The total cost of production of organic vegetables was also presented in the Table 4.2. The highest share of total cost was in the case of Potato crop (₹62,538.46/acre) compared to Tomato (₹61,944.82/acre), Green Chilli (₹55,499.96/acre), Cauliflowers (₹45,005.98/acre), Beans (₹43,231.70/acre) and Cabbage (38,638.91/acre).

The total yield obtained was highest in case of Tomato (120 qtl/acre), Cabbage (90.00 qtl/acre), Cauliflower (85.00qtl/acre), Potato (75qtl/acre), Green Chilli (60.00 qtl/acre) and Beans (50.00 qtl/acre).

The price of the major organic vegetables was maximum in Beans (4,500.00/qtl), followed by Green Chilli and Cauliflowers (₹2,600.00/qtl), Potato (₹2,000.00/qtl), Tomato (₹1,966.00/qtl) and Cabbage (₹1,500.00/qtl).

The analysis of gross returns for major vegetable crops indicated that the gross returns obtained per acre in Tomato crop was highest at ₹2,35,920.00/acre as compared to Beans (₹2,25,000/acre), Cauliflower (₹2,21,000/acre),chilli (₹1,56,000/acre), Potato (₹1,50,000/acre) and Cabbage (₹1,35,000/acre) based on per acre yield. With respect to net returns, it was highest in case of Beans at ₹1,78,068.30./acre when compared to Cauliflowers (₹1,68,280.27/acre), Tomato (₹1,63,375.58/acre), Green Chilli (₹96,701.00./acre), and Cabbage (₹89,078.29/acre) Potato (₹82,204.04/acre).

The benefit per rupee spent in major vegetable cultivation was highest in case of Beans crop (₹5.21) compared to Cauliflowers (₹4.91), Tomato (₹3.81), Cabbage (₹3.49) Green Chilli (₹2.81) and Potato (₹2.41).

4.1.3 Marketing cost, margins of organic Tomato in different channels

A systematic analysis of costs and margins of various intermediaries involved in marketing of organic vegetables would help to know the various services rendered by these intermediaries and their economic performance in the marketing of organic vegetables. The marketing costs and margins of different market functionaries were worked out as percentage to consumer's price for the effective comparison. Further, the price received by the producer and paid by the consumer provided the extent of spread in price between them.

In study area the three marketing channels in case of selected organic vegetables were farmed to be under operation.

Channel-I Farmer → Wholesaler → Retailer → Consumer

Channel-II Farmer → HOPCOMS → Consumer

Channel-III Farmer → Organic Agent → Retailer → Consumer

The results on marketing costs and margins of intermediaries involved in the marketing of organic Tomato in Bengaluru Rural district was presented in the Table 4.3 The marketing Channel-I adopted in the marketing of process indicated distribution of produce from Farmers to Wholesalers to Retailers and finally to the ultimate Consumers.

The marketing costs and margins in Channel-I practiced in the distribution of organic tomato showed the producers price of ₹ 1800.00/ qtl and the ultimate price paid by the consumer was ₹ 2592.00/qtl. It was found that farmer as a producer played a limited role as marketer to the extent of preparing the produce for the market and transporting it to the nearest market and these incurred a cost of ₹ 25.00/qtl. Organic Tomato hence, by allowing the marketing cost incurred by producer actually received a net price of ₹ 1775.00/qtl of organic tomato, which accounted only 1.00 per cent of the consumer's price. The percentage of producer share in the consumer rupee was 68.48 per cent.

Table 4.3 Marketing Costs and Margins of organic Tomato in different Marketing Channels

(₹/qtl)

Sl. No	Particulars	Channel-I	Channel-II	Channel-III
1	Producer price	1800.00	1800.0	2300.00
2	Cost incurred by producer	25.00 (1.00)	90.00 (4.17)	150.00 (4.94)
3	Producers net price	1775.00 (68.48)	1710.00 (79.17)	2150.00 (70.82)
4	Purchase price of Wholesaler	1800	0.00	0.00
5	Cost incurred for Wholesaler	120.00 (4.63)	0.00	0.00
6	Net Profit margin of Wholesaler	240.00 (9.23)	0.00	0.00
7	Sale price for Wholesaler	2160.00	0.00	0.00
8	Purchase price of HOPCOMS	0.00	1800.00	0.00
9	Cost incurred for HOPCOMS	0.00	180.00 (8.33)	0.00
10	Net Profit margin of HOPCOMS	0.00	180.0 (8.33)	0.00
11	Sale price for HOPCOMS	0.00	2160.00	0.00
12	Purchase price for Organic Agent	0.00	0.00	2300.00
13	Cost incurred for Organic Agent	0.00	0.00	107.50 (3.55)
14	Net Profit margin of Organic Agent	0.00	0.00	122.50 (4.03)
15	Sale price for Organic Agent	0.00	0.00	2530.00
16	Cost incurred for Retailer	208.5 (8.04)	0.00	177.10 (5.83)
17	Consumer price (selling price of Retailer)	2592.00	2160.00	3036.00
18	Net Profit of Retailers	223.5 (8.62)	0.00	328.90 (10.83)
19	Percentage of Producer share in the consumer price	68.48	79.17	70.82

Note : Figures in parenthesis indicates the percentages to the consumer rupee.

The share in consumers price by wholesaler comprising the cost incurred (4.63%) and profit margin (9.23%). Similarly, the cost incurred by Retailers were ₹ 208.50/qtl (8.04%)and Net profit margin ₹ 223.50/qtl (8.62%).

It was observed that Retailer in organic Tomato added more share in consumer price compared to Wholesaler in the marketing of organic Tomato in Channel-I.

Channel II: This was the second important channel found under operation. Farmers supplied their organic produce to HOPCOMS. The HOPCOMS purchased their produce from farmers where the price was found to be (₹1,800.00 /qtl). The percentage producer's share was worked out to be 79.17 per cent. In this channel producer was got high share. In Channel- II HOPCOMS worked as an intermediaries between the producer and consumer .the marketing cost of HOPCOMS was (₹180.00/qtl) with share of 8.33 per cent in consumer rupee. The margin retained by HOPCOMS was recorded as ₹ 180.00 (8.33% share) in the consumer price.

Channel III: This was the third important Channel found under operation. The organic produce distributed from Producer to Organic Agent to Retailer to Consumers. The marketing cost of producer was found to be higher ₹ 150.00 (4.94 per cent). The producer's share was worked out to be 70.82 per cent. The share in consumers price by organic agent comprising the cost incurred (3.55%) and profit margin (4.03%). Similarly, the cost incurred by Retailers were ₹177.10/qtl (5.83%)and profit margin ₹ 328.90/qtl (10.83%).

4.1.4 Marketing cost, margins of Organic Cabbage in different channels

The results on marketing costs and margins of intermediaries involved in the marketing of organic cabbage in Bengaluru rural district were presented in the Table 4.4. The marketing Channel-I adopted in the marketing process indicated distribution of produce from Farmers to Wholesalers to Retailers and finally to the Consumers.

Table 4.4 Marketing Costs and Margins of organic Cabbage in different Marketing Channels

(₹/qtl)

Sl. No	Particulars	Channel-I	Channel-II	Channel-III
1	Producer price	1000.00	1500.00	2000
2	Cost incurred by producer	25.25 (1.64)	75.00 (4.16)	142.5 (5.16)
3	Producers net price	974.75 (63.30)	1425.00 (79.17)	1857.50 (67.30)
4	Purchase price of Wholesaler	1000.00	0.00	0.00
5	Cost incurred for Wholesaler	79.37 (5.15)	0.00	0.00
6	Net Profit margin of Wholesaler	120.63 (7.83)	0.00	0.00
7	Sale price for Wholesaler	1200.00	0.00	0.00
8	Purchase price of HOPCOMS	0.00	1500.00	0.00
9	Cost incurred for HOPCOMS	0.00	120.00 (6.67)	0.00
10	Net Profit margin of HOPCOMS	0.00	180.00 (10.00)	0.00
11	Sale price for HOPCOMS	0.00	1800.00	0.00
12	Purchase price of organic agent	0.00	0.00	2000
13	Cost incurred for organic agent	0.00	0.00	100.00 (3.63)
14	Net Profit margin of organic agent	0.00	0.00	200.00 (7.25)
15	Sale price for organic agent	0.00	0.00	2300.00
16	Cost incurred for Retailer	102.50 (6.66)	0.00	161.00 (5.83)
17	Net Profit of Retailers	237.50 (15.42)	1800.00	299.00 (10.83)
18	Consumer price (selling price of Retailer	1540.00	0.00	2760.00
19	Percentage of Producer share in the consumer price	63.30	79.17	67.93

Note : Figures in parenthesis indicates the percentages to the consumer rupee.

The marketing costs and margins in Channel-I adopted in the distribution of organic tomato showed the producers price of ₹1,000.00/ qtl and the ultimate price paid by the consumer was ₹1,540.00/qtl it was found that farmer as a producer played a limited role as marketer to the extent of preparing the produce for the market and transporting it to the nearest market and these incurred a cost of ₹25.25/qtl. Organic cabbage, hence, by allowing the marketing cost incurred by producer actually received a net price of ₹974.75.00/qtl of organic cabbage, which accounted only 1.64 per cent share of the consumer's price. The producer share in consumer rupee was 63.30 per cent.

The share in consumers price by Wholesaler comprising the cost incurred
(5.15%) and profit margin (7.83%). Similarly, the cost incurred by Retailers were ₹ 102.50/qtl (6.66%) and profit margin ₹ 237.50/qtl (15.42%).

It was observed that Retailer in organic cabbage added more share in consumer price as compared to Wholesaler in the marketing of organic cabbage in Channel-I.

Channel II: This was the second important Channel found under operation. Farmers supplied their produce to HOPCOMS. The HOPCOMS purchased their produce from farmers where the price was found to be more (₹1,500 /qtl) than in Channel-I. The percentage of producer's share was worked out to be 79.17 per cent. In this channel producer was got high share. In Channel- II, HOPCOMS worked as a intermediate between the producer and consumer. The marketing cost of HOPCOMS was (₹120.00/qtl) with share of 6.67 per cent in consumer price. The margin retained by HOPCOMS was recorded as ₹180.00 (10.00% share) in the consumer price.

Channel III: This was the third important channel found under operation. The produce distributed from Producer to Organic Agent to Retailer to Consumers. The marketing cost of producer was found to be higher ₹ 142.50/qtl (5.16%). The producer's share was worked out to be 67.30 per cent. The share in consumers price by Organic Agent comprised the cost incurred (3.63%) and profit margin (7.25%). Similarly, the cost incurred by Retailers was ₹161.00/qtl (5.83%) and profit margin ₹ 299.00/qtl (10.83%).

4.1.4 Marketing Cost, Margins of Organic Cauliflowers in different Channels

The results on marketing costs and margins of intermediaries involved in the marketing of Organic Cauliflowers in Bengaluru Rural district in different Channels were presented in the Table 4.5.

The marketing Channel-I adopted in the marketing of indicated distribution of produce from Farmers to Wholesalers to Retailers and finally to the Consumers.The marketing costs and margins in Channel-I practiced in the distribution of Organic Cauliflower showed the producers price of ₹2,300/ qtl and the ultimate price paid by the consumer ₹3,000.00/qtl it was found that farmer as a producer played a limited role as marketer to the extent of preparing the produce for the market and transporting it to the nearest market and they incurred a cost of ₹50.00/qtl. Organic cauliflower, hence, by allowing the marketing cost incurred by producer actually received a net price of ₹2250.00/qtl of organic cauliflower which accounted only 1.67 per cent share of the consumer's price. The producer share in consumer rupee was 75.00 per cent.

The share in consumers price by Wholesaler comprising the cost incurred
(4.33%) and profit margin (5.67%). Similarly, the cost incurred by Retailers ₹ 160.35/qtl (5.35%) and profit margin ₹239.65 /qtl (7.98%).

It was observed that Retailer in organic cauliflower added more share in consumer price compared to Wholesaler in the marketing of organic cauliflower in Channel-I.

Table 4.5 Marketing Costs and Margins of organic Cauliflower in different Marketing Channels

(₹/qtl)

Sl. No	Particulars	Channel-I	Channel-II	Channel-III
1	Producer price	2300.00	2570.00	3000.00
2	Cost incurred by producer	50.00 (1.67)	77.25 (2.69)	145.0 (3.87)
3	Producers net price	2250.00 (75.00)	2492.75 (86.86)	2855.00 (76.33)
4	Purchase price of Wholesaler	2300	0.00	0.00
5	Cost incurred for Wholesaler	130.00 (4.33)	0.00	0.00
6	Net Profit margin of Wholesaler	170.00 (5.67)	0.00	0.00
7	Sale price for Wholesaler	2600.00	0.00	0.00
8	Purchase price for HOPCOMS	0.00	2492.75	0.00
9	Cost incurred for HOPCOMS	0.00	120.00 (4.18)	0.00
10	Net Profit margin of HOPCOMS	0.00	180.00 (6.27)	0.00
11	Sale price for HOPCOMS	0.00	2870.00	0.00
12	Purchase price for organic agent	0.00	0.00	3000
13	Cost incurred for organic agent	0.00	0.00	140 (3.74)
14	Net Profit margin of organic agent	0.00	0.00	160.00 (4.28)
15	Sale price for organic agent	0.00	0.00	3300.00
16	Cost incurred for Retailer	160.35 (5.35)	0.00	224.00 (6.00)
17	Net Profit of Retailers	239.65 (7.98)	2870.00	216.00 (5.78)
18	Consumer price (selling price of Retailer)	3000.0	0.00	3740.00
19	Percentage of Producer share in the consumer price	75.00	86.86	76.34

Note : Figures in parenthesis indicates the percentages to the consumer rupee.

Channel II: This was the second important channel found under operation. Farmers supplied their produce to HOPCOMS. The HOPCOMS purchased their produce from farmers where the price was found to be more (₹2,570.00 /qtl) than in Channel-I. The producer's share was worked out to be 86.86 per cent. In this channel producer was got high share. In channel- II HOPCOMS worked as an intermediate between the producer and consumer. The marketing cost of HOPCOMS was (₹120.00/qtl) with share of 4.18 per cent in consumer price. The margin retained by HOPCOMS was recorded as ₹ 180.00 (6.27% share) in the consumer price.

Channel III: This was the third important channel found under operation. The produce distributed from Producer to Organic Agent to Retailer to Consumers. The marketing cost of producer was found to be higher ₹145.00/qtl (3.87%). The percentage of producer's share was worked out to be 76.34 per cent. The share in consumers price by Organic Agent comprised the cost incurred (3.74%) and profit margin (4.28%). Similarly, the cost incurred by Retailers was ₹216.00/qtl (5.78%) and profit margin ₹224.00./qtl (6.00%).

4.1.5 Marketing Cost, Margins of Organic Potato in different Channels

The results on marketing costs and margins of intermediaries involved in the marketing of organic potato in Bengaluru Rural district in different channels are presented in the Table 4.6.

The marketing Channel-I adopted in the marketing process indicated distribution of produce from Farmers to Wholesalers to Retailers and finally to the Consumers. The marketing costs and margins in Channel-I practiced in the distribution of organic potato showed the producers price of ₹ 1600.00/qtl and the ultimate price paid by the consumer ₹2208.00/qtl it was found that farmer as a producer played a limited role as marketer to the extent of preparing the produce for the market and transporting it to the nearest market and these incurred a cost of ₹45.00/qtl. Organic potato hence, by allowing the

Table 4.6 Marketing Costs and Margins of organic Potato in different Marketing Channels

(₹/qtl)

Sl. No	Particulars	Channel-I	Channel-II	Channel-III
1	Producer price	1600.00	2250.00	2200.00
2	Cost incurred by producer	45.00 (2.04)	67.50 (2.46)	105.00 (3.46)
3	Producers net price	1555.00 (70.43)	2182.50 (79.65)	2095.00 (69.01)
4	Purchase price of Wholesaler	1600	0.00	0.00
5	Cost incurred by Wholesaler	115.00 (5.21)	0.00	0.00
6	Net Profit margin of Wholesaler	125.00 (5.66)	0.00	0.00
7	Sale price for Wholesaler	1840.00	0.00	0.00
8	Purchase price for HOPCOMS	0.00	2250.00	0.00
9	Cost incurred for HOPCOMS	0.00	225.00 (8.21)	0.00
10	Net Profit margin of HOPCOMS	0.00	265.00 (9.68)	0.00
11	Sale price for HOPCOMS	0.00	2740.00	0.00
12	Purchase price for organic agent	0.00	0.00	2200.00
13	Cost incurred for organic agent	0.00	0.00	110.00 (3.62)
14	Net Profit margin of organic agent	0.00	0.00	220.00 (7.25)
15	Sale price for organic agent	0.00	0.00	2530.00
16	Cost incurred for Retailer	128.80 (5.83)	0.00	177.10 (5.83)
17	Net Profit of Retailers	239.20 (10.83)	2740.00	328.90 (10.83)
18	Consumer price (selling price of Retailer)	2208.00	0.00	3036.00
19	Percentage of Producer share in the consumer price	70.43	82.11	69.01

Note : Figures in parenthesis indicates the percentages to the consumer rupee.

marketing cost incurred by producer actually received a net price of ₹1555.00/qtl of organic potato, which accounted only 2.04 per cent share of the consumer's price. The producer share in consumer rupee was 70.43 per cent.

The share in consumers price by Wholesaler comprising the cost incurred
(5.21%) and profit margin (5.66%). Similarly, the cost incurred by Retailers were ₹128.80/qtl (5.83%) and profit margin ₹239.20/qtl (10.83%).

It was observed that Retailer in organic potato added more share in consumer price compared to Wholesaler in the marketing of organic tomato in Channel-I.

Channel II: This was the second important channel found under operation. Farmers supplied their produce to HOPCOMS. The HOPCOMS purchased their produce from farmers where the price was found to be more (₹2250.00 /qtl) than in Channel-I. The percentage of producer's share was worked out to be 79.65 per cent. In this channel producer was got high share. In channel- II HOPCOMS worked as a Intermediate between the producer and consumer. The marketing cost of HOPCOMS was (₹225.00/qtl) with share of 8.21 per cent in consumer price. The margin retained by HOPCOMS was recorded as ₹ 265.00(9.68% share) in the consumer price.

Channel III: This was the third important channel found under operation. The produce distributed from Producer to Organic Agent to Retailer to Consumers. The marketing cost of producer was found to be higher ₹ 105.00/qtl (3.46%). The producer's share was worked out to be 69.01 per cent. The share in consumers price by Organic Agent comprised the cost incurred (3.62%) and profit margin (7.25%). Similarly, the cost incurred by Retailers was ₹177.10/qtl (5.83%) and profit margin ₹ 328.90/qtl (10.83%).

4.1.6 Marketing Cost, Margins of Organic Beans in different Channels

The results on marketing costs and margins of intermediaries involved in the marketing of organic Beans in Bengaluru rural district in different Channels were presented in the Table 4.7.

The marketing Channel-I practiced in the marketing process indicated distribution of produce from Farmers to Wholesalers to Retailers and finally to the Consumers. The marketing costs and margins in Channel-I adopted in the distribution of organic Beans showed the producers price of ₹3975.00/qtl and the ultimate price paid by the consumer ₹4750.00/qtl. It was found that farmer as a producer played a limited role as marketer to the extent of preparing the produce for the market and transporting it to the nearest market and these incurred a cost of ₹40.00/qtl. Organic Beans hence, by allowing the marketing cost incurred by producer actually received a net price of ₹3935.00/qtl of organic Beans, which accounted only 0.84 per cent share of the consumer's price. The producer share in consumer rupee was 82.84 per cent.

The share in consumers price by Wholesaler comprising the cost incurred
(2.53%) and profit margin (3.79%). Similarly, the cost incurred by Retailers were ₹220.00/qtl (4.63%) and profit margin ₹255.00/qtl (5.37%).

It was observed that Retailer in organic Beans added more share in consumer price compared to Wholesaler in the marketing of organic Beans in Channel-I.

Channel II: This was the second important channel found under operation. Farmers supplied their produce to HOPCOMS. The HOPCOMS purchased their produce from farmers where the price was found to be more (₹4500.00/qtl) than in Channel-I. The producer's share was worked out to be 90.16 per cent. In this channel producer was got high share. In channel- II HOPCOMS worked as a intermediate between the producer and consumer. The marketing cost of HOPCOMS was (₹120.00/qtl) with share of 2.45 per cent in consumer price. The profit margin retained by HOPCOMS was recorded as ₹280.00(5.72% share) in the consumer price.

Table 4.7 Marketing Costs and Margins of organic Beans in different Marketing Channels

(₹/qtl)

Sl. No	Particulars	Channel-I	Channel-II	Channel-III
1	Producer price	3975.00	4500.00	5000.00
2	Cost incurred by producer	40.00 (0.84)	82.00 (1.67)	100.00 (1.75)
3	Producers net price	3935.00 (82.84)	4418.00 (90.16)	4900 (85.96)
4	Purchase price of Wholesaler	3975.00	0.00	0.00
5	Cost incurred for Wholesaler	120.0 (2.53)	0.00	0.00
6	Net Profit margin of Wholesaler	180.00 (3.79)	0.00	0.00
7	Sale price for Wholesaler	4275.00	0.00	0.00
8	Purchase price for HOPCOMS	0.00	4500.00	0.00
9	Cost incurred for HOPCOMS	0.00	120.00 (2.45)	0.00
10	Net Profit margin of HOPCOMS	0.00	280.00 (5.72)	0.00
11	Sale price for HOPCOMS	0.00	4900.00	0.00
12	Purchase price for organic agent	0.00	0.00	5000.00
13	Cost incurred for organic agent	0.00	0.00	75.00 (1.32)
14	Net Profit margin of organic agent	0.00	0.00	225.00 (3.95)
15	Sale price for organic agent	0.00	0.00	5300.00
16	Cost incurred for Retailer	220 (4.63)	0.00	171.00 (3.00)
17	Net Profit of Retailers	255.00 (5.37)	4900.00	229.00 (4.01)
18	Consumer price (selling price of Retailer)	4750.00	0.00	5700.00
19	Percentage of Producer share in the consumer price	82.84	90.16	85.96

Note : Figures in parenthesis indicates the percentages to the consumer rupee.

Channel III: This was the third important channel found under operation. The produce distributed from Producer to Organic Agent to Retailer to Consumers. The marketing cost of producer was found to be higher ₹ 100.00/qtl (1.75%). The producer's share was worked out to be 85.96 per cent. The share in consumers price by Organic Agent comprised the cost incurred (1.32%) and profit margin (3.95%). Similarly, the cost incurred by Retailers was ₹171.00/qtl (3.00%) and profit margin ₹ 229.00/qtl (4.01%).

4.1.7 Marketing Cost, Margins of Organic Green Chilli in different Channels

The results on marketing costs and margins of intermediaries involved in the marketing of organic Chilli in Bengaluru rural district in different Channels were presented in the Table 4.8.

The marketing Channel-I practiced in the marketing process indicated distribution of produce from Farmers to Wholesalers to Retailers and finally to the Consumers. The marketing costs and margins in Channel-I practiced in the distribution of organic Green Chilli showed the producers price of ₹2350.00/qtl and the ultimate price paid by the consumer ₹3000.00/qtl. It was found that farmer as a producer played a limited role as marketer to the extent of preparing the produce for the market and transporting it to the nearest market and they incurred a cost of ₹40.00/qtl. Organic Green Chilli hence, by allowing the marketing cost incurred by producer actually received a net price of ₹2350.00/qtl of organic Green Chilli, which accounted only 1.33 per cent share of the consumer's price. The producer share in consumer rupee was 77.00 per cent.

The share in consumers price by Wholesaler comprising the cost incurred (5.23%) and profit margin (8.10%). Similarly, the cost incurred by Retailers were ₹.104.00/qtl (3.47%) and profit margin ₹.146.00/qtl (4.87%).

It was observed that Wholesaler in organic Green Chilli added more share in consumer price compared to Retailer in the marketing of organic Green Chilli in Channel-I.

Table 4.8 Marketing Costs and Margins of organic Green Chilli in different Marketing Channels

(₹/qtl)

Sl. No	Particulars	Channel-I	Channel-II	Channel-III
1	Producer price	2350.00	2700.00	3000.00
2	Cost incurred for producer	40.00 (1.33)	50.00 (1.56)	100.00 (2.66)
3	Producers net price	2310 (77.00)	2650.00 (82.82)	2900 (77.13)
4	Purchase price for Wholesaler	2350.00	0.00	0.00
5	Cost incurred for Wholesaler	157.00 (5.23)	0.00	0.00
6	Net Profit margin of Wholesaler	243.00 (8.10)	0.00	0.00
7	Sale price for Wholesaler	2750.00	0.00	0.00
8	Purchase price for HOPCOMS	0.00	2700.00	0.00
9	Cost incurred for HOPCOMS	0.00	235.00 (7.34)	0.00
10	Net Profit margin of HOPCOMS	0.00	265.00 (8.28)	0.00
11	Sale price for HOPCOMS	0.00	3200.00	0.00
12	Purchase price for organic agent	0.00	0.00	3000
13	Cost incurred for organic agent	0.00	0.00	145.00 (3.86)
14	Net Profit margin of organic agent	0.00	0.00	155.00 (4.12)
15	Sale price for organic agent	0.00	0.00	3300.00
16	Cost incurred for Retailer	104.00 (3.47)	0.00	131.00 (3.48)
17	Net Profit of Retailers	146.00 (4.87)	3200.00	329.00 (8.75)
18	Consumer price (selling price of Retailer)	3000	0.00	3760.00
19	Percentage of Producer share in the consumer price	77.00	82.81	77.13

Note : Figures in parenthesis indicates the percentages to the consumer rupee.

Channel II: This was the second important channel found under operation. Farmers supplied their produce to HOPCOMS. The HOPCOMS purchased their produce from farmers where the price was found to be more (₹2700.00/qtl) than in Channel-I. The producer's share was worked out to be 82.82 per cent. In this channel producer was got high share. In channel- II HOPCOMS worked as a intermediaries between the producer and consumer. The marketing cost of HOPCOMS was (₹235.00/qtl) with share of 7.34 per cent in consumer price. The margin retained by HOPCOMS was recorded as ₹265.00 (8.28% share) in the consumer price.

Channel III: This was the third important channel found under operation. The produce distributed from Producer to Organic Agent to Retailer to Consumers. The marketing cost of producer was found to be higher ₹100.00/tl (2.66%). The producer's share was worked out to be 77.13 per cent. The share in consumers' price by Organic Agent comprised the cost incurred 3.86 per cent and profit margin 4.12 per cent. Similarly, the cost incurred by Retailers was ₹131.00/qtl (3.48%) and profit margin ₹329.00/qtl (8.75%).

4.1.8 Marketing cost incurred by farmers-respondents in different channels

The Table 4.9 revealed that marketing costs incurred by the respondents for the organic vegetables in different channels. The average marketing cost was highest in the case of Cauliflower (₹90.75/qtl) compared to the Tomato (₹88.33/qtl), Cabbage (₹80.92/qtl), Beans (₹74.00/qtl), Potato (₹72.50/qtl) and Green Chilli (₹63.33/qtl).

4.1.9 Marketing cost incurred by the farmer- respondents for different crops

(Per acre)

The results were shown in the Table 4.10 revealed that highest marketing cost was incurred in case of Tomato ₹10,599.60 per acre compared to the Cauliflowers (₹7713.75), Cabbage (₹7282.80/acre), Potato (₹5437.50), Green Chilli (₹3799.80/acre) and Beans (₹3700.00/acre).

Table 4.9 Marketing cost incurred by farmers in different channels

(₹/qtl)

Crop	Channel-1	Channel-II	Channel-III	Average marketing cost
Tomato	25.00	90.00	150.00	88.33
Potato	45.00	67.50	105.00	72.50
Cabbage	25.25	75.00	142.00	80.92
Cauliflowers	50.00	77.25	145.00	90.75
Beans	40.00	82.00	100.00	74.00
Green Chilli	40.00	50.00	100.00	63.33

Channel-I Farmer → Wholesaler → Retailer → Consumer
Channel-II Farmer → HOPCOMS → Consumer
Channel-III Farmer → Organic Agent → Retailer → Consumer

Table 4.10 Marketing cost incurred by the sample farmer respondents for different crops

Crop	Marketing cost ₹/qtl	Yield (qtls)/acre	Total marketing cost/Acre
Tomato	88.33	120	10599.60
Potato	72.50	75	5437.50
Cabbage	80.92	90	7282.80
Cauliflower	90.75	85	7713.75
Beans	74.00	50	3700.00
Green Chilli	63.33	60	3799.80

4.2 Awareness towards Organic Vegetables

4.2.1 General information of Consumer -respondents in the study area

The Table 4.11 presents the general information of selected samples in Bengaluru city. It could be seen from the Table 4.2.1 that the maximum number of respondents i.e., 42.22 per cent of them belonged to the (21-40 years). 37.78 per cent of them were 41-60 years and 20.00 per cent of them were in the age of >60.

Maximum number of the selected respondents was degree holders (45.55 %), 17.77 per cent of them were of PUC level, 20.00 per cent of the respondents were high school level and 11.11 per cent of them were of primary school. Very small proportion of the respondents were of illiterates (5.55%).

Most of the respondents belonged to nuclear families (91.11 %) and remaining 8.89 per cent of them were living in joint families.

Among the selected samples, 38.88 per cent of them were vegetarians and remaining 61.12 per cent were non-vegetarians.

Most of the respondents (44.44%) belonged to income group (>₹ 10.000/ month), 35.55 per cent of them belonged to income group (₹7500 – 10000/ month) and the remaining 23.33 per cent of them belonged to income group (>₹5000-7500/month).

Under classification of occupation, 30.00 per cent of them were government employees, 28.89 per cent of them were private employees, 21.11 per cent were business, 20.00 per cent of them were included house wives and others occupations.

Table 4.11 General information of Consumer-respondents in Bengaluru Urban District

General Information	Bengaluru Urban District		
	Categories	No. of respondents	Percentage
Age	21-40 years	38	42.22
	41-60 years	34	37.78
	>60 years	18	20.00
Education	Illiterate	5	5.55
	Primary	10	11.11
	High School	18	20.00
	PUC	16	17.77
	Degree & above	41	45.55
Family type	Joint	8	8.89
	Nuclear	82	91.11
Food habit	Vegetarian	35	38.88
	Non- Vegetarian	55	61.12
Monthly Income (₹)	5000-7500	21	23.33
	7500-10000	32	35.55
	Above 10000	40	44.44
Occupation	Business	19	21.11
	Government employees	27	30.00
	Private companies	26	28.89
	Others	18	20.00)

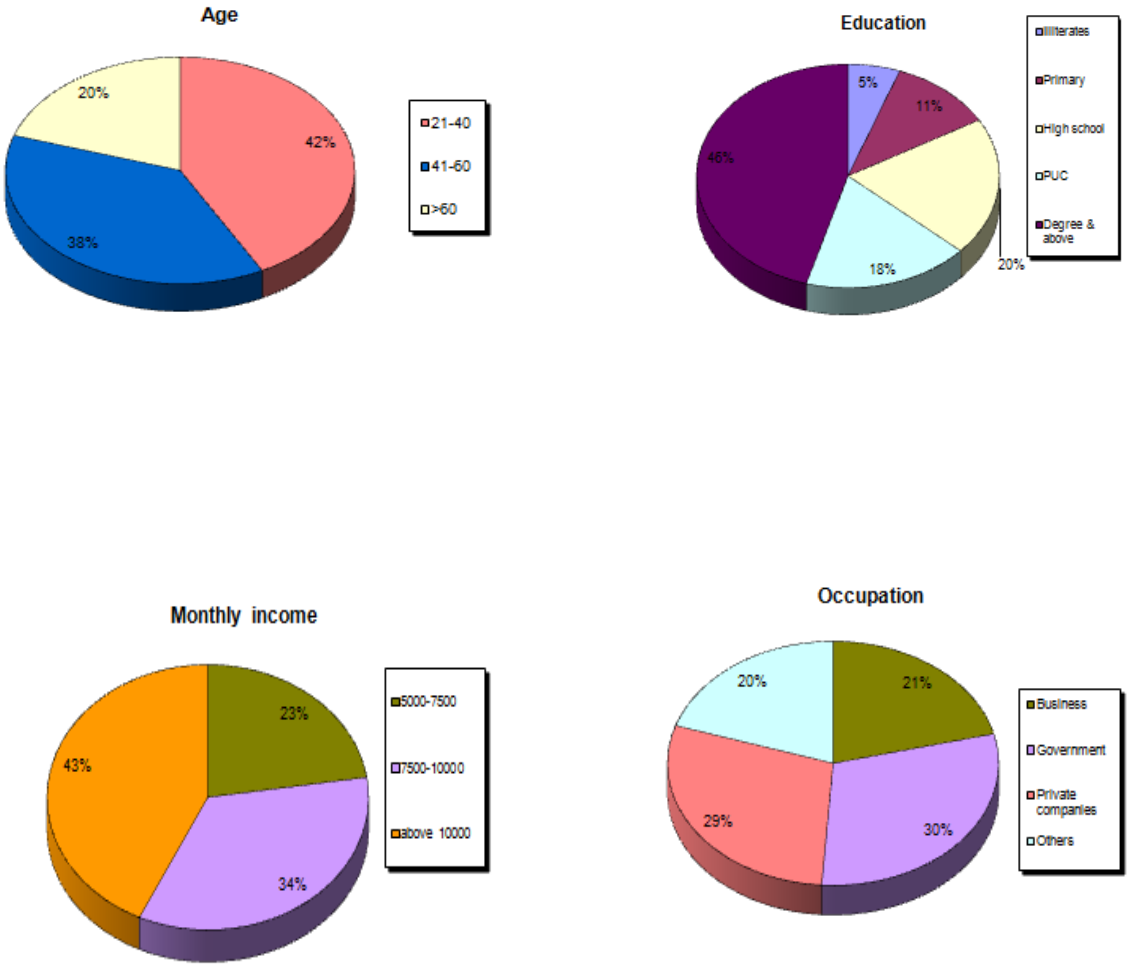

Fig. 3.General information of Consumer-respondents in Bengaluru Urban District

4.2.2 Awareness towards Organic Vegetables

In present study, the Table 4.12 indicated that most of the respondents were aware about the organic vegetables (77.78%) and 22.22 per cent of the respondents were doesn't have awareness about the organic vegetables in the study area.

4.2.3 Knowledge about Organic Vegetables

The Table 4.13 revealed that about 24.29 per cent of the respondents who were having awareness about the organic vegetables. They were had prior knowledge about the organic vegetables and 75.71 per cent of the consumers did not had prior knowledge about the organic vegetables among the respondents. The 70.00 per cent of the respondents were seen organic vegetables before and the 30.00 per cent of the respondents were not seen organic vegetables before. The 65.71 percent of the respondents were purchased organic vegetables while 34.29 per cent of the respondents were not purchased organic vegetables.

4.2.4 Sources of Information to organic products consumers

Source of information to create awareness about the organic vegetables in the study area were analysed and depicted in Table 4.14 it was observed from the table that, in case of Bengaluru urban district shop Keeper/Retailer were the major source for getting information about the organic vegetables (70 and 100% respectively). This was followed by Newspapers (58 and 82.86 % respectively), Magazines (50 and 71.43% respectively), Friends/Relatives (46 and 65.71% respectively) and Radio (35 and 50.00 % respectively).

4.3 Factors influencing the purchasing of Organic Vegetables

In present study in Bengaluru Urban district preference for organic vegetables by the consumers were presented in the Table 4.15 while preferring healthy and hygienically produced was considered as the foremost factor (mean score of 68.28). Second important factor was good quality with a

Table 4.12 Awareness towards Organic Vegetables by the respondents

Statement	No. of sample			Percentage to total		
	Yes	No	Total	Yes	No	Total
Are you aware availability of organic vegetables	70	20	90	77.78	22.22	100.00

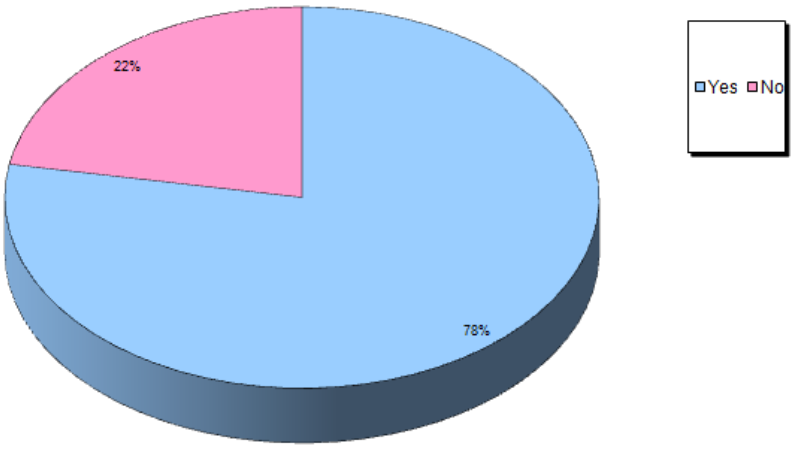

Fig. 4. Awareness towards Organic Vegetables by the respondents

Table 4.13 Knowledge of the consumers with respect to Organic Vegetables

Variable	No. sample	Percentage to the total
a. Prior knowledge about organic vegetable		
Yes	17	24.29
No	53	75.71
Total	70	100.00
b. Seen organic vegetable before		
Yes	49	70.00
No	21	30.00
Total	70	100.00
c. purchase of organic vegetables		
Yes	46	65.71
No	24	34.29
Total	70	100

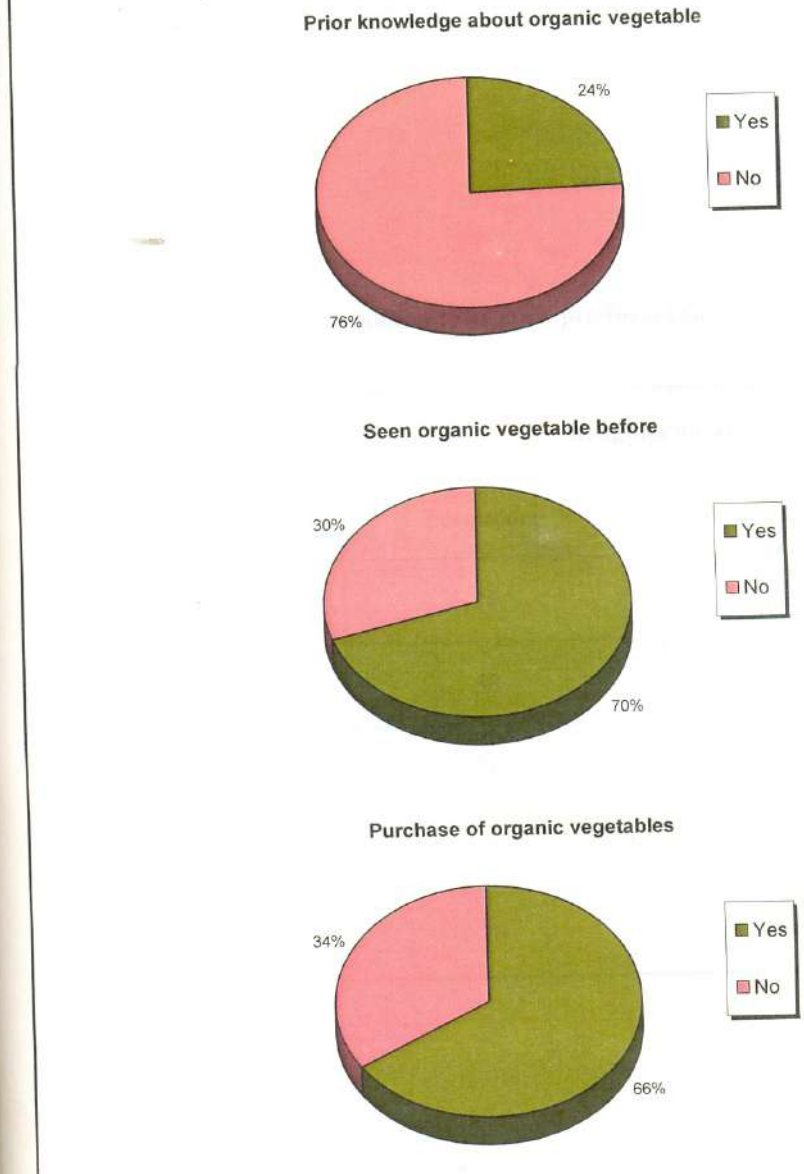

Fig. 5. Knowledge of the consumers with respect to Organic Vegetables

Table 4.14 Sources of Information to organic products consumers

(N=70)

Sources	Bengaluru city	
	Frequency	Percentage to total
Radio	35	50.00
News papers	58	82.86
Magazines	50	71.43
Friends /Relatives	46	65.71
Shop Keeper/Retailers	70	100.00

Table 4.15 Factors influencing the purchasing of organic vegetables by the consumers

Sl. No.	Factors	Garret score	Rank
1	Healthy and hygienically produced	68.28	I
2	Good quality	67.57	II
3	Freshly available	62.08	III
4	Good taste	55.41	IV
5	Liked by the family members	49.89	V
6	Good service	47.13	VI
7	Influenced by friends/relatives	36.56	VII
8	Accessibility	31.78	VIII
9	Regular availability	30.07	IX
10	Promoted by credit sales	28.72	X

mean score of 67.57 third important factor was freshly available (mean score of 62.08). Good tastes (mean score of 55.41) followed by liked by the family members (mean score of 49.89), Good service (mean score of 47.13), influenced by friends/relatives (mean score of 35.56), accessibility (mean score of 31.78), regular availability (mean score of 30.07) and promoted by credit sales (mean score of 28.72). In this ranking method, healthy and hygienically produced was scores highest rank and promoted by credit sales scored least rank among all the factors.

4.4 Constraints in Production and Marketing of Organic Vegetables

4.4.1 Constraints in Production of Organic Vegetables

In the present study, opinion survey was conducted regarding the production of Organic Vegetables and the results were presented in Table 4.16 the opinions of the Organic Vegetable Growers on the problem of growing organic vegetables were gathered right from the procurement of inputs till the crop was harvested. The respondents were asked to rank the attributes in a scale of one to eight for the productions problems, the least rank being eight and rank one represent highest score. The ranks indicated farmer's preference for different production problems.

In the ranking method non-availability of labour was given utmost priority by the farmers (67.03). The second importance was given to non-availability of information on organic farming (57.78). The third and fourth ranks were low productivity (56.70) and incidence of pests and diseases (54.42). Non-availability of organic insecticides, non-availability of organic manure and limited, non-availability of organic pesticides and limited and irregular power supply occupied next four positions with score of 53.10, 52.47, 48.22 and 35.65 respectively. In this ranking method, non-availability of labour had got first rank (67.03) and limited and irregular power supply (35.65) got the least rank among the different attributes.

Table 4.16 Constraints in production of organic vegetables

Sl. No	Problems	Garret score	Rank
1	Non -availability of labour	67.03	I
2	Non -availability of information on organic farming	57.78	II
3	Low productivity	56.70	III
4	Incidence of pest and diseases	54.42	IV
5	Non- availability of organic insecticides	53.10	V
6	Non -availability of organic manure	52.47	VI
7	Non -availability of organic pesticide	48.22	VII
8	Limited and irregular power supply	47.63	VIII

4.4.2 Constraints in Marketing of Organic Vegetables

In the present study, opinion survey was conducted regarding the marketing of organic vegetables and the results were presented in Table 4.17. The opinions of the organic vegetable growers on the problem of marketing of organic vegetable were gathered right from the procurement of organic vegetable crops till the crop produce was marketed. The respondents were asked to rank the attributes in a scale of one to ten for the marketing problems, the least rank being tenth and rank one represent highest score. The methodology used for this was given in the section three. The ranks indicated farmer's preference for different marketing problems.

In the ranking method far location of selling unit was given utmost priority by the farmers (62.62). The second importance was given to costly transportation facilities of market for organic vegetables (59.95). The third and fourth ranks were absence of premium price in local market (59.80) and lack of storage facility (59.27). The fifth rank was given to lack of market information (47.82). Lack of grading facility, lack of packaging facility, lack of financial assistance from any company, delay in payment and sale proceeds and faulty in weighment occupied next five positions with score of 46.40, 43.10, 39.83, 26.92 and 20.42 respectively. In this ranking method, far location of selling unit had got first rank (62.62) and faulty weighment (20.42) got the least rank among the different attributes.

Table 4.17 Constraints in marketing of organic vegetables

Sl. No	Problems	Garret Score	Rank
1	Far off location of selling unit	62.62	I
2	costly Transportation facilities	59.95	II
3	Absence of premium price on local market	59.80	III
4	Lack of storage facility	59.27	IV
5	Lack of Market Information	47.82	V
6	Lack of Grading Facility	46.40	VI
7	Lack of Packaging Facility	43.10	VII
8	Lack of Financial assistance from any company	39.83	VIII
9	Delay in payment and sale proceeds	26.92	IX
10	Faultily weighment	20.42	X

5. DISCUSSION

The results of the investigation presented in the results chapter were discussed in detail in this chapter. The main focus here was to throw light on some of the causes responsible for the major findings observed in the study. This kind of analysis was hoped to identify such of the policy measures and execute corrections that could be implemented to overcome the constraints encountered by Organic Vegetable producers. Keeping in view the objectives of the study, the results were discussed under the following headings.

5.1 Supply Chain Analysis of Organic Vegetables

5.2 Awareness towards Organic Vegetables

5.3 Factors influencing the purchasing of Organic Vegetables

5.4 Constraints in Production and Marketing of Organic Vegetables

5.1 Supply Chain Analysis of Organic Vegetables

5.1.1 Socio -economic characteristics of Organic Farmers in the study area

5.1.1.1 Age of Respondents

The Table 4.1 in the previous chapter revealed the general information about the organic vegetable growers. The average age of the farmers were 43.60 years, indicated that most of the farmers were fall under middle age group. Hence, middle age farmers were more aggressive in production of organic vegetables to earn more profit and maintain the soil fertility.

5.1.1.2 Family Size and Type of family

The Table 4.1 revealed the results most of the sample respondents family size was middle size family (4-6 members) and most of the families were nuclear families. This might be due to their awareness regarding the increased cost of living, disintegration of Hindu Joint Family System and difficulties in maintenance of big family and they might have found to have

medium families to lead better and comfortable life. The predominance of Nuclear family was due to the realization of advantages of nuclear family in terms of running family, fewer responsibilities, privacy and more freedom of action in taking family decisions.

5.1.1.3 Family Composition

In all the category of farmer's, male population was found slight higher compared to female population as the average male population was high (33.75%) compared to female population (32.22%) for farmers in the family. Whereas the average children population was 34.33 per cent.

5.1.1.4 Occupational pattern

The occupational pattern of sample farmers revealed that among the sample farmers producing different vegetables in the district, majority (55.00%) of them were dependent on agriculture. The remaining 45.00 percent farmers depended on agriculture and other subsidiary occupations as a source of livelihood. They were of them working as agricultural labourers, because of seasonality of agriculture. Remaining farmers were involved in other jobs and works outside field because of their small land holdings.

5.1.1.5 Educational status

With respect to the literacy rate, it was noticed that majority of farmers were educated in the study area. Literacy level of sample respondents ranged from primary to degree. It was noted fact that higher the education level more would be the knowledge and better would be the understanding capacity of new technologies. Majority of the organic farmers possessed education up to high school level. It was noticed that on an average 85.00 per cent of organic sample farmers were observed to be literates. It was also apparent from the results presented in Table that the education levels of the farmers because of their better financial positions.

5.1.2 Cost-Returns structure in Organic Vegetables production

Per acre cost and returns in production of major organic vegetables was presented in the Table 4.2 the results revealed that among all the farmers the total cost incurred by farmers on potato was highest (₹62,358.46/acre), as compared to Tomato (₹61,944.82/acre), Chilli (₹55,499.96/acre), Cauliflower (₹45,005.98/acre), Beans (₹43,231.70/acre) and Cabbage (38,638.91/acre). This might be attributed to the fact that Potato crop required high seed rate and they buy high quality seeds. Besides this farmers also applying more Farm Yard Manure (FYM), Bio-Fertilizers and Bio Pesticides and Human Labours were used more in the production of organic vegetable.

The cost of human labour, fertilizer, seeds and bullock labour were the items of costs with major share in the variable cost of production , because most of the operations like harvesting/picking, spraying and weeding were human labour intensive operations and the other operations like harrowing and inter-cultivation were bullock labour intensive. The distribution pattern of operational costs for various inputs revealed that cost of human labour was the highest in case of Tomato farms i.e. (₹25,500.00/acre), compared to Chilli (₹22,500/acre), Potato and Beans farms (₹7,500/acre),Cauliflower farms (₹7,500/acre) and Cabbage (6,500/acre). The harvesting time in Tomato crop required more human labours compared to other crops. Where as bullock labour cost was highest at Cauliflower (₹2,260/acre) followed by Cabbage (₹1,910/acre), Beans (₹1,500/acre), Potato (₹1,950/acre) and Chilli (₹1,500/acre).The cost of machine labour was highest in case of Potato (₹2,110.00/acre) and was lowest in Cabbage and Beans (₹980/acre) Potato required deep summer ploughing compared to other crops so Potato required more machine labour compared to other organic vegetable crops.

In the case of Tomato, Cabbage, Cauliflower and Green Chilli organic vegetable seedlings were used to cultivation of the crop where as in Potato tubers were used as seeds and in Beans seeds were used. The cost of seeds was the highest in Potato crop (₹11,840.00/acre) where as it was

lowest in the case of Beans crop (₹3,575.00/acre) followed by Chilli (₹4,410/acre), Cabbage (₹6,770.00/acre), Tomato (₹7,550.00/acre) and Cauliflower (₹8,090/acre). The availability Farm Yard Manure was one of the main problem in the study area. The cost of organic manure was the highest in Potato crop (₹19,200/acre) compared to Cauliflower (₹13,850.00/acre), Chilli (₹10,500/acre), Tomato and Cabbage (₹12,800.00/acre). The farmers were applying more farm yard manure since they were growing vegetables organically. It was also noticed that expenditure on Bio-Fertilizers was seen highest in Cauliflower (680/acre) while it was very less in green Chilli (₹300/acre), Potato (₹630/acre), Tomato (₹500/acre), Beans (500/acre) and Cabbage (₹500/acre). Therefore, it could be asserted that there was a high variability in the cost of cultivation of different vegetables due to varied input requirements and profitability levels.

The analysis of gross returns for major vegetable crops indicated that the gross returns obtained per acre in Tomato crop was highest at ₹235920.00./acre as compared to Beans (₹2,25,000/acre), Cauliflower (₹2,21,000/acre), Green chilli (₹1,56,000/acre), Potato (₹1,50,000/acre) based on per acre yield. With respect to net returns, it was highest in case of Beans at ₹1,78,068.30./acre when compared to Cauliflower (₹1,68,280.27/acre), Tomato (₹1,63,375.58/acre), chili (₹96,701.00./acre), Cabbage (₹89,078.29/acre) and Potato (₹82,204.04/acre).

The benefit per rupee spent in major Organic vegetables production was highest in case of Beans crop (₹5.21) compared to Cauliflower (4.91), Tomato (₹3.81), Chilli (₹2.81) and Potato (₹2.41). It might because of beans were receiving highest price for per kg than remaining other vegetables in the study area. Higher B: C ratio clearly indicated that cultivation of organic vegetables in the district was found to be highly profitable.

5.1.3 Marketing Cost, Margins of Organic Tomato in different channels

Production of any farm commodity completed only when it reached to the ultimate consumer. The marketing process, therefore, had been regarded as a part and parcel of the production activity. It was said that the Indian farmer was a good producer but a bad marketer. The ultimate success in marketing of any commodity largely depended upon the ease and significance in the marketing of Organic Vegetables. The Organic Vegetables were perishable and hence, the study of marketing organizations and the various market functions involved in marketing of organic vegetables was important, due to the peculiarities of agriculture.

From The Table.4.3 revealed that, in relative terms channel –II was best channel for the farmers, where percentage of producer share in consumer rupee was more 79.17 per cent. As, in this channel there was only one intermediate between the producer and consumer that was HOPCOMS. Even though, producers were getting more price for produce in Channel-III, percentage of producer share in consumer rupee was more in channel-II so Channel-II was found to be a best channel for the Organic Tomato Producers. The producers should have agreement with HOPCOMS to sell the produce in Channel-II. The percentage of producer share in consumer rupee was 70.82 per cent in Channel-III. In Channel-III, farmers they carried produce near to the Organic Agent by incurring their own cost. In channel-I, Wholesaler was procured produce from producer himself so there was less marketing cost for the producers and which made them to get produce cheaper rate compare to other channels. The percentage share of consumer rupee of retailer was higher in Channel-III. It was mainly due to lower levels of prices paid at the Organic Agent and selling price was more for consumer. In the channel-I retailer was getting more cost, it might because of grading, cleaning. (Similar findings were observed by Hugar (1980) in his study on Marketing of Vegetables in Belgaum City-An Economic Analysis).

The producers share were inversely related to the consumer's price, while intermediates shares were positively related. It showed that the shares of intermediates increased with increase in consumers prices, whereas those of producers decreased with the increase in the consumer's prices. Thus it was quite obvious that the benefit of increases in the consumer's price was not passed on to the producers but it was absorbed by the intermediates.

5.1.4 Marketing Cost, Margins of Organic cabbage in different channels

The Table 4.4 revealed that, in relative terms percentage of producer share in consumer rupee was more in Channel-II. As, there was only one intermediate between the producer and consumer. The percentage of producer share in the Channel-II was 79.17 per cent, even though cabbage growers were getting more price in Channel-III. For their produce, the percentage producer share in consumer rupee was more in Channel-II. Producers should have agreement with HOPCOMS to sale produce to HOPCOMS in Channel-II. So Channel-II was found to be best channel for the organic Cabbage growers in the study area. Wholesaler directly procure the organic Cabbage from the producer so producer was get less price in the Channel-I. In the point of view of producers, Channel-II was found to be best channel for the producer in the study area for organic cabbage. Similar findings were observed by Hugar (1980) in his study on marketing of vegetables in Belgaum City-An Economic Analysis.

5.1.5 Marketing Cost, Margins of Organic Cauliflower in different Channels

From the Table 4.5 revealed that, in relative terms Channel –II was best Channel for the farmers, where producer share in consumer rupee was more (86.86 per cent). It might because of only one intermediate between the producer and consumer that was HOPCOMS. Even though, producers were getting more price in Channel-III, the percentage of producer share in consumer rupee was more in Channel-II, so Channel-II was found to be a best Channel for the organic Cauliflower producers. The producers should

have agreement with HOPCOMS to sell the produce in Channel-II. The percentage of producer share in consumer rupee was 76.34 per cent in channel-III. In Channel-III farmer they supplied produce to the Organic Agent by incurring own cost. In Channel-I, Wholesaler was procured produce from producer himself so there was less marketing cost for the producers and which made them to get produce cheaper rate compare to other Channel. Among the intermediaries, the share of consumer rupee of Wholesaler was less than Retailer in Channel-I, it might because retailer was sold produce to consumers by more price by incurring more cost due to grading than wholesaler. In the Channel-III, Retailer was getting more cost it may because of packaging and keeping always in freezing condition due to its perishable nature.

5.1.6 Marketing Cost, Margins of Organic Potato in different Channels

From the Table 4.6 revealed that, in relative terms Channel –II was best Channel for the farmers, where percentage of producer share in consumer rupee was more (82.11%). It might because of only one intermediate between the producer and consumer that was HOPCOMS. The percentage of Producer share in consumer rupee was more in Channel-II, so Channel-II was found to be a best Channel for the Organic Potato producer. The producers should have agreement with HOPCOMS to sell the produce in Channel-II. The producer share in consumer rupee was 69.01 per cent in Channel-III. In Channel-III farmer they supplied produce to the Organic Agent by incurring own cost. In Channel-I wholesaler was procure produce from producer himself so there was less marketing cost for the producers in Channel-I. The net share of consumer rupee of wholesaler was less than retailer in Channel-I. It might because retailer sold produce to consumer by more price by incurring more cost due to grading than wholesaler. In the Channel-III, Retailer was getting more cost it might because of grading cleaning and packaging and keeping always in freezing condition due to its perishable nature.

5.1.7 Marketing Cost, Margins of Organic Beans in different channels

From the Table 4.7 revealed that, in relative terms Channel – II was best channel for the farmers, where producer share in consumer rupee was more (90.16 per cent). It might because of only one intermediate between the producer and consumer. Producer share in consumer rupee was more in channel-II. Even though, producers getting more price in Channel-III, producers share in consumer rupee was less than channel-II. So Channel-II was found to be a best Channel for the organic beans producers. The producers should have agreement with HOPCOMS to sell the produce in Channel-II. The producer share in consumer rupee was 85.96 per cent in Channel-III. In Channel-III farmer they carried produce near to the Organic Agent by incurring their own cost. In Channel-I Wholesaler was procure produce from producer himself so there was less marketing cost for the producers in Channel-I. The share of consumer rupee of wholesaler was less than retailer in Channel-I. It might because retailer sale produce to consumer by more price by incurring more cost due to grading than wholesaler. In the Channel-III retailer was getting more cost it might because of grading cleaning and packaging and keeping always in freezing condition due to its perishable nature. In the study area organic beans were having more price than other vegetables.

5.1.8 Marketing Cost, Margins of Organic Green Chilli in different Channels

From the Table 4.8 revealed that, in relative terms channel –II was best channel for the farmers, where producer share in consumer rupee was more (82.21 per cent). It might because of only one intermediate between the producer and consumer. Even though, producers were getting more price in Channel-III, the percentage of producer share in consumer rupee was more in Channel-II, so Channel-II was found to be a best Channel for the organic Green chilli producers. The producers should have agreement with HOPCOMS to sell the produce in Channel-II. The percentage of producer share in consumer rupee was 77.13 per cent in Channel-III. In Channel-III

farmer they supplied produce to the Organic Agent by incurring own cost. In channel-I, Wholesaler was procured produce from producer himself so there was less marketing cost for the producers in Channel-I. Among the intermediaries the share of consumer rupee of wholesaler was less than Retailer in Channel-I it might because retailer was sold produce to consumer by more price by incurring more cost due to grading and cleaning than wholesaler. In the Channel-III organic agent was played, retailer was getting more cost it may because of packaging and keeping always in freezing condition due to its perishable nature.

5.1.9 Marketing cost incurred by farmer-respondents in different channels

In the Table 4.9 revealed marketing cost of organic vegetables in different Channels. Among the three Channels farmers were incurring more marketing cost in the Channel-III. It might because producers only carried the produce to the Organic Agent by their own marketing cost (transportation packing cost, loading and unloading cost).

5.1.10 Marketing Cost incurred by the farmer-respondents for different crops (per acre)

In the Table 4.10 revealed that, marketing costs incurred by the farmer-respondents for different organic vegetable crops per acre among all the crops, Tomato was incurred more marketing cost compared to other crops. It might because of more quantity of yield and perishable in nature.

5.2 Awareness towards Organic Vegetables

5.2.1 General Information of the Consumer-Respondents in the Study Area

It was clear from the Table 4.11, most of the respondents were fall under the age group of 21-40 years and most of the respondents were higher educated and these were better decision makers to purchase organic vegetables.

Most of the respondent's families were nuclear families in the study area. due to the realization of advantages of nuclear family in terms of running family, fewer responsibilities, privacy and more freedom of action in taking family decisions.

And it was found that both vegetarian and non-vegetarian food habits were there, these food habits were have impact on consumption of organic vegetables. Majority of the respondent's income was above ₹10,000.00 for monthly this income had impact on consumption of organic vegetables.

Most of the respondents were employees in the area due to Metropolitan City and need income to run the family in city.

5.2.2. Awareness towards Organic Vegetables by the Consumer-Respondents

Results revealed in the Table 4.12 indicated that 77.78 per cent of the respondents were had well awareness towards organic vegetables and remaining 22.22 per cent of the respondents were did not had awareness about the organic vegetables. Consumers who were aware about the organic vegetables had positive perception towards the organic vegetables and majority of the respondents were intention to purchase organic vegetables in future. Similar findings were observed by Phuah Kit Teng (2011) his study on consumer awareness and consumption intention towards green foods in Malaysia.

5.2.3. Knowledge about Organic Vegetables

In present study results revealed in Table.4.13 indicated that 24.29 percent of the respondents were had prior knowledge about organic vegetables and 75.71 per cent of the respondents did not had prior knowledge about the organic vegetables. Respondents were getting now a days more knowledge about the organic vegetables. Among the respondents 70.00 percent of respondents were seen organic vegetables before only and 30.00 per cent of the respondents were did not seen the organic vegetables. It might

because less availability. Among the respondents who were had knowledge about the organic vegetables, 65.71 per cent of the respondents were purchased organic vegetables and 34.29 per cent of the respondents were not purchased, it might due to higher cost and less availability to their place. Similar findings were observed by Dipeolu (2009) in his study consumer awareness and willingness to pay for organic vegetables in S. W. Nigeria.

5.2.4 Sources of Information to organic products consumers

In the Table 4.14 results were revealed that almost all respondents who were having awareness about the organic vegetables were got awareness from the Retailer/ shop keeper it might because to by seeing everyday and most of them were got awareness through Newspapers it might because now a days the organic farming was most popular so respondents were got awareness about organic vegetables. Some of the respondents were got awareness from Magazine, Radio, and Friends or Relatives in the study area.

5.3. Factors influencing the purchasing of Organic Vegetables

The opinion survey was conducted to identify the factors influencing for purchasing Organic Vegetables by the Consumer-respondents and results were presented in the Table 4.15.

It could be observed from the table the majority of the respondents were expressed that healthy and hygienically produced was the major factor to purchase organic vegetables, it might because respondents were having more concern about their health and organic vegetables were free from chemicals and good for the health. The next factor was good quality, compared to conventionally grown vegetables, the organic vegetables were good in quality so respondents prefer organic vegetables because of good quality. Next factor was freshly available, in organic retail outlets, vegetables were kept in cold condition so always fresh in nature. Respondents were purchasing organic vegetables due to its good taste and next other factors

were followed by liked by the family members, good service, influenced by the friends and relatives, accessibility, regular availability and promoted by credit sales. Mainly preferring because of organic vegetables were good for health and free from chemicals. Similar findings were observed by Khallid Ismail and NawawIshak (2014) study conducted on consumer perception, purchase intention and actual purchase behaviour of organic food products in Malaysia.

5.4. Constraints in Production and Marketing of Organic Vegetables

5.4.1 Constraints in Production of Organic Vegetables

The Opinion survey was conducted to elicit the problems faced by the sample farmers in the production of organic vegetables under organic methods and results presented in Table 4.16 were discussed here.

The major production problems were concerned that majority of the organic vegetable growers expressed the non -availability of labour was given utmost priority, Non-availability of information on organic farming, low productivity ,incidence of pests and diseases, non-availability of organic insecticides, non-availability of organic manure, non-availability of organic pesticides limited and irregular power supply were the major problems and which were ranked one to eight based on the Garrett's Ranking Technique. Organic vegetable production was a labour intensive enterprise which required more number of labours during the sowing, planting, intercultural operations weeding and mulching, application of manure, harvesting etc,. Labour scarcity during peak season was a common phenomenon in the study area since labour supply fell short of demand. Most of the organic farmers had paid advance wages to the labours to get them during critical stages of operations like weeding & mulching and harvesting.

5.4.2. Constraints in Marketing of Organic Vegetables

Results presented in the Table 4.17 regarding constraints in the marketing of Organic Vegetables were discussed here.

Majority of the sample farmers expressed far-off location of selling units as a major problem, followed by costly transportation facilities, absence of premium price in local market, lack of storage facility, lack of market information, lack of grading facility, lack of packaging facility, lack of financial support from any company, delay in payment and faulty weighment were the major problems in marketing of organically produced vegetables and which were ranked one to tenth based on the Garrett;s Ranking Technique. The uncontrolled market and distress situation among the respondents while marketing for compelling the farmers to sell the organic produce in local market might have resulted for the incidence of these problems. Similar results were observed by Thimmareddy (2001) and Mallikarjun (2008).

6. SUMMARY AND POLICY IMPLICATIONS

India bestowed with lot of potential to produce all varieties of organic products due to its various agro climatic regions. In several parts of the country, the inherited tradition of organic farming is an added advantage. This holds promise for the organic producers to tap the market which is growing steadily in the domestic market related to the export market.

The Government of India has implemented the National Programme for Organic Production (NPOP). The National Programme involves the Accreditation Programme for Certification Bodies, Standards for Organic Production, Promotion of Organic Farming etc. The NPOP Standards for Production and Accreditation system have been recognized by European Commission and Switzerland as equivalent to their country standards. Similarly, USDA has recognized NPOP conformity assessment procedures of accreditation as equivalent to that of US. With these recognitions, Indian organic products duly certified by the Accredited Certification Bodies of India are accepted by the importing countries.

Organic farming is gaining gradual momentum across the world. Based on the global survey on Organic Farming carried out in 2012 (FIBL-IFOAM), world wide data of organic agriculture are available from 164 countries. There are 37.5 million hectares of agricultural land in 2012, including in conversion areas. In India, total area under organic certification is 5.21 million hectares (APEDA, 2013).India produced around 1.34 million MT of certified organic products which included all varieties of food products namely Sugarcane, Cotton, Basmati Rice, Pulses, Tea, Spices, Coffee, Oilseeds, Fruits and their value added products. The production is not limited to the edible sector but also produces organic cotton fiber, functional food products etc (APEDA, 2013).

Both, consumers and farmers are now slowly and gradually shifting back to organic farming in India. It is believed by many that organic farming is healthier. Though, the health benefits of organic food are yet to be proved,

consumers are willing to pay premium price for the same. Many farmers in India are shifting to organic farming due to the domestic and international demand for organic food. Further, stringent standards for non-organic food in European and US markets have led to rejection of many Indian food consignments in the past. Organic farming therefore provides a better alternate to chemical farming.

6.1 The Specific Objectives of the study

1. To analyze the supply chain in organically grown vegetables
2. To ascertain the awareness of consumers towards organically grown vegetables
3. To ascertain the factors influencing consumer preference for organically grown vegetables
4. To document constraints in production and marketing of organically grown vegetables.

6.2. Methodology

A multistage sampling was used to select the sample respondents. Bengaluru Rural district had been selected purposively for the farmers who were growing vegetables in organic method. In Bengaluru Rural district, three taluks were randomly selected and in each taluk two vegetables were selected and ten farmers were selected for each vegetable in the study area. Totally 60 farmers were selected and 10 traders were selected.

Bengaluru Urban district had been selected to study of consumer awareness and factors influencing for consumer perception towards organic vegetables. Three locations were randomly selected and in each location 30 respondents were selected for the study. Totally 90 consumers were selected and thus total sample size was 160.

In order to accomplish the various objectives outlined for the study, the research was exclusively based on primary data. The data were collected

from the organic vegetable growers and consumers on various aspects at production and marketing at the crop and consumer awareness, factors influencing to preference of organic vegetables with the help of pre-tested, comprehensive questionnaire exclusively designed for the study. The respondents were interviewed personally to elicit the information required for the study.

6.3. Analytical Tools and Techniques employed

Cost and Returns in organic vegetable production, marketing cost and profit occurred to the farmers were worked out and presented in the tabular form. Consumer awareness was worked out and presented in the tabular form. Garrett's Ranking Technique was used to analyze the factors influencing for preference of organic vegetables by the consumer-respondents and production and marketing problems faced by the farmer-respondents.

6.4 Major Findings of the study:

6.4.1. Socio-economic characteristics of the sample respondents

The average age of the sample respondents was 43.60 years with family size of about 4-6 members. Majority of the respondents families were nuclear having more number of male than female and children. Among the sample farmers 55.00 per cent of respondents doing agriculture and 45.00 per cent of the farmers were doing agriculture and other subsidiary activities. The Most of the farmers educated up to middle school.

6.4.2 Cost and Returns from Onion Vegetable production

Among the six organic vegetables, the highest cost of production was in case of Potato (₹62358.46/acre) as compared to Tomato (₹61,944.82/acre), Green chilli (₹55,499.96/acre), Cauliflower (₹45,005.98/acre), Beans (₹43,231.70/acre) and Cabbage (₹38638.91/acre).

The gross returns obtained per acre among six vegetables highest gross returns were obtained in case of Tomato (₹2,35,920.00/acre) compared to beans (₹2,25,000/acre), Cauliflower (₹2,21,000.00/acre), Greenchilli (₹156000/acre), potato (₹150000/acre) and cabbage (₹135000/acre). The B:C Ratio was highest in case of Beans (5.21) was more compared to Cauliflower (4.91),tomato (3.81), Cabbage (3.49), Green Chilli (2.81) and Potato (2.41) in the study area.

6.4.3. Marketing Cost and Margins in Organic Vegetable production

Among all the Organic vegetables marketing analysis, the Channel-II (Farmer to HOPCOMS to Consumer) was the best channel found to be the farmers in the study area. As in this channel there was only one intermediate between the producer and consumer. The producer share was more compared to the other Channels in the study area even though, farmers were getting more price for their produce in the Channel-III. The percentage of producer share was more in Channel-II than Channel-III. In Channel-I and Channel-III Retailer share in consumer price was more compared to the other intermediaries like Wholesaler in Channel-I and Organic Agent Channel-III.

6.4.4. Awareness towards Organic Vegetables

Among all the respondents in the study area 77.78 per cent of the respondents were had knowledge about the organic vegetables and remaining 22.22 per cent of the respondents did not have awareness about the organic vegetables.

Among the respondents who were having awareness about the Organic Vegetables, 24.29 per cent were had prior knowledge and 70.00 per cent of the respondents were seen organic vegetable before and 65.71 per cent of respondents were purchased organic vegetables in the study area.

The sample respondents were got more percentage of awareness from the Shop Keeper/Retailer compared to the Radio, Newspaper, Magazine and Friends or Relatives in the study area.

6.4.5. Factors Influencing for the purchasing of Organic Vegetables

Most of the respondents were preferring organic vegetables in the study area because having health conscious they were free from chemicals good for health, organic vegetables were had good quality compared to the conventional, they were good in taste, freshly available, liked by the family members, and influenced by the friends and relatives. The most of the respondents were have positive perception towards organic vegetables in the study area.

6.4.6. Constraints in Production and Marketing of Organic Vegetables

The major problems faced by the sample farmers were categorized under two, heads *viz.*, Production and Marketing problems. Among the production problems, non-availability of labour, non-availability of information on organic farming, low productivity and non-availability of bio-pesticides were the major problems in the study area. Limited and irregular power supply, non-availability of organic manure and incidence of pest and diseases were the other problems. Among the marketing problems far-off location of selling unit, costly transportation facilities, absence of premium price in the local market, non-availability of market related information. Lack of storage facility, lack of grading facility and faulty weighment were the other crucial problems in the study area and Garette's Ranking Technique was used to rank the problems in both production and marketing of organic vegetables. The respondents were asked to rank the attributes in a scale of one to eight for the production problems and one to tenth for marketing problems, the least rank being eight or tenth and rank one represent highest score.

6.5. Policy Implications

Based on the findings of the present investigation following policy implications are drawn,

1. Major resources of the farmer-respondents, Human labour, and Farm Yard Manure (FYM) were the major contributors to the organic vegetable output. This indicates the importance of these inputs in organic vegetable production. Therefore, timely supply of these quality inputs to the farmers may be ensured through Development Departments.

2. Cost of labour during the operations was a major problem in vegetable production in organic methods, hence partial mechanization of these operations to be attempted.

3. Suitable organic vegetables market need to be established at Taluk /Hobali/Gram Panchayat level to decrease the marketing cost for the organic vegetable growers and need to be provided the premium price for the Organic Vegetables separately.

4. Farmer-respondents were facing the problem of non-availability of organic inputs. Hence, large scale multiplication of bio-fertilizers, bio-control agents need to be under taken for distribution to the farmers at reasonable rates by the Department of Agriculture, Agricultural Universities and Private companies.

REFERENCES

Aaker David , 2000, Building strong brands. The Free Press, New York.

Abdul, R., Saraf, S. A. and Wani, S. A., 2011, Economics of Production and Marketing of Apple in Himachal Pradesh and Jammu and Kashmir-A comparative study. *Indian J. Agil. Mktg*., 25(1): 97-119.

Ajjan, N., Raveendaran, N.,Rajamani, K., Indumathi, V.M. and Vennila, A.R., 2008, An economic analysis of cultivation and marketing of Gloriosa in Tamil Nadu. *Indian. J. Arecanut, Spices & Medicinal plants*, 10 (4): 182-195.

Alexandra Claudia and Hans-Joachim Mosler, 2013, Determining behaviour factors interventions to increase safe water consumption: a cross sectional field study in rural Ethiopia, *International journal of environmental health research*. 23 (2):96-107.

Amalanathan, P. and Antony Thanaraj, X., 2011, Marketing constraints of members of Primary Dairy Co-operative Societies in Pondicherry, *Southern. Econ.,* 50 (7):22-26.

Andrei Cosmin Dumea, 2012, A study on factors influencing on consumption of organic food in Romania. *Ph.D Thesis*, Doctoral School of Economics IASI, Romania.

Annunziata Azzurra and Pascale Paola, (2009), Consumer's behaviour and attitude towards food products: The case of Organic and Functional Food, EAAE Seminar" A resilient European food industry and food chain in a challenging world", Chania, crete, Greece.

Anonymous, 2013, District Statistical Office, Bengaluru Rural and Bengaluru Urban, pp.1-120.

Anonymous, 2014, The world of Organic Agriculture Statistics and Emerging Trends. *http://ifoam.org.in*.

Aydin Basir and Sherin sheriff, 2012, Consumer awareness of food labelling: A Case Study of United Arab Emirates, *African Journal of Agricultural Research* vol. 7(28):4021-4028.

Banumathy, S. and Hemamena, M., 2006, Analysis of brand preference of soft drinks in the global environment. *Ind. J. Mktg*., 36 (6): 12-16.

Birgritroitner-Schobesberger, Ika Darnhofer , Suthichai Somsook and Christian R. Vogl, 2007, Consumer perception of organic foods in Bangkok,Thailand, Food policy 33 (1) :112-121.

Briji, B., 2006, Marketing system for apple in hills problems and prospects (A Case study of Kulludistrict, Himachala Pradesh. *Indian J. Agri. Mktng*., 8 (5): 285-293.

Brown, K., Mcllveen, H. and Strugnell, C., 2000, Nutritional awareness and food preferences of young consumers in Northern Ireland. Nutr. and Food Sci, 30 (4/5) : 230-235.

Beverland, M., 2001, Creating value through brands : The ZESPRITM kiwi fruit case. *British Food J.,* 103 (6): 383-399.

Cicia, G. and Giudice, T.D., 2002, Consumers' Perception of Quality in Organic food - A random utility model under preference heterogeneity and choice correlation from rank-orderings. *British Food Journal*, 104 (3/4/5):200-213.

Dipeolu, A. O., Philip, B. B., Aiyelaagbe, I.O.O., Akinbodeand, S. O., Adedokun, T. A., 2009, Consumer awareness and willingness to pay for organic vegetables in S.W. Nigeria*. As. J. Food Ag-Ind*., 20: 57-65.

Dhandhalya, M. G. and Shiyani, R. L., 2012, Economic viability of sapota orchard and marketing constraints of sapota in Saurashtra region. *Indian J.Agil. Mktg.*, 26 (1): 179-190.

Deorukhakar, A.C., Desai, A.P. and Nikam, M.B., 2005, Marketing of Arecanut in Ratnagiridistrict of Maharastra. *Indian J. Arecanut, Spices & Medicinal plants*, 7 (4): 144-148.

Gildmacher, P.R., Kaguongo,W., Ortiz, O., Tesfaye, A., Woldegiorgis, G., Wagoire, W. W., Kakuhenzire, R., Kinyae, P. M., Nyongesa, M, Struik, P. C., Leeuwis, C., 2009, Improving potato production in Kenya, Uganda and Ethiopia, *International Potato Center*, Nairobi, Kenya, *Potato-Research*,52 (2): 173-205.

Hendge, Y.G., Kadam, R.P., More, S.S., patil, S.S. and More, P.S., 2007, Constraints faced by banana growers of Nanded district., *J.Soils and Crops*, 17(2): 425-426.

Hugar, 1980, Marketing of Vegetables in Belgaum City-An Economic Analysis. *M.Sc. (Agri.) Thesis,* Univ. Agri.Sci., Bengaluru.

Jan P. Voon, K Wang Sing Ngni and Anand Agrawal, 2011, Determinants of willingness food to purchase organic food: International Food Agribusiness Management Review., 14(2) (103-120).

Kailash, K. and Singh, H. L., 2010, Price Spread of Mango in Lucknow district of U.P. *Indian J. Agil. Mktg.*, 24 (2): 51-57.

Kerutigi, M. G., Ramachandra, V.A.,Kunnal ,L..B., Mahajanshetti, S.B., and Shirol, A.M., 2009, Marketing of Sapota in Northern Karnataka. *Indian j.Agric. Mktg.,* 23 (3):57-63.

Kledal and Rye, P., 2005, Organic food and farming: Between market subordination and retailer growth prospects. Paper presented at international farm management association, developing entrepreneurship abilities to feed the world in a Sustainable way, Sao Paolo, Brazil.

Khalid Ishmail and NawawiIshak, 2014, Consumer perception, purchase intention and actual purchase behavior of organic food products*, Rev.Integer.Bus.Econ.Res.*Vol.3 (2).

Koujalagi, C. B., 2012, An economic analysis of production, marketing and export performance of pomegranate in Karnataka. *Ph.D Thesis*, Univ. Agric. Sci., Dharwad, Karnataka (India).

Magnusson, M.K., Arvola, A., Hursti, U.K.K., Åberg, L. and Sjoden, P. O., 2001, Attitudes towards organic foods among Swedish consumers. *British Food Journal*, 103 (3):209-227.

Mallikarjun, P., 2008, A Case study on production and marketing management behavior of organic vegetables growers in Belagaum district*, M.Sc. (Agri.) Thesis,* Univ. Agric.Sci., Dharwad.

Mohammad Altrawneh, 2013, Consumer awareness towards organic food: A pilot study in Jordan. *j. Agric. food. tech,* 3 (12)4-18.

Nagaraja, B., 2004, Consumer behaviour in rural areas: A micro level study on consumer behaviour in Kavimandal. *Indian journal of marketing*, 34 (11): 30-36.

Naphade, S.A. and Tingre, A.S., 2008, Economics of production and marketing of guava in Bhuldhan district of Maharashtra, *Indian J, Agri. Mkg.* 22 (2):33-41.

Narang, R., 2006, A study on branded foods. *Ind. J. Mktng,* 36 (11): 3-9.

Patil. M., 2008, A study on production and marketing of organic vegetable growers in Belgaum district, *M.Sc. (Agri.)* Thesis, Univ.Agric.Sci. Dharwad.

Pearson David, Henryks, Joanna, Sultan, Parves, Anisimova and Tatliana, 2013, Organic food: Exploring purchase frequency to explain consumer behaviour. *Journal of Organic System*, 8 (2): ISSN 1177-4528.

Phuah Kit Teng, Golnaz Rezai, Zainalabidin Mohamedand Mad Nasir Shamsudin, 2011, Consumers' Awareness and Consumption Intention towards Green Foods, International Conference on Management (IICM) Proceedings.

Purcciarelli Denna and Adrienne Thamos, 2011, a study on determinates that influence food consumption among older members of a Mid-West community. food and nutrition sciences, ball university, Muncie , USA.

Radha Mohan Jangir., 2010, A study on analysis of consumer preferences for processed fruit and vegetable products in Jaipur city, Rajasthan.,*MBA (ABM)* thesis, University of Agriculture Sciences, Bangalore.

Ramasamy, K., Kalaivanan, G. and Sukumar, S., 2005, Consumer behaviour towards instant food products. Ind. J. Mktg., 24 (2-3): 55-59.

Rao, Y.S., Lakshmanan, R., Marty Mathew, K. and Thomas, J., 2011, Problems faced by the farmers and traders of saffron and other spices in Jammu and Kashmir. *Ind. J. Arecanut, Spices &Medicinal Plants.* 13 (3):5-14.

Ricks, D., Woods, T. and Sterns, J., 2000, Chain Management and Marketing Performance in Fruit Industry. Actahorta. 661-668.

Renuka Hire Kenchangoudar., 2008, a study on consumer behaviour towards ready to eat products in Hubli and Dharwad City. *MBA (ABM) thesis*, Univ. Agric. Sci., Dharwad, Karnataka (India).

Ruchira, S. and Gupta, N.K., Market behaviour of Chilli growers in Jaipur district of Rajasthan *Indian J. Arecanut, Spices & Medicinal Plants*.13 (2):18-21.

Sanjay Kumar, Ram Suresh, Virendra Singh and Singh, A.K., 2011, Economic Analysis of Menthol Mint in Uttar Pradesh: A Case Study of Barabanki District. *Agric.Econ.Res.Rev*. 24 (1): 345-350.

Sanjay Kumar, 2014, A study on Indian consumer attitude towards food safety. *Journal of Food Products Marketing,* 20:3, 229-243.

Shivakumar, J Giram., 2004, Buying behaviour of consumers towards the product produced by SSI-UNIT. Indian Journal of Marketing, 34 (3): pp 19-23.

Shanmugpriya, K.S., S.Murali Gopal and B. Swaminathan, 2014, Consumer preference of organic vegetables in Coimbatore city of Tamil Nadu: An Application of logistic regression model, Trends in biosciences 7 (23): 3886-3893.

Singh, S., 2007, organic produce supply chains for sustainable Agri-food systems and livelihoods: case studies of organic basmati rice in India. Paper presented at international conference on food security and sustainability of food production, Bengaluru.

Srikanth, H. S., 2011, Marketing Channels of Mango: A study in Srinivasapura taluk of Kolar District. *MSc. (Agri.)* Thesis, (unpublished), Univ. Agric. Sci., Bangalore, Karnataka (India).

Sunder, A and Kombai Raju, S., 2004, Economics and Production of Gloriosa Superbain Tamil Nadu*. Indian J. Arecanut, Spices & Medicinal plants,* 6 (2): 61-66.

Subha V., 2004, Managing Supply Chain. *Indian j. of Mktng*, 34 (1): 14-15.

Tamil Selven, M.,Honey Cheiyan, and Manojkumar, K.,2009, Pepper production prospects 2009-10. *Indian j. Arecanut, spices & Medicinal plants,* 11 (4)169-176.

Thakare, S.S., Naphade. and Vitonde, A.K., 2011,Economics of Production and Marketing of Cowpea. *Indian J.Agric.Mktg*. 25 (2):67-76.

Timmareddy, K.S., 2001, Case studies on organic farming. *M.Sc. (Agri.) Thesis*, Univ.Agric.Sci. Dharwad, Karnataka (India).

Torben Tiedermann and Umelatacz Lohmann., 2013, Production risk and technical efficiency in organic and conventional agriculture-The case of arable farms in Germany.*J.Agric.Econ*. 64 (1):73-96.

Vincent, N., 2006, A study on brand consciousness among Children and its effect on family buying behaviour in Bengaluru City*. Ind. J. Mktg*, 36 (1): 12-18.

Wermund, U., Fearne, A. and Hornibook, S.A., 2002, Opportunities in the UK market: A Supply Chain Audit. Farm Management Journal, 11(5).

Yee, J. and Young, L., 2001, A public health approach to reducing the fat content of meat pies in Auckland. *J. New Zealand Dietetic Association,* 55(1): 22-27.

APPENDIX I

Garreett ranking conversion table
The conversion of orders of merits into units of amount of “Scores”

Per cent	Score	Per cent	Score	Per cent	Score
0.09	99	22.32	65	83.31	31
0.20	98	23.88	64	84.56	30
0.32	97	25.48	63	85.75	29
0.45	96	27.15	62	86.89	28
0.61	95	28.86	61	87.96	27
0.78	94	30.61	60	88.97	26
0.97	93	32.42	59	89.94	25
1.18	92	34.25	58	90.83	24
1.42	91	36.15	57	91.67	23
1.68	90	38.06	56	92.45	22
1.96	89	40.01	55	93.19	21
2.28	88	41.97	54	93.86	20
2.69	87	43.97	53	94.49	19
3.01	86	45.97	52	95.08	18
3.43	85	47.98	51	95.62	17
3.89	84	50.00	50	96.11	16
4.38	83	52.02	49	96.57	15
4.92	82	54.03	48	96.99	14
5.51	81	56.03	47	97.37	13
6.14	80	58.03	46	97.72	12
6.81	79	59.99	45	98.04	11
7.55	78	61.94	44	98.32	10
8.33	77	93.85	43	98.58	9
9.17	76	65.75	42	98.82	8
10.06	75	67.48	41	99.03	7
11.03	74	69.39	40	99.22	6
12.04	73	71.14	39	99.39	5
13.11	72	72.85	38	99.55	4
14.25	71	74.52	37	99.68	3
15.44	70	76.12	36	99.80	2
16.69	69	77.68	35	99.91	1
18.01	68	79.17	34	100.00	0
19.39	67	80.61	33		
20.93	66	87.99	32		

APPENDIX II

INTERVIEW SCHEDULE

UNIVERSITY OF AGRICULTURAL SCIENCES, DHARWAD

Department of Agri Business Management

College of Agriculture, Dharwad

Topic: Production and Marketing Management of Organic vegetables-A case of Bangalore.

Schedule- A (Farmer)

GENERAL INFORMATION

I. Name of the respondent :_____

II. Age :_____

III. Education :Illiterate/Primary/Sec./SSLC/PUC/Diploma G/PG Diploma/PG

IV. Type of family: Joint/Nucleus

V. Primary occupation :_____

VI. Annual income(₹) :_____

VII. Family size :Male:_____ Female:_____Children:_____

VIII. Name of the vegetables grown:_____

IX. To whom you sell vegetables :_____

Ph.No_____

2. Land holdings

Particulars	Owned land	Leased in land	Total	Rent paid/acre(₹)
Dry				
Irrigated				
Total				

3. Cropping pattern

Season	Crop	Variety	Area (acre)	Yield /ac	Total yield	Dry /Irrigated
Kharif						
Rabi						
Summer						

4. Farm inventory status

Sl.no	Particulars	No.	Year of purchase	Purchase value(₹)
i.	Implements			
	a) Iron plough			
	b) Wooden plough			
	c) Spade			
	d) Harrows			
	Any others (specify)			
ii.	Machinery			
	a) Tractor			
	b) Sprayer			
	c) Duster			
	d) Any others (specify)			
iii.	Farm buildings			
	Pump house			
iv.	Storage			
	a) Buildings			
	b) any other (specify)			
v.	Others ,if any			

5. Cost of cultivation

Particulars	unit	Quantity			Cost/ unit (₹)	Total value (₹)
		owned	purchased	Total		
Material costs						
a) Seeds	Kg s					
b) FYM	Qtls.					
c) Red earth	Qtls.					
d) Green mannuring	Qtls.					
e) Bio- fertilizers	Kgs.					
f) PPC	Lts.					
Labour costs						
a) Cleaning land operations	MD					
b) Sowing	MD					

Particulars	unit	Quantity			Cost/ unit (₹)	Total value (₹)
		owned	purchased	Total		
c) Gap filling	MD					
d) Irrigation	MD					
e) Training	MD					
f) Weeding and mulching	MD					
g) PPC application	MD					
h) Intercultivation	MD					
i) Harvesting	MD					
Other costs						
a) Human labour hiring charges	₹/MD					
b) Land revenue	₹/ac					

6. Disposal of the produce to different agencies

Sl. No	Vegetables	Frequency/ Time of sale	Qty sold (qtls)	Place of sale	Price received ₹/qtl	Total amount (₹)	Commission	
							Rate	Value (₹)

7. Do you have any agreement to sell particular agency Yes/No
   If yes

Sl. No	Vegetables	Frequency of delivery	Qty to be delivered at each time	Place at which it is delivered	Total value (₹)	Total qty delivered in a week	Total amount (₹)

8. A. Mode of packing and its costs

Sl. No	Mode of packing	Qty packed	Cost incurred		Total cost (₹)
			Labour (₹)	Material (₹)	
1	Gunny bags				
2	Wooden boxes				
3	Others, specify				
	a.				
	b.				

B. Mode of transportation and its cost

Mode of transportation	Qty transported	Distance Covered (Kms)	Hired/ owned transport	Transportation Cost per qntl (₹)	Total transportation cost (₹)	Cost incurred			
						Loading Charges (₹)	Total Loading Charges (₹)	Unloading Charges (₹)	Total Unloading charges

9. A Marketing channels

Sl.no	Channels	Qty marketed (q)
CH-I		
CH-II		
CH-III		

Farmer =F Village Merchant=VM Wholesaler= W Retailer =R
Consumer =C Processer=P Exporter =E

B. Marketing cost

Costs	Weighing	Packing	Storing	Transportation	Loading & Unloading	Miscellaneous
CH-I						
CH-II						
CH-III						

10. Marketing Problems faced by the farmers

a. Far off location of selling unit
b. Costly Transportation facilities
c. Lack of market information
d. Lack of grading facility
e. Lack of packing facility
f. Lack of storage facility
g. Malpractices of buyers
h. Faulty weighment

i. Lack of financial assistance from any company
j. Delay in payment and sale proceeds

11. Production problems faced by the Farmers

a. Non- availability of information on organic vegetables
b. Non -availability of labor
c. Low productivity
d. Non -availability of organic insecticides
e. Non -availability of organic pesticides
f. Non - availability of organic manures
g. Incidence of pest and diseases
h. Limited and irregular power supply

ph.No_____

Schedule B (Market Intermediateries)

Commission Agent /Wholesaler/Village Trader/Retailer

i. Name of the Respondent:_____
ii. Age(years)_____ iii. Education:_____ iv. Sex:_____
v.Location:_____ vii.1^{0}occupation:_____
viii2^0 occupation:_____
ix. Quantity handled/ annum: veg.1:____(tones) veg.2:___(tonnes) veg.3:___(tonnes)
x.Type of ownership : Individual / Partnership /Cooperative/Any others
xi.Year of Establishment: _____
xii.No. of years in vegetable trading:_____

a. Information on procurement and sale

Sl no	Source of purchase	Quantity	Price (₹./Qtl.)	Wastge (₹/qtl)	Qty sold (₹/qtl)	Sale price (₹./Qtl.)
1						
2						
3						

b. How long you are in this business:_____
c. On what basis you form price:_____
d. What facilities do you provide to the producer who brings produce for sale?
   Better price/ Loan/ Storage facility/Transportation/ Advance payment/Any others
e. Do you grade vegetables?
   Yes / No
   If yes do you make payment according to the grades:
   Yes / No

f. Do you provide any credit facilities to the growers who brings produce?

   Yes? / No?
   If yes, to how many growers?_____
   Maximum duration for which amount is advanced_____
g. Fixed costs: do you have shop owned ?/ rented??

1. If rented, what is the rent/year:_____
2. Licensed fee(₹):_____
3. Maintenance cost(₹):._____
4. Tax paid(₹):_____
5. Insurance(₹):_____

h. Marketing costs (₹):

1. Transportation :_____
2. Storage :_____
3. Weighing :_____
4. Loading/ unloading :_____
5. Wastage :_____
6. Commission :_____
7. Others :_____

i. Labour employed in marketing of the produce

Sl.No	Employees	No.	Nature of work	Payment (₹)
1	Permanent			
2	Casual			
3	Family			

j. Transaction activities

Month	Total qty Purchased (q)	Price (₹)	Total Value (₹.)	From whom	From where (place)	Remarks
Month	Total qty Sold	Price (₹)	Total Value (₹.)	To whom Sold	To where (place)	Method of sale

ph.No_____

Schedule C. CONSUMER

General information

1. Name of the respondent :
2. Address :
3. Age(years) :
4. Sex :
5. Education :
6. Occupation :
7. City:
8. No. of people employed :
9. Monthly income(□):
10. Food habits :
11. Type of family:Joint/Nucleus
12. Family size : Male : Female:

Adult

Children

13. Monthly expenditure on vegetables:
14. Do you aware of organic vegetables: Yes/ No

If yes

15. From where you are buying the vegetables

Sl.No	Particulars						
		Qty	Value (₹)	Qty	Value(₹)	Qty	Value(₹)

16. Frequency of buying : Daily/ once / twice a week
17. Amount spent on vegetables (₹) in : Vegetables Price(₹)

Each purchase for selected commodities

18. Mode of payment : Cash/card

19. Reasons for purchasing organic vegetables

Sr . No	Reasons	
1	Freshly available	
2	Good taste	
3	Good quality	
4	Good service	
5	Hygienically produced	
6	Accessibility	
7	Regular availability	
8	Liked by the family members	
9	Influenced by friends/relatives	
10	Promoted by credit sales	
11	Others if any	

PRODUCTION AND MARKETING MANAGEMENT OF ORGANIC VEGETABLES-A CASE OF BENGALURU

VANI N 2015 Dr. SONNAD J. S.
MAJOR ADVISOR

ABSTRACT

The study was conducted in Bengaluru Urban and Rural Districts of Karnataka state. A sample of 60 farmers in Bengaluru Rural District and 90 consumers in Bengaluru Urban District were selected randomly for the study. Data were elicited for the year of 2013-14 through survey method. For analysis of data, tabular analysis and Garret's Ranking Technique methods were employed.

The per acre total cost of production of organic vegetables, the highest cost of in case of potato (₹ 62,358.46) and lowest cost in case of cabbage (₹ 38,638.91). The net returns obtained per acre was highest in case of beans (₹ 1,78,068.30) and lowest in case of potato (₹ 82,204.04).The Benefit cost ratio was profitable in case of beans (5.21). The channel-II (Farmer → HOPCOMS → Consumers) was found to be the best channel for the organic farmers. Majority of the consumer respondents were aware about organic vegetables with 77.78 per cent. Most of the consumer respondents were getting awareness from Shop keeper/ Retailers. Health conscious was the major factor for the purchasing organic vegetables. The major problem faced by the organic farmers were non-availability of labour, information on organic farming and far-off location of selling units.