FARMER AND CONSUMER BEHAVIOUR TOWARDS ORGANIC VEGETABLES

By

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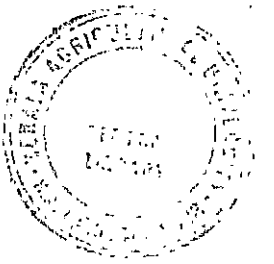
(2012-15-107)



THESIS

Submitted in partial fulfillment of the requirement for the degree of

Master of Science in Cooperation & Banking

(Rural Marketing Management)

Faculty of Agriculture

Kerala Agricultural University, Thrissur

Department of Rural Marketing Management
COLLEGE OF COOPERATION, BANKING & MANAGEMENT
VELLANIKKARA, THRISSUR-680656
KERALA, INDIA

2015

DECLARATION

DECLARATION

I, hereby declare that the thesis entitled **"Farmer and consumer behaviour towards organic vegetables"** is a bonafide record of research work done by me during the course of research and that the thesis has not previously formed the basis for the award to me of any degree, diploma, fellowship or other similar title, of any other university or society.

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CERTIFICATES

CERTIFICATE

Certified that this thesis entitled **"Farmer and consumer behaviour towards organic vegetables"** is a record of research work done independently by **Ms. Divya Vijayan** under my guidance and supervision and that it has not previously formed the basis for the award of any degree, fellowship or associateship to her.

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We, the undersigned members of the advisory committee of **Ms. Divya Vijayan (2012-15-107)** a candidate for the degree of Master of Science in Co-operation & Banking with specialization in Rural Marketing Management, agree that this thesis entitled **"Farmer and consumer behaviour towards organic vegetables"** may be submitted by **Ms. Divya Vijayan (2012-15-107)**, in partial fulfillment of the requirement for the degree.

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ACKNOWLEDGMENT

ACKNOWLEDGMENT

I am very glad to present this thesis report on "Farmer and consumer behaviour towards organic vegetables". This work could not have been in its present form without the timely advice, guidance, help and prayers of an ample of well wishers. To them, who had remained with me as a constant inspiration, I place my advent resolution.

I am highly obliged to ***Dr. Ushadevi.K.N****, Associate Professor and Head, Department of Rural Marketing Management, College of co-operation, Banking and Management without whose expert guidance, constant encouragement and sincere effort, this thesis would have remained a dream. No words in my vocabulary would suffice to express my heartfelt thanks and gratitude for her valuable advice, suggestion and encouragement throughout my career. Her personal attention, consideration and dedication are also thankfully acknowledged here with. I feel greatly honoured by getting chance to work under her guidance.*

I would specially like to express my sincere thanks to ***Dr. C.Narayanankutty,*** *Professor, College of Horticulture, for his kind help and whole hearted cooperation that I have received during my work. I am immensely indebted to him for the keen interest he has shown in my work, with a lot of valuable corrections and suggestions, positive encouragement and advice.*

I am respectfully thankful to ***Dr. Laly John.C,*** *Associate Professor, Department of Agricultural Statistics, College of horticulture, for her valuable advice and suggestions throughout my academic career and also personal care given by her.*

I am gratefully to ***Mr. Mohanan. M,*** *Associate Professor, Department of Rural Marketing Management, College of co-operation, Banking and Management, for his valuable suggestions and support for my thesis work.*

I am also placing deep sense of gratitude to ***Dr. R. Sendilkumar*** *Associate Professor, Department of Co-operative Management, College of co-operation, Banking and Management, for his valuable advice and support given by him.*

I owe a deep intellectual debt to ***Dr. Shaheena.P****, Associate Professor, Department of Development Economics, College of co-operation, Banking and Management, for the advice, kind concern, and support throughout my study.*

I also wish to express my gratitude to ***Dr.A Sakheer Hussain****, Assistant Professor, Centre for e-learning, Kerala Agricultural University, for support given in the study.*

I remain grateful to ***Dr.E.Vinayakumar****, Associate Professor and* ***Ms. Misha Davis, Assistant Professor****, Department of Co-operative Management,* ***Ms. Saneera*** *and* ***Ms. Kavitha****, Teaching Assistant, Department of Rural Marketing Management, and* ***Dr. Sangeetha. K. Prathap****, Department of Rural Banking and Finance Management, College of co-operation, Banking and Management for their kind concern and encouraging words, advices and support.*

I wish to express my gratefulness to Dr. A. ***Sukumaran****, Associate Dean, College of Co-operation, Banking and Management for their timely help and encouragement throughout my career.*

I would like to express my deep sense of gratitude to ***Sri. Sathian.K.P****, Librarian, Sri. Praveen and all other library assistants, of Co-operation, Banking and Management for their immense help during my thesis work. I also remember with the gratitude for the support given by all staffs, Central Library, Kerala Agricultural University.*

I acknowledge my sincere gratitude to ***Sri. Ajith K.B****, Assistant manager, VFPCK, Palakkad,* ***Sri. Sony****, Assistant manager, VFPCK, Ernakulum,* ***Sri. Sivaraman****, President, Farmers club, Thrissur and all respondent farmers and consumers in Thrissur, Palakkad and Ernakulum Districts who co-operate with me during my survey.*

I am placing my deep sense of gratitude to all other teachers and non-teaching staff of the College of co-operation, Banking and Management for their co-operation and timely support. I am also thankful to ***Smt.Prema*** *for her kind concern and timely help. I am placing my thankfulness to all office staff of College of co-operation, Banking and Management for their timely co-operation and timely help.*

I also place my sincere sincere thanks to Kerala Agricultural University for the assistance in the form of fellowship.

Words fail to express my gratitude and indebtedness to my most lovable friends ***James chettan, Sreelakshmi, C.C, Shiferaw chettan, Elizabath Philip, Sreelakshmi, Salini, Keerthy, Sruthy Madhavan and Greeni*** *for their unfailing friendship, unimpeachable loyalty and fervid companionship and for their great support throughout my academic career.*

Reckon with love and affection, the support extended to me by ***Zita. V. bosco, Saranya, and Maheswary*** *and all others for their help and wholehearted co-operation extended for me.*

No words can explain fully my affection and gratitude towards my beloved ***parents, sisters and brothers,*** *who have always stood by me as a constant source of inspiration in all walks of my life.*

Last but not least I bow my head before the almighty who blessed me with the power, encouragement, motivation and peace to complete this endeavor successfully.

Divya Vijayan

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CHAPTER 1

INTRODUCTION

1.1 Significance of the study

Organic farming is a holistic production management system which promotes and enhances agro-ecosystem health, including biodiversity, biological cycles, and soil biological activity. It emphasizes, the use of management practices in preference to the use of off –farm inputs, taking into account that regional conditions require locally adapted systems. This is accomplished by using, where possible, agronomic, biological, and mechanical methods, as opposed to using synthetic materials, to fulfill any specific function within the system (FAO, 1999). To the maximum extent feasible, organic farming systems rely on crop rotations, crop residues, animal manures, legumes, green manures, off- farm organic wastes and aspects of biological pest control to maintain soil productivity and tilth, to supply plant nutrients and to control insects, weeds and other pests" (Lampkin, 1990).

Organic farming systems differ from conventional systems in several aspects such as no artificial pesticides or fertilizers are used on organic farms and it generally have a wider crop rotation scheme, and also have larger areas of non-crop habitats (Seyed et al., 2010). By not using soluble chemical fertilizers and limiting the use of natural bio pesticides in organic farming means, it is largely dependent on biological processes for the supply of nutrients and for protection of crops from pests and disease (Gosling et al., 2006). Organic farming produces safe and nutritious food as it helps prevent soil pollution by stopping risky chemical reactions in the soil and avoiding produce contamination, as well as soil erosion, by wind and rain. Hadriman (2004) has found that the nutritional value was an important factor that influences

consumers' preferences in purchasing chemical free vegetable, followed by desire, freshness, health effect and taste.

Organic farming has the twin objective of making the system sustainable and environmentally sensitive. In order to achieve these two goals, it has developed some rules and standards which must be strictly adhere to. There is very little scope for change and flexibility. Thus, the organic farming does not require best use of options available rather it makes the best use of options that have been approved. These options are usually more complex and less effective than the conventional system.

With ever increasing population having huge requirements of vegetables and lack of availability of organic resources, pure organic farming is not possible in India, rather some specific area can be diverted to organic farming for export of high quality vegetable crops. Thus, as a whole under Indian condition, only partial switching to organic farming of export oriented vegetable crops can be possible in recent times. According to Borlaug (2002) "Switching on food production to organic would lower crop yields. We can use all the organics that are available but we are not going to feed six billion people with organic fertilizers."

For Indian Agriculture, use of chemical fertilizers cannot be totally eliminated, rather it could be reduced, or minimized. It has been proved by various experiments that conjoint application of inorganic fertilizers along with various organic sources are capable of sustaining higher crop productivity, improving soil quality and soil productivity, besides supplying N, P and K, these organic sources also helps in alleviating the increasing incidence of deficiencies of secondary and micronutrients. The commercial mineral fertilizers will have to be bear the main burden of supplying plant nutrients to meet the food requirements of growing populations. Therefore, these organic resources should be used in integration with chemical fertilizers to narrow down the gap between addition and removal of nutrients by crops as well as sustain the quality of soil and achieve higher crop productivity. Nationwide adoption of organic

farming is not possible due to its high cost, unavailability of organic resources, productivity etc which will leave many more people hungry. Thus, in India, adoption of pure organic farming is possible partially, more specifically crops having high export potential in international markets. On the other hand, full adoption of integrated green revolution farming, another option of organic farming can be possible to a large extent, where, the basic trends of the green revolution such as intensive use of external inputs, increased irrigation, development of high yielding and hybrid varieties as well as mechanizations of labour are retained with much greater efficiency on the use of these inputs with limited damage to the environment and human health. For this purpose some organic techniques are developed and combined with the high input technology in order to create integrated Systems such as, "Integrated Nutrient Management" (INM), "Integrated Pest Management" (IPM) and biological control methods which reduce the need for chemicals.

The need for organic farming in India arises from the unsustainability of agriculture production and the damage caused to ecology through the conventional farming practices. The major problem in India is the poor productivity of soil because of the low level of the organic matter. Organic farming practices are based on a maximum harmonious relationship with nature aiming at the non-destruction of the environment. So it is important to know, how the farmers and consumers accept organic vegetable farming and their awareness, knowledge and attitude.

1.2 Statement of the problem

India is the second most populous country in the world after China. With the increasing population, the cultivable land resource availability is shrinking day to day. To meet the food, fibre, fuel, fodder and other needs of the growing population, the productivity of agricultural land and soil health needs to be improved. Green Revolution in the post independence era has shown path to developing countries for self-sufficiency in food but sustaining agricultural production against the finite natural

resource base demands has shifted from the "resource degrading" chemical agriculture to a "resource protective" biological or organic agriculture.

The current farming systems lay emphasis on high yields, which are achieved by intensive use of fertilisers, pesticides and other off-farm inputs. Alternate farming systems range from systems which follow only slightly reduced use of these inputs through the better use of soil tests, cultivation of crops only on soils best suited to them, integrated use of pest management, etc, to those that seek to minimise their use through appropriate crop rotations, integration of livestock with crop husbandry, mechanical or biological control of weeds and less costly buildings and equipment. So for agriculture to be sustainable, it should include a spectrum of farming systems ranging from organic systems that greatly reduce or eliminate use of chemical inputs to those involving the prudent use of antibiotics to control specific pests and diseases' (Kerala Land Use Board, 1997) In the past 10-15 years, many farmers in Kerala other than those who continued the traditional methods, have taken up organic farming quite earnestly. Those who reverted from modern intensive agriculture to organic farming had to face many problems. Sudden withdrawal of the external inputs led to a steep fall in yield. The high yielding varieties of seeds had to be replaced by indigenous ones. The gap of 30 - 40 years created a vacuum in the knowledge of traditional agricultural practices. The prevalence of modern agriculture in the majority of the cultivable areas makes it difficult to maintain organic purity in the soil and atmosphere. Moreover, the organic farmers are scattered all over the state with only pursuing it seriously. While it has been proven beyond doubt that the organically grown food is much better in quality, it remains to be established that, in terms of total productivity and economic viability, whether organic farming can compare with modern intensive agriculture.

Organic farming in Kerala is mostly in infant stage, but there is a distinct movement among the farmers as well agriculture experts and scientists in favour of ecological farming. Advocates of less chemicals more naturals are on the increase. There is considerable consumer awareness about the dangers of pesticide poisoning and

fertilizers residues in food. Farmers are finding it profitable to return to traditional farming.

Still the farmers are not successful much in organic vegetable farming due to the risk involved in it. They are not confident to adopt organic farming or to get organic certification for their produce.

Organic farming has been systematically followed on a large scale in the developed countries. Unfortunately in India, though there is a potential for adopting organic farming, it is not taking place on a large scale due to various factors. There are consumers who are eager to pay premium price for organically produced commodities in India. India can tap such export potential of organically produced vegetables, which will bring huge export earnings to the country. But the farmers should more focus on organic vegetable farming and to produce certified organic vegetable.

Hence, it is important to know the attitude of farmers and consumers, which helped to analyze the present situation of organic vegetable farming and the barriers of adoption to organic vegetable farming.

1.3 Objectives of the study

The main objectives of the study were

- To study the behaviour of farmers towards organic vegetable farming
- To identify the barriers in adoption process of organic vegetable cultivation and the constraints in marketing of organic vegetables
- To examine the consumer's behaviour towards organic vegetables
- To identify the determinants of consumer behaviour towards organic vegetables.

1.4 Scope of the study

Organic farming is one of the several approaches found to meet the objectives of sustainable Agriculture. With the developing world, Organic farming technique is gaining importance at a very high speed in India. The main reason behind the growth and development of organic farming is that we can grow consumables like dried fruits and nuts, cocoa, spices, herbs, oil crops etc. and non-food items like cotton, potted plants, livestock and cut flowers without disturbing the nature much. Organic farming could solve various problems like soil erosion, loss of soil nutrients and loss of nutrition in food. India being an agriculture oriented country has vast opportunity to go ahead in the field of organic farming. As per census 2011 In Kerala there are 1322850 agricultural labourers and 668279 cultivators in Kerala. Vegetables are cultivating in gross irrigated area of 17481 ha. Census shows that there is a declining trend in the total area under cultivation from 55151 ha in 2004-05 to 41155 ha in 2011-12. Currently, India ranks 10th among the top ten countries in terms of cultivable land under organic certification. The total area under organic certification is 4.72 million ha (APEDA 2013-14). This signals that potentials are huge and still it has to move forward.

The most important constraint felt in the progress of organic farming is the lack of government policies to promote organic agriculture. The best strategy to overcome this is to assess market demand for organic farm products and to identify the major problems faced by farmers to adopt organic farming and make them aware about the scope and opportunities existing in this field in the changing economic scenario. The present study identified farmer's attitude and obstacles in adoption of organic farming and it would help the policy makers to frame policies to promote organic agriculture and also motivate the farmers to adopt organic farming. The identification of consumer behaviour would provide more evidence on consumer underlying purchase motives and to establish appropriate marketing strategies to develop a future demand.

1.5 **Limitations**

The study forms a part of the master's degree programme of the student researcher and hence it has all the limitations of time, money and other resources. Consequently, the researcher was unable to extend the study to all parts of the state. Study was supposed to include entire population of organic vegetable farmers (8 numbers) certified by INDOCERT. At the time of survey 2 farmers revealed that they could not able to provide data related to vegetable farming. Thus the sample restricted to 6 certified organic farmers.

No human effort is free from limitations. This study is no exception. However sincere attempts have been made to carry out the research as systematically as possible.

1.6 Organisation of the thesis

The report of the study has been presented in five chapters. The first chapter discusses the significances of the study, statement of problem, objectives and utility, scope and the limitations of the study. The second chapter reviews the available literature on the topic under investigation and provides the theoretical orientation of the study. The third chapter details the methodology adopted in the process of investigation and analysis. The fourth chapter is earmarked for results and discussions of the study. The last chapter highlights the summary of findings and the conclusions followed by references, appendices, and abstract of the thesis

REVIEW OF LITERATURE

CHAPTER 2

REVIEW OF LITERATURE

Review of literature is the part and parcel of all scientific investigations which would enable the researcher to understand the research gap and justify the study. Hence any research begins with an enquiry into the studies already conducted in and the related field of study. This chapter discusses the available literature relating to farmer and consumer behavior towards organic vegetables so as to develop and establish a theoretical framework for the study, based on ideas and concepts expressed by various authors and researchers. The studies reviewed have been classified under four heads taking into consideration the main objectives of the study and presented below.

2.1 Importance of organic farming

2.2 Farmer behaviour towards organic farming,

2.3 Barriers in adoption process of organic cultivation and the constraints in marketing of organic produce

2.4 Consumer behavior

2.5 Determinants of consumer behavior

2.1 Organic farming

Organic farming is a holistic production management system which promotes and enhances agro-ecosystem health, including biodiversity, biological cycles, and soil biological activity. It emphasizes, the use of management practices in preference to the use of off farm inputs, taking into account that regional conditions require locally adapted systems. This is accomplished by using, where ever possible, agronomic, biological, and mechanical methods, as opposed to using synthetic materials, to fulfill any specific

function within the system (FAO, 1999). The related studies in the organic farming are given below.

Balachandran (2004) made an attempt to study the status of organic farming in Kerala through surveying organic farmers in Kerala. The study found that organic farming in Kerala faces a stiff challenge from many sides. The fundamental need is to create awareness in the society on the ill effects of modern agriculture and the positive qualities of organic agriculture. It was suggested that the government and other institutional agencies should support development of model organic plots in the different regions of the state where farmers can learn the techniques. While rapid transition to organic farming is not advisable, even phased reversion can cause temporary financial risk, which can be reduced if there is support from the authorities.

Narayan (2005) presents relevance and constraints of organic farming in India based on the secondary data collected from authorized journals. The study found that India is lagging far behind in the adoption of organic farming. So far, the only achievement seems to be laying down on the NSOP and the approval of 4 accreditation agencies (all government bodies) whose expertise is limited to few crops. Study suggested that substantial financial support by government is absolutely necessary to promote organic farming. Market development for the organic products is a crucial factor to promote domestic sales. The producer's organization must be encouraged to government accredited for inspection and certification in accordance with NSOP.

Ramesh *et.al.* (2005) stated in his article on "Organic farming: Its relevance to the Indian context" that increasing consciousness about conservation of environment as well as health hazards associated with agro chemicals and consumer preference to safe and hazard free food are the major factors that lead to the growing interest in alternate form of agriculture in the world. The interest in organic agriculture in developing countries is growing because it requires less financial input and places more relevance as the natural and human resources available. Organic agriculture does not need costly investments in

irrigation energy and external inputs but rather organic agricultural policies have the potential to improve local food security in marginal areas. Combination of lower input costs and favorable price premium can offset reduced yield and make organic farm equally and often more profitable than conventional farmers.

"Influence Of Socio-Psychological Characteristics In Adoption Of Organic Farming Practices In Coconut Based Homesteads In Humid Tropics" was a study conducted by Jayavardhana and sherief (2010) aimed to find out the influence of socio-psychological characteristics in adoption of organic farming practices in coconut based homesteads. Data were collected through pretested structured interview schedule and the relationship between the dependent variables and adoption was studied using correlation analysis. Correlation coefficient indicated that education, innovativeness, risk orientation, market perception, self confidence, information seeking behavior, awareness, knowledge and attitude towards organic farming practices showed significant correlation with adoption. However age, experience in coconut cultivation, livestock possession, training attended and environmental orientation had negative and non significant correlation with adoption of organic farming practices among the coconut based homestead farmers.

Kaur (2010) published an article emphasising the need of organic farming in India. Secondary data were collected from literature on the historical evaluation. The study found that organic agriculture is highly needed in India. But the most important constraint felt in the progress of organic farming in India is the inability of the government policy making levels to take a firm decision to promote organic farming.

The article on "A need for organic farming in India" by Guruswamy (2010) highlights the types, present status, productivity, management of diseases, weeds, manures, harvesting, post harvesting, marketing and advantages of organic farming products which will overcome the current issues of the conventional farming. It is found that organic farming practice is to be re-introduced from the current 1to 2 percent to the

possible extend to get rid off difficulties in conventional farming. Organic farming will solve the food shortage and crisis in our country permanently and can encash heavily by exporting to needy countries of having food shortages.

Ramesh *et.al.* (2010) conducted a study on status of organic farming in India through survey made on certified organic farm in the country to ascertain the real benefits and feasibility of organic farming in terms of production potential, economic and soil health in comparison to conventional farms. The study revealed that in spite of the reduction in crop productivity organic farming provided higher net profit to farmers compared to conventional farming. This was mainly due to the availability of premium price for the certified organic produce and reduction in the cost of cultivation. In cases where such premium prices were not available and the cultivation was higher primarily due to purchased off – farm inputs organic farming was not found economically feasible. However there was an overall improvement in soil quality in terms of various parameters viz, physical, chemical, biological indicating an enhanced soil health and sustainability of crop production in organic farming system.

Pandey and Singh (2012) have made an attempt to study opportunities and constraints in organic farming in Indian perspective. Organic farming follows the principle of circular causation and has emerged in response to questions on health, environment and sustainability issues. Farmer's apprehension towards organic farming in India is rooted in non-availability of sufficient organic supplements, bio fertilizers and local market for organic produce and poor access to guidelines, certification and input costs. Capital-driven regulation by contracting firms further discourages small farm holders. An integrated effort is needed from government and nongovernment agencies to encourage farmers to adopt OF as a solution to climate change, health and sustainability issue.

In order to understand the profile of organic food consumers and the perception of these consumers about organic foods, a study was conducted in the twin

cities of Hyderabad and Secunderabad by Radhika *et.al.*(2012). The organic food consumers mostly belonged to wealthy classes, were highly health conscious, and a mix of professionals and businessmen. The information collected with the help of structured questionnaire from sample of two hundred consumers formed the basis for the study. Simple averages and percentages have been used to analyse the data. The finding of the study also revealed that though the consumers are satisfied with the taste of organic foods and to an extent about the premium prices, concerns like authenticity of being organic, absence of range of varieties, right information on the pack and absence of convenient supply points have to be addressed to increase the demand for organic foods.

Sakthirama and Venkatram (2012) were conducted a structural analysis of purchase intention of organic consumers. The aim of the study wa to measure attitude, familiarity and purchase behavior of consumers towards organic food in an urban city of India. The study was conducted in Coimbatore City. The sample size consisted of 200 consumers were selected randomly. The study found that the purchase intention was influenced by attitude and knowledge and familiarity of consumers. Meanwhile knowledge and familiarity of consumers affect the attitude of the consumer. It suggested that information and promotion campaigns could focus on promoting organic foods, so the consumers are provided with elements and experiences that stimulate their knowledge and familiarity.

Green Marketing: a study of consumer perception and preferences in India was a paper made by Bhatia and Jain (2013). This research provides a brief review of environmental issues and identifies the green values of the consumers, their level of awareness about environmental issues, green products and practices. The study was conducted on 106 respondents and data analyzed using Liker scale and regression analysis. High level of awareness about green marketing practices and products was found among the consumers. Green values were also found to be high among the respondents. Research has given good insights for marketers of the green products

and suggested that the need of designing the marketing communication campaigns promoting green products due to high green value among the consumers. Results of regression analysis reveals the view that overall green values, awareness about green products and practices and the perception regarding seriousness of marketing companies towards green marketing had positive significant impact on consumer persuasion to buy and prefer green products over conventional products.

Ragavan and Magesh (2013) Studied the consumers' purchase intentions towards organic products in Tamilnadu. The consumers have been selected by adopting random sampling technique through pre-tested and structured questionnaire. The results showed that perceptions towards organic food product depict the strongest relationship with buyers' intention to buy organic food product followed by the buyers' belief that consuming organic food product is contributing to preserving the environment. It seems that perception towards organic food and belief that organic food was environmentally friendly are not independent from each other. Besides, the availability of product information is also supporting the consumers' intention to purchase organic products. However, other factors (awareness on government support and action and availability of information on product location) were found to be insignificantly related to the intention to purchase the organic products. The perception towards organic products, beliefs about product safety for use, belief about product friendliness to the environment and availability of product information were the major determinants for the consumers' purchase intention towards organic products.

Shukla *et.a.l* (2013)also stated about the status of organic farming in India. Organic farming can contribute to sustainable food security by improving nutrition intake, supporting livelihoods in rural areas and enhancing biodiversity, while simultaneously reducing vulnerability to climate change. This is because it uses 50 percent less fossil fuel energy than conventional farming and relies on practices like rotating crops, applying mulch to empty fields and maintaining perennial shrubs and trees

on farms, which stabilize soils and improve water retention, thus reducing vulnerability to harsh weather patterns. On an average, organic farms sustain 30 percent higher biodiversity than conventional farms.

A study on Buying behaviour of urban residents towards organically produced food products was conducted by Bharathi *et.al.* (2014).The aim of the study was to understand the buying behaviour of urban residents towards organically produced food products in Banglore city. A structured interview schedule was used for the collection of data from the samples selected and analyzed using descriptive statistics. The study found that as results of environmental sustainability, importance is shifted towards Organic food products rather than commercial food products. The study brought out the fact that the people were well aware of images and availability, but not loyal entirely to organic food products. The respondents without doubt attracted towards Organic food products. So the marketers must create promotions which are both realistic and moral and the product availability in terms of volume and variety are required to become successful in marketing organic food products.

A Study on Green Marketing: With Special Reference to Organic Product in Coimbatore City was conducted by Gnanapandithan and Rajasekaran(2014). The objective of the study was to create awareness about green product or organic product and it's important to the society. A structured methodology has been adopted to collect primary and secondary data for the research and analyzed by Percentage analysis and average score analysis. Study revealed that there is an increasing trend in customer's awareness and in turn the green product markets have gained momentum. Though the price level of organic product is high, the level of satisfaction of customers on organic product is encouraged. The hygienic condition, healthiness and the taste of organic product gives the maximum level of satisfaction to the consumers, which is otherwise considered as the green marketing strategies.

Kumar and Yamuna (2014) studied the customer awareness and satisfaction towards Eco-friendly products in Coimbatore city. The data were collected through Questionnaire. A Sample of 100 respondents was selected at convenience. The percentage analysis and Average Rank Analysis used for analysis of data. The study found that there are number of brands available in the market for this eco friendly products but the market for the same depend on customer preference and customer satisfaction towards the same. The design, price, quality, quantity, durability, unpolluted environment, availability are the aspects of eco friendly products will have influence on the choice and preferences of customers. The brand of eco friendly products which fulfills all the requirements establishes a better image among customers and sells more in the market.

A study on Smallholder organic farmers 'attitude, objectives and barriers towards production of organic fruits and vegetables in India: a multivariate analysis by Nandi *et.al.* (2014) aimed to analyse smallholder farmer's attitudes, objectives and barriers towards production of organic fruits and vegetables (F&V) in Karnataka State, South India, as well as to identify farmers' profiles based on attitudes and objectives. The source of information used was based on a field survey carried out during early 2014. The results of factor analysis based on attitudes revealed that five factors including market, environmental, support, benefit & cost and community explained 70.9 % of the variance. Further, factor analysis based on objectives acknowledged presence of three latent factors including economic, environmental and socio-cultural explaining 77.1 % of the total variance. Similarly, four latent factors were identified based on factor analysis of sixteen barrier variables, representing production, marketing, techno-managerial and economic & financial barriers, which explained 68.5 % of the variance.

A study on Consumer behavior and purchase intention for organic food made by Paul and Ratna(2014) focused on the behavior of ecological consumers and their intention to purchase organic food. The method used for the data collection was a

face-to-face interview and used a structured questionnaire. Data were analyzed by multivariate analyses like multiple regressions, factor analysis and cluster analysis with large sample size. The results indicated that health, availability and education from demographic factors positively influence the consumer's attitude towards buying organic food. Overall satisfaction of consumers for organic food was more than inorganic food but the satisfaction level varies due to different factors.

Ramesh and Divya (2015) were aimed o study the respondents' awareness towards the organic foods products in Cimbatore city. A sample of 120 respondents was taken into account for finding their uses for the organic food products and the data were analyzed using Chi- square analysis and Average Ranking analysis. The study found that there was a significant relationship between education qualification and types of organic food products. There was no relationship between monthly income and price level of organic food products. Majority of respondents, ranked first to quality of the product. The main barrier to increase the market share of organic food products was consumer information.

2.2 Farmer behaviour

Bhattacharya and Krishna (2003) stated that organic farming is not a recent origin in India. It dates back to ancient period during Indus valley cultivation and its mention was made in Rigveda. There was use of green manures oil cakes and animal excreta. Farmers were interested to do organic farming.

The study conducted by Kallas *et.al.,* (2009) on Farmer's objectives as determinant factors of organic farming adoption. The paper seeks to assessed the decision to adopt organic farming practices. More specifically, they used Duration Analysis (DA) to determine why farmers adopt organic farming and the timing of adoption. They extend previous studies by including farmers' objectives, risk preferences and agricultural policies as covariates in the DA model. The Analytical Hierarchy Process (AHP) is used

as a multi-criteria decision-making methodology to measure farmers' objectives. The empirical analysis uses farm-level data collected through a questionnaire to a sample of vineyard holdings in the Spanish region of Catalonia. Farmers' objectives are found to influence the conversion decision. Moreover, farmers who are not risk averse are more prone to adopt organic farming. Results also identify the policy changes that have been more relevant in motivating adoption of organic practices.

Converting or not converting to organic farming in Austria:Farmer types and their rationale by Darnhofer and Schneeberger(2007) aimed to provide a detailed picture of farmers' decision making and illustrate the choice between organic and conventional farm management. The decision tree allows to identify decision criteria and examines the decision making process of farmers in choosing their farming method. It also allows to characterize farmer strategies and values, identifying five types of farmers: the 'committed conventional', the 'pragmatic conventional', the 'environment-conscious but not organic', the 'pragmatic organic' and the 'committed organic'. The importance of taking into account heterogeneity in farmers' attitudes, preferences and goals and their impact on the choice of farming method is emphasized. The study supports research showing that farmers in general and potential converters in particular are not one homogeneous group. While farming methods are, to some extent, influenced by issues related to technical aspects of agricultural production and farm structure, personal values play an important role in decision-making.

The study on Farmer attitudes towards converting to organic farming by Laepple and Donnellan (2008) focuses on the role that the attitudes of farmers play in identifying drivers and barriers to the intention to convert to organic farming using the theory of planned behaviour. The study which aimed to explain the decision to adopt or not to adopt organic farming over time with respect to a variety of factors such as economic, institutional and socio economic as well as comparing the attitudes of organic and

conventional farmers. A model from the social psychology literature named the Theory of Planned Behaviour (TPB) was applied. According to the TPB intention is based on three main constructs, namely attitudes, subjective norm (SN) and perceived behavioural control (PBC). Barriers and drivers were identified by calculating correlation coefficients between the indirect attitude measures and intention. The results indicate that future uptake of organic farming is likely to be financially driven, but farmers were reluctant to produce a product which they perceive only rich people can afford. The personal interviews also confirmed this result, as most farmers immediately mentioned they felt no one can afford to buy organic food as it is seen as too expensive.

Factors influencing the conversion to organic farming in Norway by Koesling (2008) focused on Determinants of the decision to convert to organic farming methods are examined by applying bivariate analyses and a multinomial logit model to a survey of 1018 Norwegian crop and dairy farmers. A series of one-way Analyses of Variances (ANOVA) for metric variables (including Likert-type scale variables) and chi-square or Fisher exact tests for discrete variables were performed to assess differences in characteristics, goals, motives and attitudes across the groups. The results show that 4 percent of the conventional respondents plan to convert by 2009, which may imply that the national goal of 10 percent organically managed area will not be achieved. The analysis indicates that organic farmers, compared to their conventional counterparts, are more likely to have larger farms, more education, be located closer to urban areas, be crop farmers, have 'sustainable and environment-friendly farming' as a goal and hold favourable views about the values of organic farming methods. Even though the farmers who are planning to convert seem to be more business-minded and less organically oriented than the existing organic producers, policies for promoting organic farming which confine itself to financial considerations may miss important factors which prompt farmers to convert.

Canavari *et.al.* (2008) investigated the factors explaining behaviours and attitudes of farmers towards organic practices. Among a wide set of motivational, economic and environmental variables, they focus on those factors related to ethnocentrism of farmers and the importance of local origin labels. The study found that ethnocentrism cannot explain neither the present status of farmers (organic vs. conventional) nor their future intentions about the adoption of agricultural methods of production. However, the absence of local origin labels is significantly affecting the choice of conventional farmers who do not convert to organic farming.

A research paper on Organic farming: a solution to agriculture crisis or a "new" trend to healthy eating? an overview of French and British farmers conducted by Bouley (2010). In order to meet the aims of the research, a multi-method analysis using both quantitative and qualitative method was developed. Questionnaires provided a base for analysis on organic farming and then allowed the researcher to focus on particular aspects of organic farming using in-depth interviews. Only a minority of farmers were in favour of organic farming while the others had concerns about organic farming as its concept goes against their belief: a farmer must produce food for the nation. Organic farming has not yet entered farmers' perception of farming but the future change of agricultural policy may encourage more farmers to become organic farmers. However, unless organic farming is more regulated, the organic food sector need to be controlled otherwise it may experience similar levels of inelasticity in demand as those operating in the conventional sector

A study on Ohio Grain Farmers' Attitudes toward Organic and Non-Organic Farming Methods conducted by Hall (2010) aimed to study the barriers toward adopting organic farming and the relationship between demographic characteristics of Ohio grain farmers and their attitude formation. Data were collected through a questionnaire sent to 320 members of the Ohio Corn Growers Association or the Ohio Wheat Growers

Association. Respondents reported a positive attitude toward using non-organic farming methods, while a more negative attitude toward using organic farming was reported. The list of barriers toward growing crops organically confirmed that Ohio grain farmers hold a negative attitude toward organic farming. The barriers to adopting organic farming were reduced yields, increased workload, more pest and disease problems, and higher weed infestations. As stated earlier, many of these barriers such as reduced yields, pest and disease problems, and higher weed infestations may indicate that farmers feel organic methods would cause them to have problems with managing their fields. This negative image of organic farming may negatively affect Ohio grain farmers' attitude toward organic farming.

Assis and mohd (2011) conducted a study to investigate the knowledge, perception or attitude, and practices of vegetable growers towards organic farming. Survey method through face-to-face interview by using structured questionnaire was used to collect data from a total of 31 vegetable growers in Kundasang, Sabah which was selected by using simple random sampling method. Likert's rating was used. The findings of the study show that the knowledge of the respondents on organic farming especially pertaining to the use of chemical insecticides, herbicides and fertilizers is still need to be improved, their attitude is also still negative, and they are still dependent on conventional practices especially to control pests and diseases.

Devdas and Helen (2013) made an attempt to study attitude of farmers towards organic vegetable cultivation. Data were collected through primary survey and data wer analyzed by mean and standard deviation. Majority of the organic farmers (86.67 percent) had a favourable attitude towards organic farming practices followed by more favourable (10 percent) and less favourable (3.33 percent) attitude. More than 80 per cent of the conventional farmers had favourable attitude towards organic farming practices. Above 90 per cent of the organic as well as conventional farmers believed that use of organic farming practices was essential for better quality of vegetables. Nearly cent per

cent of the conventional farmers reduced the chemical application over the years and increased the application of organic manures.

2.3 Barriers in adoption of organic farming

Investigating the barriers of converting to organic farming can provide valuable information and suggestions to the farmers and also can identify the factors that affect the decision whether to convert to organic farming. Through the following literature reviews, the objective can be more clearly understand.

The study on Marketing of Indian Organic Products: Status, Issues, and Prospects conducted by Singh (2003) locates the rationale for organic farming and trade in the problems of conventional farming and trade practices, both international and domestic, and documents the Indian experience in organic production and trade. It explores the main issues in this sector and discusses strategies for its better performance from a marketing and competitiveness perspective. The study found that certification of organic products has emerged as an important issue in their marketing. The growth of organic farming in India and other Asian countries has been slow due to the emphasis given to food security rather than food safety.

A study on Market opportunities and challenges for Indian organic products conducted by Garibey and Jyothi (2004) assessed the demand and requirements in the international market and identify measures to improve the quality of Indian organic products in line with international market requirements and also to formulate strategies for both domestic and international markets with a focus on market access for small and medium-sized farmers and enterprises. To determine the characteristics of the Indian domestic organic market primary and secondary research was carried out. The primary research involved gathering data from Indian producers or traders, NGOs, certifying agencies, commodity boards and consumers. Detailed questionnaire were used to collect

the information. The study found that lack of information on availability and certification, price expectation too high relation to quality, low quality of consistency and contamination, reliability of exporters and slow shipment, restricting on importing Indian organic products.

Lopez and Requena (2005) conducetd a study on Factors related to the adoption of organic farming in Spanish olive orchards. The paper characterizes organic olive growers and farms in the south of Spain and compares them to their conventional counterparts. Information was gathered in a survey of 322 olive growers. The organic growers differed from their conventional counterparts in that their orchards were less productive and in the more part-time nature of their dedication to agriculture. They were also younger, more involved in management and administration of the holding, attended more courses, were more commonly members of agricultural associations, received more information via the Andalusian Committee for Organic Agriculture (a control, certification and training organization), had a more negative opinion regarding the use of chemicals, and believed that organic agriculture required more time and effort but provided greater returns.

A study was conducted by Yamota and Tan-Cruz (2006) to identify the different factors affecting farmers' adoption of organic rice farming in Magsaysay through socio-demographic profile of the farmer adopters and non-adopters. In study the behaviour of the farmers was evaluated through economic valuation method, specifically willingness to pay (WTP) and willingness to accept (WTA). The findings revealed that attributes like age, number of years in formal schooling, number of seminars attended, number of household members involved in farming, farmers' valuation and tenure exhibit a positive relationship towards the rate of organic adoption. Credit availment and family income are negatively related to the rate of adoption. Farmers' valuations towards the technology positively affect the farmers' rate of adoption. The higher the farmers' willingness to accept and pay, the higher the rate of adoption.

A study on Adopting Organic Agriculture: An Investigation Using the Theory of Planned Behaviour was conducted by Hattam (2006). The aim of the paper was to find the reasons for barriers of adopting organic agriculture. The method of study was survey using structured questionnaire. The household survey of 233 small-scale avocado producers including 186 conventional (non-adopters) and 47 certifed organic (adopters) growers were conducted. For the data analysis the Theory of Planned Behaviour (TPB) and ordered probit model were used. The results from the Ordered Probit Models also showed that both age and education influence the intention to produce organic avocados. They are overridden by a perceived inability to convert successfully and social pressures from important referent groups. Psychological factors are therefore significant barriers to adoption.

A study on "The Adoption and Diffusion of Organic Agriculture: Economics, Drivers and Constraints" conducted by Wheeler (2006) investigated the barriers to, and the drivers of, the adoption of organic agriculture, especially from the point of view of agricultural professionals. A quantitative analysis of 61 countries in the thesis finds evidence that government agricultural policies have a positive impact on the level of organic farming, and may play a more important role than market forces in driving the adoption of organic agriculture. The thesis reports the results of a detailed survey of 185 public agricultural professionals on their views towards organic agriculture and modern biotechnology. The thesis concludes with policy implications for sustainable farming innovations. The importance of public information provision, R&D and providing support for a variety of research programmes is emphasized.

Lau (2007) Identified barriers to entry into the organic market and possible strategies to increase the likelihood of success for potential organic producers. The number of certified organic operations in Texas has remained relatively stagnant while nationally the organic food sector has experienced double-digit growth. A survey was

conducted. To determine if there are significant differences among producer groups, a one-way ANOVA was used for scaled items. The study found that financial risk from adoption or transitioning seems to be a common concern and Producers did not find any information service as "very useful." The important constrains in organic farming identified were high input cost, organic inputs, and organic processing facilities.

A study was conducted by Khaledi (2007) on "Assessing the Barriers to Conversion to Organic Farming: An Institutional Analysis". The focus of this research report is on identifying factors that encourage or discourage farmers considering adopting organic practices, especially the institutional factors that affect the decision whether to convert to organic farming. The data used in the study were collected from a sample of both organic and conventional farmers in Saskatchewan. The results revealed that conventional farmers lack information in many areas of organic practices, and that the institutions related to organic farming are very useful in providing information about organic farming. Assessing the "willingness to convert" of conventional farmers shows some potential for converting to organic practices. Lack of knowledge and skills needed to manage an organic farm and lack of market opportunities for organic products are the most important reasons for not using organic farming practices.

A study on farmers Adoption of organic vegetable production practices in West Java and Bali, Indonesia conducted by Takagi (2010). The goal of this study was to determine farmers' perceptions of organic vegetable production practices including bio-pesticides and compost in West Java and Bali, Indonesia. Data were collected using a mixed method: face-to-face survey and interviews with key informants. Data were analyzed using binary logit analysis, and by a path analysis. In the interviews with key informants, a snowball sampling was used to collect detailed information from persons representing the Department of Agriculture, the agricultural extension agency, and people in an organic vegetable market channel in the study sites. Result of the binary logit analysis showed that the factors associated with awareness of the practices include:

location, gender, educational level, distance to the pilot farms, exposure to the pilot farms, and information sources. However, results of the path analysis showed no statistically significant relationships between awareness of the practices, attitude toward the practices, and intention to adopt the practices.

"Overcoming the Barriers to Organic Adoption in the United States: A Look at Pragmatic Conventional Producers in Texas" was a research paper by Constance and Choi (2010) which was aimed to document the structural and institutional constraints to organic adoption. This is accomplished through a review of organic programs and policies in the U.S., in particular the National Organic Program. The study also investigated the predictors of interest and the perceived barriers to organic adoption among pragmatic conventional producers in Texas, compared to organic and conventional producers. A series of bivariate analyses were conducted to compare producer characteristics, attitudes toward organics, and information and services needs assessment among the three groups of producers: conventional, pragmatic conventional, and organic. The results indicated that more than fourty percent of producers who currently have conventional operations have at least some interest in organic production. There are significant differences among the three groups in their structural and attitudinal characteristics related to organic adoption. For the pragmatic conventional producers, an increase in revenue was a major facilitator of organic adoption. Their high levels of uncertainty regarding organic production and marketing, and especially organic certification constrain organic adoption. The paper concluded that increased institutional support would facilitate organic adoption.

Barriers to conversion to organic farming: A case study in Babol County in Iran by Omid Sharifi et.al. (2010) aimed to identify these barriers in Babol County in Iran. A sample size of 150 farmers was selected for this research by using simple random sampling method. KMO measure and Bartlett's test to assess appropriateness of the data were used for factor analysis.The result of factor analysis showed that major barriers or

obstacles to the adoption of organic farming between farmers were: productive, natural, attitude and knowledge, infrastructural, institutional and economical barriers.

The study was conducted by Kafle (2011) on Factors Affecting Adoption of Organic Vegetable Farming in Chitwan District, Nepal. The importance of organic agriculture is being realized by farmers as well as the policy makers, intellectuals and sensitive citizens after observing the deteriorating situation in the agriculture sector of Nepal. A broad range of factors including the socio-economic characteristics of the farmer and farmer's perception on organic farming were covered to assess the factors affecting adoption of organic vegetable production in Phoolbari VDC of Chitwan district of Nepal. The data were obtained from 65 households of Phoolbari VDC adopting organic farming. Multiple regression analysis was adopted to analyze the data. The finding points out three factors, farmers' participation in organic farming related trainings and visits, farm size and compatibility of organic farming to their situations as the main determinants of adoption of organic farming among farmers.

In the study by Hosseini and Ajoudani (2012) on "Affective Factors in Adopting Organic Farming in Iran' discussed the perception of agricultural specialists in Kermanshah Province about factors affecting the adoption of organic farming. The methodology used in this study involved a combination of descriptive and quantitative research and included the use of correlation, regression and descriptive analysis as data processing methods. The regression analysis showed that the extension/education and economic factors determined 31% of variance on the perception of respondents regarding the adoption of organic farming by farmers.

Study on Factors Affecting the Adoption of Organic Pepper Farming in India by Rana et.al. (2012) is carried out to address problems with an emerging farming concept of organic agriculture. The study was undertaken in Idukki district of Kerala in India. Primary data were collected from conventional and organic farmers. It used logit

regression model to analyze the data. In addition, the study found that the perception of farmers towards organic farming as an important driver in the decision making process and the extension service and the lack of governmental extension support were the major constraints to adoption.

A research paper on "Extent of Adoption and Perceived Reasons for Organic Cardamom Production in Idukki District of Kerala" conducted by Reshma et.al. (2013) identified the extent of adoption of various recommended practices and reasons for adopting organic cultivation practices of cardamom. Data were collected from organic and inorganic cardamom farmers' which were selected through multistage sampling procedure. The results of the study on different aspects of extent of adoption in case of organic and inorganic farmers clearly showed that most of the practicing farmers were innovative in the complete adoption of the relevant technologies. Organic cardamom growers were found to be more innovative in the adoption of practices like planting material selection, the water and soil conservation technologies, and plant protection measures contributing higher benefit for the overall improvement of their farmland and the income generating capacity of farmers. The apprehension for the pollution free environment, chemical free produce, and increased demand for the organic cardamom in the international and the domestic markets horde farmers briskly to adopt organic farming practices in cardamom

Singh (2013) explored the problems perceived in marketing of organic products by farmers in Uttarakhand state of India. Descriptive research design with survey method, wherein data were collected through face-to-face structured interviews with 72 farmers in the plains and hilly regions of Uttarakhand was adopted for the present investigation. Data were analyzed with descriptive statistics and Chi square test to provide additional information about the effect of the selected variables on perceived problems. The objectives focused on the prevalent marketing practices adopted by the farmers for organic crops and to ascertain marketing related problems perceived by them with reference to organic crops. The most prominent problem in marketing of organic crops

reported by the respondents in the plain areas of the state of Uttarakhand was related to 'High Production Cost' that led to low profit, or no profit; while the largest proportion of the respondents from the hills reported 'Unavailability of an earmarked market place/shop for organic crops' to be their biggest cause for concern. The paper further deals with the market place for transaction, distribution channels, satisfaction of the sample of farmers, information on organic crops grown, perceived problems of farmers and implications of the study.

2.4 Consumer behavior towards organic products

consumer behaviour means the behaviour that display in search for purchasing using, evaluating and disposing of products that they expect will satisfy their needs for the consumption. The reviews of research on consumer behaviour towards organic products were presented below.

The research report on consumer behaviour in purchasing of organic food products in Australia was conducted by Turnbull (2000) aimed to develop a sound theoretical model of consumer behaviour for organic products that will fill the gaps in the literature and add to the knowledge base for industry, business government and farmers. The methodology used is four focus groups to assist in discovering new ideas, diagnosing situations and screening alternatives. Focus groups generate insights into complex behaviours and motivations and will be useful for the exploratory and developmental nature of the research. Two of the groups were people with low organic consumption experience while two groups included those with a high organic consumption experience. The findings of the research determine how consumers identify organic products and showed factors that influence their purchase decision. As well, a model of the purchase decision structure for consumers regarding organic products, links the literature to theoretical knowledge of consumer behaviour.

Radman (2005) was Conducted a research on Consumer consumption and perception of organic products in Croatia. The objective of this paper was to gain knowledge about consumer attitudes toward organic products in the capital of Croatia. The data obtained from the survey were analysed with univariate analysis, chi-square test, ANOVA and correlation analysis. The study found that Croatian consumers consider organically-grown products as very healthy, of good quality and tasty. However, these products are perceived as rather expensive and of questionable appearance. Consumers are not very familiar with the supply of ecologically-grown products in the market. Some groups of consumers have more positive attitudes toward organic products, and they exhibit an increased willingness to pay higher prices for these products. Therefore, marketing strategies for organic products should be targeted towards such groups

A study on Quality, Safety and Consumer Behaviour Towards Organic Food was conducted by Lucas (2008) to compare Portuguese and German consumer behaviour towards Organic Food Products (OFP). For this purpose, an extensive literature review on quality and food safety of organic food products was carried out and a consumer survey was implemented, with data were collected by means of personal interviews in the capital cities of the two countries. The data was analysed using descriptive statistics and a comparison of Portuguese and German consumers was made with the help of chi-square tests and ANOVA. The results show positive consumer attitudes towards organic food products. However, its consumption is much lower than could be expected from these attitudes. Intentions to buy organic food products are quite high, suggesting that these products might obtain a substantial market share in the future.

Sadek and Oktarani (2009) conducted a study on Consumer Knowledge and Perception about Organic Food: a Challenge for Consumer Education on The Benefits of Going Organic. The study was based on the secondary data taken from the report AC Nielsen survey which is held on 2007. Survey has been done in 18 countries. The result indicates that consumer's interest in organic food is influenced by their belief that organic

food is better for health and the environment. This may provide a basis for worldwide education on the benefits of going organic.

A study on Consumer behaviour towards Organic Food Consumption in Hong Kong: An Empirical Study was conducted by Yi (2009). Through examining the demographic characteristics of general public attitude towards organic food, health consciousness, environmental concerns and organic food knowledge, the study aims to identify associations between all these factors and the frequency in organic food consumption. For research design, both exploratory and descriptive researches were conducted in this study. Concerning methodology, the quota sampling method was adopted with the sample size of 330. To analyze the collected data, the statistical analysis of Statistical Package for Social Science was applied. Findings showed that gender and presence of children in household have significant relationship with the organic food consumption. Positive relationships of attitude, health consciousness, environmental concerns and organic food knowledge with the frequency of organic food consumption are proved. Main finding of the study was age, education and income are found not related positively to consumption of organic food.

A study on Organic farming and consumer behavior towards organic produce in a transition country: Case of Armenia was conducted by Grigoryan & Urutyan (2009). This paper was mainly concentrated on the behavior of local consumers towards organic produce in comparison with agricultural products grown without use of organic farming techniques. Objective of the conducted relevant regression analysis is to forecast the consumer willingness to pay a price premium for organic produce on the base of different variables and explore the necessity to conduct a large scale research project in Armenia. Transition process and the first steps towards market economy are accompanied with many difficulties for Armenian agriculture.

The research on Antecedents and outcomes of consumer environmentally-friendly attitudes and behaviour by Leonidou (2010) presents the results of a study conducted among 500 Cypriot consumers, focusing on the factors that shape consumer environmental attitudes and behaviour, as well as on the resulting outcomes. The descriptive statistics (mean scores and standard deviations) of the constructs and items used for the purposes of this study. The findings confirmed that both the inward and outward environmental attitudes of a consumer are positively influenced by his/her degree of collectivism, long-term orientation, political involvement, deontology, and law obedience, but have no connection with liberalism. The findings of the study have important implications for shaping effective company offerings to consumers in target markets, as well as formulating appropriate policies at the governmental level to enhance environmental sensitivity among citizens.

A study was conducted by Sangkumchalianga and Huang (2012) on Consumers' perceptions and attitudes of organic food products in Northern Thailand. The adoption of organic production and processing is highly determined by market demand. Therefore, this is reflected in consumers' perceptions and attitudes towards organic food products. This research draws on a survey of 390 respondents. Results indicated that the main reasons for purchasing organic food products are an expectation of a healthier and environmentally friendly means of production. Organic buyers tend to be older and higher educated than those who do not buy them. In addition, consumers' trust in the authenticity of the goods and price are also issues. However, the main barrier to increase the market share of organic food products is consumer information.

Acheampong *et.al.* (2012) was conducted a study on Consumers Behaviours and Attitudes towards Safe Vegetables Production in Ghana: A Case Study of the Cities of Kumasi and Cape Coast conducted by. It was aimed at ascertaining farmers' and consumers' awareness and perceptions on production and consumption of organic vegetables. It was also aimed at coaching them on how to produce and or obtain and consume safe vegetables. Much attention was paid to the use of chemical pesticides in

vegetable production and the presence of chemical residues on vegetables and vegetable products. Selected two hundred consumers through random sampling were interviewed using structured questionnaires in the capital cities of two regions of Ghana in September 2009.mThe Ordered Probit Model (Pindyck and Rubinfeld, 1991) was used to estimate the effects of both quantitative and qualitative variables on consumers' willingness to pay higher prices for safer vegetables. The model showed that labeling, visual appearance, freshness and availability had significant influences on consumers' willingness to pay higher prices for safe vegetables.

Mithilesh (2013) was conducted a study to know the consumers opinion about organic food products. The opinion of consumer about organic food products was that 85.83 per cent of respondents found that organic food products are good for the environment. The study revealed that consumer thought that organic food products are good for the environment as well as good for the human health but there is lack of more awareness between consumers about organic food products.

A research paper on Consumers Perception towards Organic Products-A Study in Mysore City conducted by Chandrashekar (2014) was aimed to examine the consumers perception towards organic products in the study area and to analyze the constraints in marketing of organic products. The study was based on primary and secondary data. The Multivariate Analysis and ANOVA (Analysis of Variance) were used to analyse data. The main problems of organic consumers are irregular availability of organic products. Sometimes, the organic consumer would purchase non organic products along with organic products. The organic products were too expensive than non-organic products. So the consumers were not purchasing more quantity of organic products. The varieties of organic products which were available in the market are limited. There was a lack of awareness about organic products to consumers. The organic products were not properly certified from any organic certified agency or authority. The organic products shops are limited in the city. There is a lack of technology for the procurement of organic products.

Mohamed (2014) studied consumer attitude towards organic food in trichy – south India based on the data were collected from the selected supermarkets which are selling organic food products in Trichy. One way ANOVA and correlation used. The study examined consumer's attitude toward purchasing organic food products based on three variables namely health consciousness, environmental factors and safety considerations. The results of the study showed that the sample of the study was more concerned with health and safety factors in their decision to consume organic food products.

2.5 Determinants of consumer behavior towards organic vegetables

A study among Swedish consumers was conducted by Magnusson *et.al.*, (2001) in order to examine Swedish consumers' attitudes toward organic food products (milk, meat, potatoes, bread) purchase frequently, purchase criteria, perceived availability and beliefs about organic food products The study found that the most important purchase criteria for the target foods were good taste, healthiness, and quality. The criterion of being organically was found to be the least important. The findings suggested that the most important purchase criteria and the most common beliefs about organic food products do not match very well. This may be contributed to the low regular purchasers. In order to increase the regular organic food products purchasers, the authors have suggested that the quality of organic food products should be increased and a smaller price differences between conventional and organic food products should be established.

Onyango (2007) conducted to identify and estimate the importance of the various factors driving consumer perception and acceptance of organic food products and profile likely consumers of organic food products. The factors to be considered critical in determining the regularity of organic food products purchase was related to food naturalness aspect (no artificial flavors or coloring), vegetarian (persons who do not eat

meat or animal products) and production location. The study also reveals that food familiarity aspect (whether the respondents has consumed a food previously or prefer a familiar brand) was negatively associated with organic food products purchase. It is interesting to note that this study has contributes to the emerging literature by broadening the list of drivers of organic food products purchase beyond socio-economies factors to include public opinions regarding characteristics of food that are important in consuming decisions.

The study on determinants of purchasing behaviour for organic and integrated fruits and vegetables in Slovenia by Kuhar and. Juvancic (2009) aimed to elucidate and to quantify the impact of various determinants influencing purchasing behaviour of organic and integrated fruit and vegetables consumers in Slovenia. Survey results have been used to develop a consumer behaviour model of qualitative choice. Results of this research are aimed at enabling more effective marketing strategies of organic and integrated fruit and vegetable producers in Slovenia, but also to support public policy initiatives to stimulate demand of these categories of food. A country wide survey related to purchasing behaviour of organic and integrated fruit and vegetables has been prepared for Slovenia. An ordered probit model of consumer choice was developed on the basis of survey results to quantify various determinants of purchase frequency for organically and integrally produced fruit and vegetables. Results show that purchase of analysed produce is most significantly influenced by their availability in retail outlets, followed by consumers' income, health and environmental considerations, and visual attractiveness of products. Demand for organically and integrally produced fruit and vegetables could be further stimulated by targeted knowledge and awareness raising actions.

Factors that influence the purchase of organic food: A study of consumer behaviour in the UK by Dickieson and Arkus (2009) measures the effect of several factors on the behaviour of consumers who purchase organic food products in the UK. A quantitative survey revealed consumer behaviour to be influenced by health

consciousness, perceived quality, concern over health safety, trust in organic labelling and price premium. In addition to quantitative research, several interviews with a panel of chefs, a supermarket buyer and a food supplier were conducted to provide context for findings. To test for reliability the Cronbach Alpha was calculated for each of the ten question sets. The effect of the current economic recession was found to be statistically insignificant on behaviour. Organic food is generally looked upon as an alternative to conventional food for consumers who are concerned about food safety and quality. Despite this, many consumer perceptions about safety and quality are not substantiated by scientific evidence.

Ahmad (2010) have made an attempt to gain knowledge about consumers' intention to purchase organic food products and their demographic characteristics. Data were collected in supermarkets within 3 different areas in Klang Valley, Malaysia using mall-intercept approach. A total of 177 respondents were generated. The data obtained from the survey were analyzed using chi-square test, ANOVA, correlation analysis and multiple linear regression tests. Result indicated that the intention to purchase organic products were heavily influenced by the perception on organic product worth of purchase and the belief on the safety and health aspect of the product. Respondents were divided into organic buyers and non-buyers categories. Among the organic buyers majority consumers believed organic food to be healthier, tastier and better for environment compared to conventional food.

A study on Consumer's Perception and Purchase Intentions Towards Organic Food Products:Exploring Attitude Among Academician conducted by Salleh et.al. (2010) attempted to gain knowledge about consumer attitude towards organic food products. With sample of 136 respondents consist of lecturers from Universiti Teknologi MARA (Northern Zone), the data obtained from the survey were analyzed with reliability test, correlation and regression analysis. Result from this study indicated that academician do aware of what is happening to surroundings with regards to environmental problems or

ecological concern. The findings indicated that health consciousness factor have more impact on customer purchase intention of organic food products rather than the environmental concern. Environmental concern was found to have less impact because academician perceive that although they have knowledge towards environmental and ecological factors that can contribute to sustainable environment, however their current consumption pattern will not change their perception towards organic food product however good it is.

Drivers of organic food consumption in Greece by Kulikovski and Agolli (2010) studied and measured the effect of several factors on the behavior of the consumers who purchase organic food products in Greece. It particularly investigates the purchase behavior in the light of seven variables such as health consciousness, perceived quality, value, concern over food safety, ethical concerns, price premium and trust in labeling. A quantitative survey launched electronically and questionnaires examined Greek consumer's consumption of organic food. The study used standardized coefficient b as the best measure of our independent variables on behavior. Also ANOVA and Regression coefficients also used for statistical test purpose. Behaviour was mainly influenced by quality, food safety and overall perceived value. On the other hand health, ethical concern, price premium and trust in labeling appear to have a non-significant influence on those who purchase organic food. Organic food is generally looked upon as an alternative to conventional food for consumers who are concerned about food safety and quality.

Determinants of Willingness to Purchase Organic Food: An Exploratory Study Using Structural Equation Modeling by Jan et.al. (2011) investigated the determinants of willingness to purchase organic food among consumers in a Malaysian city, using a questionnaire survey. A sample of 406 was retained for data analysis after deleting datasets with large missing values and for ensuring normality of distribution. The Theory

of Planned Behavior informed the research framework and hypotheses. Using structural equation modeling, attitude, subjective norms and affordability (behavioral control) were modeled to impact intention or willingness to pay (WTP) for organic food. WTP in turn predicted actual purchase. Attitude and subjective norms exerted significant positive effects on WTP while the effect of affordability was not significant. Attitude further impacted subjective norms and affordability, thus indicating that efforts to promote consumption growth should focus on influencing consumer attitudes. Cost of consumption is likely to have a major influence over decisions to consume either higher priced organic food or cheaper conventional alternatives. However, consumers who have been convinced of the benefits of organic food and have adopted the organic lifestyle may be less likely to be deterred by the high cost. They seem to be able to accept a higher price tag on organic food. The findings from the study offer insights on promoting more widespread organic food consumption.

A study on Intention to Buy Organic Food among Consumers in the Czech Republic conducted by Olivova (2011). The purpose of the thesis is to investigate intention to buy organic food. Moreover, the study focused to find out which determinant influences consumers' intention the most. Based on the Theory of Planned Behaviour (TPB) and literature review a conceptual model was proposed. The model investigates the effect of several independent variables on the intention to buy: attitudes toward buying, subjective norms, perceived price, perceived availability, product knowledge, and demographic characteristics. A survey of 263 consumers was carried out. Several techniques were used to analyse the model, such as descriptive statistics, independent t-test, one-way ANOVA, Pearson correlation, multiple regression analysis, and hierarchical multiple regression analysis. The results show that the proposed model explains 55.2 % of variance of the intention to buy organic food. Furthermore, the findings indicate that only attitudes toward buying and subjective norms are significant predictors of the intention to buy organic food. The variables perceived availability,

perceived price, and product knowledge, appeared to be insignificant factors in predicting the dependent variable. Among demographic characteristics only gender was found to affect the intention to buy organic food.

A study on Consumer behaviour towards organic grocery products store brands vs manufacturer brands conducted by Llorens et.al. (2012). The two main objectives of the study were to obtain an insight into the reasons which may trigger a positive or negative consumer attitude towards organic food branding; and also to uncover the reasons for buying organic store brands and barriers for not buying them. Data were collected in the field during February 2009 by personal interview at the exit of the supermarkets. Among the most relevant conclusions of this work we highlight that the main driver for consumption is "self-centered", relating to personal health, being the environmental awareness a lesser motivation.

A study on Green marketing: Consumers' Attitudes towards Eco-friendly Products and Purchase Intention in the Fast Moving Consumer Goods (FMCG) sector conducted by Morel and Kwakye (2012). The objective of the research was looked into and explored the influencing of the four traditional marketing-mix elements, satisfaction and word of mouth (WOM) on attitude and purchasing intentions of consumers on eco-friendly products specifically fasting moving consumer goods (FMCG) or non-durable ones. Study findings indicated that consumers who already bought eco-friendly products and those who are satisfied by these previous purchases were willing to repeat purchases. Indeed satisfaction goes with purchase intention. Positive attitudes concerning willingness to pay an extra price for green products are also correlated with purchase intention. However we discovered also that positive attitudes towards green products do not always lead to action i.e. purchase of these products. Our findings demonstrated that there were differences in attitudes and purchase intention toward green products between mainly the women and men and between the Swedish and the Non-Swedish.

The study on "Determinants of Regular and Occasional Consumers' Intentions to Buy Organic Food" conducted by pino *et.al.* (2012) analyzes the impact of ethical motivations, food safety and health-related concerns on purchasing intentions of habitual and less frequent consumers of organic food. A sample of 291 subjects was surveyed through a paper-and-pencil questionnaire and classified either as "regular" or "occasional" purchasers of organic food according to their buying frequency. Means, Standard Deviations and Correlations of the Study Variables and chi-square test were used in the study. Results show different determinants of intention for the two groups of subjects: ethical motivations affect the purchase intentions of regular consumers, whereas food safety concerns influence the purchase intentions of occasional consumers.

Factors affecting consumers' green purchasing behavior: an integrated conceptual framework by Kaufman (2012) suggested a different approach to assessing the variables of consumers' green purchasing behavior. Based on thoroughly researched secondary data, the study found that Environmental knowledge, Altruism, Environmental awareness, environmental concern and attitude, Availability of product information and product availability and belief about product safety for use, Perceived Consumer Effectiveness (PCE) were the important factors may affect consumers' green purchasing behavior.

"Organic Vegetable Consumption In A Region Of Thailand (Chiang Mai): Evaluation Of Consumer Perception and Consumer Buying Behavior" by Somsak(2012) examined the consumption of organic vegetable in Chiang Mai, Thailand. It aims to study consumers of this region to better understand their behavior, perceptions, attitudes, buying motives and barriers influencing the choice of organic vegetable. The data obtained from the survey was analyzed using statistical analysis tools such as ANOVA, t-test, correlation analysis,.exploratory factor analysis, and multiple regression analysis to

examine the differences in buying motives and barriers across consumer groups. The most important motives influencing buying behavior are the concerns about health and the environmentally friendliness of the products. Individuals having bought organic vegetables tend to be older, have a lower family income, and most of them buy the products at the supermarket. The main buying barriers of organic vegetables are the high price of the products and that individuals don't exactly know what organic means. These individuals tend to be younger and they have a higher family income. Interestingly, we found some buying motives and barriers to differ between eastern and western countries.

MATERIALS AND METHODS

CHAPTER 3

MATERIALS AND METHODS

The present study is a field enquiry into the farmer and consumer behaviour towards organic vegetables. This chapter provides the analytical frame work for the conceptualized research problem. The methods and tools of analysis adopted in examining the objectives are included here. The study was conducted on the conventional and organic farmers and consumers of central region of Kerala by focusing on the objectives viz; to study the behaviour of farmers towards organic vegetable farming, to identify the barriers in adoption process of organic vegetable cultivation and the constraints in marketing of organic vegetables, to examine the consumers behaviour towards organic vegetables and to identify the determinants of consumer behaviour towards organic vegetables.

The methods and procedures adopted in conducting the research are presented under following heads.

3.1 Conceptual exposition and operational definition

3.1.1 Conventional vegetable farming

It refers to a method of vegetable farming in which the use of high yielding varieties, chemical pesticides or herbicides and chemical fertilizers is allowed.

3.1.2 Organic vegetable farming

Organic farming is a holistic production management system which promotes and enhances agro-ecosystem health, including biodiversity, biological cycles, and soil biological activity. It emphasizes,

the use of management practices in preference to the use of off –farm inputs, taking into account that regional conditions require locally adapted systems. This is accomplished by using, where possible, agronomic, biological, and mechanical methods, as opposed to using synthetic materials, to fulfill any specific function within the system.

3.1.3 Organic vegetables

Vegetables which are grown by adopting organic cultivation practices.

3.1.4 Inorganic vegetables

Vegetables cultivated in the conventional way of farming practices using chemical fertilizers and pesticides.

3.1.5 Conventional farmer

Farmer who is cultivating vegetables by using conventional farming practices on a commercial basis.

3.1.6 Certified organic vegetable farmer

Organic farmers who are cultivating vegetables in land certified under INDOCERT accredited by National Accreditation Body (NAB), Government of India as per National Programme for Organic Production (NPOP).

3.1.7 Consumer

Consumer is the one who pays to consume vegetables for personal use and not for manufacture and resale.

3.1.8 Consumer behaviour towards organic vegetable

In this study consumer behaviour means the behaviour that display in search for purchasing using, evaluating and disposing of vegetables that they expect will satisfy their needs for the consumption of vegetables.

3.1.9 Farmer behaviour towards organic vegetable farming

Behaviour exhibited by both conventional and certified organic vegetable farmers while adopting, practicing and marketing of organic vegetables

3.1.10 Consumer attitude

Consumer response based on learned pre-disposition to respond to organic vegetables in a consistently favourable or unfavourable way.

3.1.11 Farmer attitude

Farmers response based on learned pre-disposition towards organic vegetable farming in a consistently favourable or unfavourable way.

3.2 Study period

The survey conducted during the period June to September 2014.

3.3 Locale of the study:

The study was confined to three districts viz, Thrissur, Palakkad and Ernakulum representing central Kerala. The districts were selected based on the prominence of vegetable cultivation and on the expert opinion the three blocks viz, Pazhayannur, Elavanchery and Muvattupuzha were selected from Thrissur, Palakkad and Ernakulum districts respectively.

3.4 Selection of respondents

Sample respondents consist of consumers, conventional farmers and certified organic farmers.

3.4.1 Selection of conventional farmers:

10 Conventional farmers were selected based on purposive sampling and the expert opinion of field scientists from each selected blocks like Pazhayanoor, Elavenchery and Muvattupuzha of Thrissur, Palakkad and Ernakulum districts respectively. Total sample of conventional farmers is confined to 30.

3.4.2 Selection of certified organic farmers:

Total population of organic farmers (6 numbers) in Kerala, certified by INDOCERT was selected.

3.4.3 Selection of consumers

Twenty consumers from each selected blocks like Pazhayanoor, Elavenchery and Muvattupuzha of Thrissur, Palakkad and Ernakulum districts respectively were selected based on the snow ball . Thus the total samples of consumers were 60.

3.5 Variables measured

Each objective in the study analyzed based on the specific variables under consideration. Those variables are listed below.

3.5.1 Farmers attitude towards organic farming

3.5.2 Socio-economic profile of farmers

3.5.3 Area under vegetable cultivation

3.5.4 Farming experience

3.5.5 Major vegetables cultivated by the respondents

3.5.6 Work load of the farmers

3.5.7 Productivity, cost and income

3.5.8 Government /institutional support

3.5.9 Participation in training

3.5.10 Exposure to agriculture programme

3.5.11 Mode of sale,

3.5.12 Interest of farmers in organic farming

3.5.13 Awareness

3.5.14 Benefits received from certified organic vegetable farming

3.5.15 Satisfaction level of certified organic vegetable farmers

3.5.16 Attitude of farmers towards organic farming

3.5.2 Barriers in adoption

3.5.2.1 Production barriers

3.5.2.2 Economic and financial barriers

3.5.2.3 Knowledge of organic farming

3.5.2.4 Technical barriers

3.5.2.5 Knowledge barriers

3.5.2.6 Marketing barriers

3.5.3 **Consumer behaviour towards organic vegetables**

3.5.3.1 Socio-economic profile of consumers

3.5.3.2 Average monthly expenditure for vegetables

3.5.3.3 Periodicity of purchase

3.5.3.4 Source of purchase of vegetable

3.5.3.5 Usage pattern

3.5.3.6 Attributes that influence purchase of vegetables

3.5.3.7 Awareness and nature of awareness

3.5.3.8 Preference and reasons for preference of organic vegetables

3.5.3.9 Attitude of consumers

3.5.3.10 Level of satisfaction

3.5.3 Determinants of consumer behaviour

3.5.4.1 Factors influencing consumer behaviour

3.5.4.2 Determinants of consumer attitude

3.5.4.3 Determinants of consumer preference

3.5.4.4 Determinants of consumer satisfaction

3.6 Data collection

Primary data were collected through pre-tested structured interview schedule from the conventional farmers, certified organic farmers and consumers.

3.7 Statistical tools used for the study:

Following statistical tools were employed to analyse the data collected based on the objectives of the study.

The variables of farmer behaviour towards organic vegetables were analysed with the help of statistical tools like Percentage analysis, Index method, Kruskal Wallis and One way ANOVA. The barriers were measured using Percentage analysis. Consumer behaviour towards organic vegetables is measured using the Percentage analysis, Index method, Kruskal Wallis, Kendall's coefficient and One way ANOVA. And the last objective determinants of consumer behaviour towards organic vegetables were analysed by using index, Chi-square and Probit analysis.

The details of the tools used were given below.

3.7.1 Index method

Indices were calculated based on Likert Scale of summated rating.

$$Index = \frac{\sum_{i=1}^{n}\sum_{j=1}^{q} S_{ij \times 100}}{\sum maxSj}$$

i= Respondents

j=Factors

Sj=Score of the j^{th} factor

Sij=Total score for the j^{th} factor of the i^{th} respondent

Maxsj=Maximum score for the j^{th} factor

Based on the obtained index, the range was worked out using logical interpretation.

3.7.2 Kendall's coefficient concordance

To understand the concordance/agreement among the consumers in ranking the reasons for preference and non preference of organic vegetables, Kendall's coefficient of concordance was used.

Kendall's coefficient of concordance (W) was calculated by using the formula:

$$W = \frac{12S}{K^2N(N^2-1)}$$

Where,

N = Number of objects

K = Number of consumers

$$S = \sum_{j=1}^{N} (R_j - \overline{R_j})^2$$

R_j = The total rank of j^{th} object

$\overline{R_j} = \frac{1}{N}\sum_{j=1}^{N} Rj$

To test the null hypothesis that the Kendall's coefficient of concordance W is equal to zero or not, χ^2 was computed.

$\chi^2 - K(N-1)$ with (N-1) degrees of freedom. If the calculated χ^2 exceeds the table value of χ^2 at (N-1) degree of freedom, we conclude that K sets of ranking are not independent.

3.7.3 Kruskal – Wallis test

The Kruskal – Wallis one way analysis of variance by ranks is an extremely useful test for deciding whether the independent samples are from different populations. It will explain whether the differences amongst samples signify genuine population differences or whether they represent merely random samples from the same population. The Kruskal – Wallis test statistic H was computed using the formula:

$$H = \frac{12}{N(N+1)} \sum_{j=1}^{k} \frac{R_j^2}{n_j} - 3(N+1)$$

Where,

k	=	Number of samples
n_j	=	Number of observations in j^{th} sample
N	=	$\sum n_j$, the number of cases in all samples combined
R_j	=	Sum of ranks in j^{th} samples

3.7.4 One-Way Analysis of Variance (ANOVA)

Analysis of variance (ANOVA) technique is used to compare he means of more than two populations. ANOVA technique uses F-statistic, which tests if the means of the groups, formed by one independent variable or a combination of variables are significantly different. It is based on the comparison of two estimates of variance- one representing the variance within groups, often referred to as error variance and other

representing the variance due to difference in group means. If the two variances do not differ significantly, there is no reason to claim that the group means differ. The F-statistic calculates the ratio between the variance due to difference between groups and the error variance

$$F = \frac{Variance\ due\ to\ difference\ between\ groups}{Error\ variance}$$

The larger the F-ratio, the greater is the difference between groups as compared to within group difference. If the F-test proves the null hypothesis of no difference between groups to be wrong, multiple comparison test are used to further explore the specific relationship among different groups.

3.7.5 Chi-Square Test of Independence

Chi-Square (χ^2) is one of the very popular methods for testing hypotheses on discrete data. Chi-Square test of independence and was used to test the hypothesis that two categorical variables are independent of each others. Anon-significant value for chi-square statistic indicates that the null hypothesis of independence of the two variables is correct.

The procedure involves comparing the observed frequencies with the expected cell frequencies. Observed cell frequencies are the actual number of cases falling in different cells of the contingency table and expected frequencies are the number of cases that should fall in each cell if there is no relationship between the observed frequency and the expected frequency of each cell of the contingency table. While observed cell frequencies can be directly obtained from the given data, expected cell frequencies are calculated by multiplying the totals of the column and row to which the cell belongs and then dividing by the total sample size. Chi-Square statistic is calculated as

$$\chi^2 = \frac{(O_{r,c} - E_{r,c})^2}{E_{r,c}}$$

Where $O_{r,c}$ is the observed cell frequency and $E_{r,c}$, the expected cell frequency.

Along with the chi-square statistic, degree of freedom associated with the contingency table (r-1) (c-1) was also calculated to find out the significance. If the calculated value of χ^2 is greater than the table value, the null hypothesis of independence between the attributes is rejected and we conclude that there is some significant association between the two attributes.

3.7.6 Ordered Probit Model

A probit model is a popular specification for an ordinal or a binary response model. As such it treats the same set of problems as does logistic regression using similar techniques. The probit model, which employs a probit link function, is most often estimated using the standard maximum likelihood procedure, such an estimation being called a probit regression.

3.7.7 Rank order scale

To analyse the consumer preference towards organic vegetables, respondents were asked to rank each reason in the order of preference and non preference towards organic vegetables. After that marks were assigned to each rank as follows. For reasons to preference the first rank a weightage of 1 was given and for the 10^{th} rank, weightage assigned was 10 and other weightage were between this range (i.e for rank 1 to 10, weightage of 1 to 10 were given respectively). Similar method is followed for analyzing the non preference also. The scores obtained were summed up to arrive the total score for each reason. So least score

obtained was given first rank and so on. Similarly highest score obtained factor is considered as the less influencing reason for consumer preference and non preference towards organic vegetables.

Based on the above methodology the analysis of the research objective was undertaken and the results and discussions are presented in chapter 4.

RESULTS AND DISUSSION

CHAPTER 4

RESULTS AND DISCUSSIONS

Organic vegetable farming means vegetable production using natural sources of nutrients such as compost, crop residues and manures and natural methods of weed control instead of using synthetic or inorganic agro chemicals. Sustainable agriculture has attracted significant attention from academic and policy circles in recent decades, particularly after the surface of negative externalities of green revolution. Different approaches have been developed to achieve sustainability in agriculture and termed as "alternative farming systems" which are any farming systems that are different from the typical conventional farming or the market-oriented monoculture.

Organic farming is gaining momentum as an alternative method to the modern system. Organic farming is a production system that sustains the health of soil, ecosystem and people. It relies on ecological processes, biodiversity and cycles adapted to local conditions, rather than the use of inputs with adverse effects. Organic farming is not at all a new concept. It was a part and parcel of our culture from the very initial stages of agriculture. However, the practice of organic cultivation has been vanished due to the new technological developments. A stage has reached where the nature calls upon for the return of organic cultivation.

The most important constraint felt in the progress of organic farming is that many farmers in the country have only vague ideas about organic farming and its advantages as against the conventional farming methods. They lack knowledge of compost making using modern techniques and also its application. The cost of organic inputs is higher than those of industrially produced chemical fertilizers and pesticides including other inputs used in the conventional farming system. There is a lack of marketing and distribution network for organic inputs because the retailers are not interested to deal these products, as the demand is low.

Subsidies and other supports from both central and state governments are very poor. The organic certification from certifying authority (Indocert, FLO, NPOP and USDA) takes more than three years. Only the organic certified products have the eligibility to export.

The best strategy to overcome this is to identify farmer and consumer behaviour for organic produce and convince the farmers regarding the recent change in consumer behavioural pattern that is consumer affinity towards the organic vegetables and to enlighten them the potential and scope of organic vegetable farming over conventional farming practices.

The study focuses on the following specific objectives:

- Behaviour of farmers towards organic vegetable farming
- Barriers in adoption process of organic vegetable cultivation and the constraints in marketing of organic vegetables
- Consumer behaviour towards organic vegetables
- Determinants of consumer behaviour towards organic vegetables

These objectives were analyzed through the primary data collected from 30 conventional farmers from central region of Kerala viz, Thrissur, Palakkad and Ernakulum, 6 certified organic farmers of INDOCERT and 60 vegetable consumers from the central region. Considering the objectives under study the whole analysis is divided into 4 sessions (4.1 to 4.4).

4.1 Behaviour of farmers towards organic vegetable farming

For analyzing this objective, both conventional and organic farmers were selected. The data were analyzed based on the following variables:

- Socio-economic profile of farmers
- Area under vegetable cultivation
- Farming experience
- Major vegetables cultivated by the respondents
- Work load of the farmers
- Productivity, cost and income

- Government /institutional support
- Participation in training
- Exposure to agriculture programme
- Mode of sale,
- Interest of farmers in organic farming
- Awareness
- Benefits received from certified organic vegetable farming
- Satisfaction level of certified organic vegetable farmers
- Attitude of farmers towards organic farming

4.1.1 Socio-economic profile of the farmers

Socio economic status is the measure of economic and social prospects of the individuals. It indicates the social position of an individual with respect to education, income and occupation. In order to examine the socio-economic characteristics of the respondents, five indicators, viz., age, education, occupation, type of family and annual family income of conventional farmers and organic farmers were considered and they are given in Table 4.1 and Table 4.2.

Table 4.1 Socio-economic profile of the conventional farmers

Sl.No	Characteristics	Thrissur	Palakkad	Ernakulum	Total (n=30)
	Age (Years)				
1.	Below 45	0	0	1 (10)	1 (3.3)
2.	45-55	3 (30)	2 (20)	2 (20)	7 (23.3)
3.	55-65	4 (40)	5 (50)	2 (20)	11 (36.7)
4.	Above 65	3 (30)	3 (30)	5 (50)	11 (36.7)
	Education				
5.	Illiterate	1 (10)	2 (20)	1 (10)	4 (13.3)
6.	Upto 12th	5 (50)	6 (60)	7 (70)	18 (60)
7.	Graduation	4 (40)	2 (20)	2 (20)	8 (26.7)
8.	Post Graduation	-	-	-	-

	Primary occupation				
9.	Agriculture	4 (40)	8 (30)	7 (70)	19 (63.33)
10.	Govt.employee	2 (20)	0	1 (10)	3 (10)
11.	Private employee	2 (20)	2 (30)	1 (10)	5 (16.67)
12.	Business	2 (20)	0	1 (10)	3 (10)
	Type of family				
13.	Joint family	0	0	0	0
14.	Nuclear family	10 (100)	10 (100)	10 (100)	30 (100)
	Annual Income (Rs)				
15.	Below 50000	0	0	2 (20)	2 (6.7)
16.	50000-100000	1 (10)	3 (30)	0	7 (23.3)
17.	100000-200000	6 (60)	2 (20)	4 (40)	9 (30)
18.	Above 200000	3 (30)	5 (50)	4 (40)	12 (40)

Source: Primary data

Note: Figures in parentheses are percentage of total

Table 4.1 reveals that majority of the respondents (73.4 percent) were in the age group of above 55 years. Only 3.3 percent respondents were aged below 35 years. This can be inferred that old people are more interested in vegetable farming to protect the environment where as new generation is keeping distance from vegetable farming. Majority of the respondents (60 percent) have education up to 12^{th} standard. Only 13.3 percent respondents were illiterate. 26.7 percent of the respondents up to graduation were also cultivating the vegetables. It shows that educated individuals are also having same interest in farming activities.

With regard to the occupation of sample respondents, the main occupation of 63.33 per cent of the respondents was agriculture and the rest of them are doing agriculture as subsidiary occupation. It indicates majority of the respondents are spending their entire work in farming activities and highly dedicated to agriculture. As seen in the present era, 100 percent of the respondents belong to nuclear family and no one was supporting to have joint family.

Income is another important economic variable which determines the economical status of the respondents as well as the standard of living of the farmers. 40 percent of the respondents were earning annual income of above ₹ 200000. It means that selected farmers were having a good standard of living.

Table 4.2 Socio-economic profile of organic farmers

Sl.No	Characteristics	Number of respondents(n=6)
	Age (Years)	
1.	35-45	0
2.	45-55	4 (66.67)
3.	55-65	2 (33.33)
4.	Above 65	0
	Education	
5.	Illiterate	0
6.	Up to 12^{th}	3 (50)
7.	Graduation	2 (33.33)
8.	Post graduation	1 (16.67)
	Primary occupation	
9.	Agriculture	4 (66.67)
10.	Govt.employee	1 (16.67)
11.	Private employee	1 (16.67)
12.	Business	0
	Type of family	
13.	Joint family	0
14.	Nuclear family	6 (100)
	Annual Income (Rs)	
15.	100000-200000	1 (16.67)
16.	200000-300000	2 (33.33)
17.	300000-400000	1 (16.67)
18.	Above 400000	2 (33.33)

Source: Primary data

Note: Figures in parentheses are percentage of total

Table 4.2 reveals majority of the respondents (66.67) were aged between 45-55 years and they are more interested in organic farming. Majority of the respondents (50 percent) were having educational qualification up to 12th standard. It can be observed that education is not the important aspect in awareness of organic farming but the farmers learned experience from agriculture is the important factor for promoting them to go for organic farming. Regarding the occupation majority of the farmers (66.67 percent) were having the main occupation as agriculture. Only 16.67 percent farmers were doing government and private job continued with the agriculture. The annual income of the organic farmers shows that 33.33 percent farmers were having income between ₹ 200000-300000 and 33.33 percent farmers have annual income above ₹400000. It can be inferred that organic farmers are seems to be high income earned farmers.

4.1.2 Land type used

The land type in which conventional and organic farmers were cultivating the crops is given in table 4.3.

Table 4.3 Type of the land used for vegetable cultivation by farmers

Nature of land	Conventional farmers (n=30)				Organic farmers(n=6)
	Thrissur	Palakkad	Ernakulum	Total	
Wet land					
Area owned	4 (40)	-	7 (70)	11 (367.67)	
Area owned and leased in		10 (100)	3 (30)	13 (43.33)	2 (33.33)
Total	4 (40)	10 (100)	10 (100)	24 (80)	2 (33.33)
Garden land					
Area owned	6 (60)	-	-	6 (20)	4 (66.67)
Total	10(100)	10(100)	10(100)	30(100)	6(100)

Source: Primary data
Note: Figures in parentheses are percentage of total

Table 4.3 shows that majority of the conventional farmers (80 percent) have been cultivating in wet land and the rest 20 percent cultivating in the garden land. It can be further noticed that garden land area was found to be more in Thrissur district.

4.1.3 Area under cultivation

Table 4.4 Area under cultivation by farmers

Type of farmers	**Conventional farmers(n=30)**				**Organic farmers (n=6)**
	Thrissur	**Palakkad**	**Ernakulum**	**Total**	
Marginal farmers	2 (20)	-	5 (50)	7 (23.33)	-
Small farmers	7 (70)	6 (60)	4 (40)	17 (56.67)	2 (33.33)
Large farmers	1 (10)	4 (40)	1 (10)	6 (20)	4 (66.67)
Total	10(100)	10(100)	10(100)	30(100)	

Source: Primary data
Note: Figures in parentheses are percentage of total

Regarding the type of conventional farmers, majority (56.67 percent) are small farmers followed by marginal farmers whereas, majority (66.67 percent) of organic farmers are large farmers and the rest are small farmers.

4.1.4 Area under cultivation of vegetables

Area under cultivation of vegetable crops varies with farmers. Vegetable cultivation requires less spacing. So the distribution of area under vegetable cultivation is less.

Table 4.5 Area under vegetable cultivation

Sl.No	Land holding (Acre)	Conventional farmers (n=30)				Organic farmers(n=6)
		Thrissur	Palakkad	Ernakulum	Total	
1.	Less than 1	-	-	-	-	5 (83.33)
2.	1-2	8 (80)	3 (30)	10 (100)	21 (70)	1 (16.67)
3.	2-3	2 (20)	6 (60)	0	8 (26.7)	-
4.	3-4	0	1 (10)	0	1 (3.3)	-
	Total	10 (100)	10 (100)	10 (100)	30 (100)	6 (100)

Source: Primary data

Note: Figures in parentheses are percentage of total

From Table 4.5 it could be inferred that the maximum area under vegetable cultivation in the study area is 4 acres. Majority of the respondents (70 percent) were cultivating vegetables in 1-2 acres of land.

It could be understood that majority of the organic farmers (83.33) were holding land less than 1 acre for the vegetable cultivation. Maximum area cultivated by an organic farmer is 2 acres.

4.1.5 Farming experience

The experience in farming is an important aspect to be examined. Higher the experience higher will be the knowledge in farming practices and knowledge regarding the recent trends in agriculture. Table 4.6 presents the farming experience of both conventional and certified organic farmers.

Table 4.6 Experience of farmers in vegetable farming

Sl.No	Experience (Years)	Conventional farmers(n=30)				Organic farmers(n=6)
		Thrissur	Palakkad	Ernakulum	Total	
1.	5-10	4 (40)	6 (60)	6 (60)	16 (53.3)	1 (16.67)
2.	10-15	2 (20)	3 (30)	1 (10)	6 (20)	5 (83.33)
3.	15-20	4 (40)	0	2 (20)	6 (20)	0
4.	20-25	0	1 (10)	1 (10)	2 (6.7)	0
	Total	10 (100)	10 (100)	10 (100)	30 (100)	6 (100)

Source: Primary data

Note: Figures in parentheses are percentage to total

Majority of the conventional farmers (53 percent) were having five to ten years of experience. Organic farmers were having wide experience in vegetable farming about 10-15 years. So it can be inferred that organic farmers were more experienced farmers than conventional farmers in vegetables.

4.1.6 Major crops cultivated by farmers

Cowpea, snake gourd and bitter gourd are the major vegetables cultivated by the conventional farmers in the study area. Organic farmers were cultivating these three major crops with other vegetables like Tomato, Okra, Ash gourd and cabbage. Farmers were cultivating the combination of these vegetables in the farm.

Table 4.7 Major crops cultivated by conventional farmers

Sl.No	Vegetables	Thrissur	Palakkad	Ernakulum	Total (n=30)
1.	Cowpea	5 (50)	9 (90)	7 (70)	21 (70)
2.	Snake gourd	10 (100)	10 (100)	10 (100)	30 (100)
3.	Bitter gourd	8 (80)	10 (100)	4 (40)	22 (86.67)

Source: Primary data

Note: Figures in parentheses are percentage of total

Table further shows that all the respondents (100 percent) were cultivating snake gourd in the three selected districts. 70 percent of the respondents cultivated cowpea and 86 percent cultivated bitter gourd. These three crops were the major combinations of vegetable crops adopted by the farmers for the cultivation. It might be due to these three crops are having high and regular demand in the market. Though some farmers were cultivated other crops like Amaranthus, Ash gourd, Okra etc. But it is not on a commercial basis.

Table 4.8 Major crops cultivated by organic farmers

Sl.No	Vegetables	Number of respondents (n=6)
1.	Cowpea	4(80)
2.	Snake gourd	5(100)
3.	Bitter gourd	3(60)
4.	Tomato	3(60)
5.	Okra	4(80)
6.	Ash gourd	2(40)
7.	Cabbage	3(60)

Source: Primary data

Note: Figures in parentheses are percentage to total

In Table 4.8, 100 percent farmers were cultivating snake gourd and 80 percent farmers were cultivating cowpea and okra. The other crops like bitter gourd, tomato cabbage and ash gourd were also cultivated. Unlike the conventional farmers, organic farmers have been focusing on more crops for sustainable income.

4.1.7 Work load of the farmers in vegetable cultivation.

To have an idea about the work load, the farmers were asked to respond regarding the hours spend by them in the vegetable farming .The conventional farmers opined that they may spend 1 to 2 hrs a day for maintenance of vegetable farm. Whereas, certified organic farmers spend 2 to to 4 hrs daily in the vegetable farm as the organic vegetables need much more care and attention.

4.1.8 Area and Productivity of vegetables

Area and productivity of the vegetable crops cultivated by conventional farmers and organic farmers are given in table 4.9.

Table 4.9 Average area and Productivity of vegetables cultivated by farmers

Conventional farmers(n=30)	**Snake gourd**		**Cowpea**		**Bitter gourd**	
	Area (Acre)	Productivity (In Kg/cre)	Area (Acre)	Productivity (In Kg/acre)	Area (Acre)	Productivity (In Kg/acre)
Thrissur	0.8	7343	0.35	5714	0.91	9793
Palakkad	1.5	15478	0.78	2721	1.00	9800
Ernakulum	0.95	9578	0.43	2666	0.31	4400
Total	**0.96**	**11301**	**0.55**	**3153**	**0.84**	**9432**
Organic farmers(n=6)	**0.26**	**3307**	**0.3**	**2166**	**0.26**	**2312**

Source: Primary data

The above table clearly shows that among the major three crops cultivated by farmers, snake gourd is growing in a larger area by conventional farmers. It may be due to easiness in cultivation and higher yield. It can be noticed from the table that cowpea is growing in smaller area than snake gourd and bitter gourd. Conventional farmers opined that productivity of cowpea is less when compared to other crops. Further it is found that the area under vegetable cultivation and productivity is comparatively more in Palakkad district. Productivity also varied from crop to crop.

In the case of organic farmers they are growing snake gourd and bitter gourd in an average area of 0.26 acres and cowpea is in 0.3 acres. A comparison between productivity of vegetables from organic farming and conventional farming, we can found that it is very low in the case of organic farming.

Table 4.10 Average area and productivity of other main crops of organic farmers

Crops	**Area (Acres)**	**Productivity (Kg/acre)**
Cabbage	0.4	1083
Ash gourd	0.15	2000
Tomato	0.3	600
Okra	0.23	400

Source: Primary data

The above table shows the average area and productivity of other crops cultivated by organic farmers.

4.1.9 Cost of cultivation and Income

Cost means the average cost of fertilisers, soil preparation, labour use, plantation, irrigation, pest control, harvesting and marketing of vegetables incurred per acre of land in both conventional and organic farming. It does not include the cost of family labour and own inputs. Net income in Table 4.11 refers to difference between total cost as defined above and income earn from the sale of vegetables. The details of cost, net income of each crop cultivated both conventional and organic farming is given in Table 4.11.

Table 4.11 Average cost incurred and income earned from conventional and organic farming

Conventional farmers(n=30)	Snake gourd		Cowpea		Bitter gourd		Total	
	Average Cost (Rs/Acre)	Net income (Rs/Acre)	Average Cost (Rs/Acre)	Net income (Rs/Acre)	Average Cost (Rs /Acre)	Net income (Rs/ Acre)	Average Cost (Rs/ Acre)	Net income (Rs/ Acre)
Thrissur	58125	15312	51428	91429	58620	147035	57647	79323
Palakkad	134782	50957	108857	93857	135000	100200	138596	81671
Ernakulum	65263	78421	62916	70417	72000	24800	65363	71800
Total	**90862**	**50120**	**113085**	**21761**	**100810**	**113460**	**98375**	**61363**
Organic farmers (n=6)	**83846**	**81538**	**84166**	**94166**	**66250**	**123750**	**94327**	**81733**

Source: Primary data

Table 4.11 revealed that the total cost of vegetable cultivation irrespective of crop is low in organic farming. The low cost may be due to fact that we were not taken family labour and own input cost while calculating the total cost. Organic farmers are employing more family hours (see para 4.1.7) than conventional farming. Moreover they are producing seeds, organic fertilizers, pesticides and insecticides from their own resources. This would have been helped them to save a major portion of their labour cost and input cost. In the case of conventional farmers, the cost of cultivation is higher than the organic farming as they are purchasing chemical fertilizers and the other inputs from outside sources. It can be also noticed that cost of cultivation and net income is comparatively high in Palakkad district than Thrissur and Ernakulum district.

Regarding the net income earned from both organic and conventional vegetable farming, it is found that organic farmers were earning a higher income than

conventional farmers and income is comparatively high for cowpea. It may be due to the high premium price earned from its sale.

Table 4.12 Average cost incurred and income earned from other crops in organic farming

Sl.No	Crops	Cost/acre	Income /acre	Net income /acre
1.	Cabbage	101666	420833	319167
2.	Ash gourd	93333	120000	26667
3.	Tomato	106666	163333	56667
4.	Okra	98888	200000	101112

Source: Primary data

The above table reveals that cabbage, ash gourd, tomato and okra can also be cultivated with a profit.

4.1.10 Government/ Institutional support to organic farming

An attempt also made to know the support of government or non governmental institutions to encourage organic farming. It is observed that the recent schemes for encouraging organic farming have not reached the individual farmers. Government and other institutional support is insufficient for the farmers to adopt organic cultivation. No quality control measures were advocated by the government. In Kerala INDOCERT is the only agency authorized to issue organic certification. However, no adequate effort was made by them to create knowledge regarding the formalities and procedures.

4.1.11 Participation of training related to organic farming

Institutions like VFPCK, Kerala Agricultural University, Kerala Bio-Diversity Board and Department of Agriculture are conducting training programmes to farmers in organic farming. They are conducting workshops, seminars and other training activities to create awareness about organic farming.

The detail of participation of farmers in training programmes on organic farming is given in table 4.13.

Table 4.13 Training participated by farmers

Sl.No	Participation	Conventional farmers(n=30)				Organic farmers(n=6)
		Thrissur	Palakkad	Ernakulum	Total	
1.	Yes	6 (60)	4 (40)	1 (10)	19 (63.3)	0 (0)
2.	No	4 (40)	6 (60)	9 (90)	11 (36.7)	6(100)
	Total	10 (100)	10 (100)	10 (100)	30 (100)	6(100)

Source: Primary data

Note: Figures in parentheses are percentage of total

It could be seen that 63 percent of the respondents were participated the training given by the government organizations especially VFPCK. But they opined that training alone cannot motivate them. Government and institutional support should be extended to encourage the farmers to adopt organic cultivation.

Organic farmers were not attended any training programmes on organic farming. They opined that they have their own experience and knowledge in organic farming. They were providing training classes for other farmers about organic farming practices.

4.1.12 Exposure to agricultural programmes

Agricultural programmes occupy an important role in encouraging farming. It provides awareness to the farmers about new technologies and farming practices and also the advantages and disadvantages of conventional and organic farming.

Table 4.14 Exposure to agricultural programmes by farmers

Media	**Conventional farmers (n=30)**				**Organic farmers (n=6)**
	Thrissur	**Palakkad**	**Ernakulum**	**Total**	
All India Radio					
Yes	4 (40)	6(60)	5 (50)	15 (50)	1 (16.67)
No	6 (60)	4(40)	5 (50)	15 (50)	5 (83.33)
Television					
Yes	7 (70)	9 (90)	8 (80)	24 (80)	4 (66.67)
No	3 (30)	1 (10)	2 (20)	6 (20)	2 (33.33)
Agricultural Magazines					
Yes	5 (50)	6 (60)	7 (70)	18 (60)	6 (100)
No	5 (50)	4 (40)	3 (30)	12 (40)	0 (0)
Total	10(100)	10(100)	10(100)	30	6(100)

Source: Primary data

Note: Figures in parentheses are percentage of total

Table 4.14 revealed that half of the conventional farmers have been listening agricultural programmes in Radio. Majority of the organic farmers (83.33 percent) were not listening agricultural programmes in Radio. So radio was not an important source for the agriculture information to the organic farmers.

Exposure of agriculture programmes in television shows that majority of the respondents (80 percent) were watching agricultural programmes in television channels like krishi deepam programme. It could also be noticed that majority of the organic farmers (66.67 percent) were watching agricultural programmes in television channels.

Majority of the respondents (60 percent) were reading agricultural magazines. So it is a source of the agricultural information for the farmers. And also 100 percent organic farmers were reading agricultural magazines ike keralakarshakan, karshakasree etc. So it is a source of the agricultural information for the vegetable farmers.

4.1.13 Mode of sale of vegetables

Farmers are selling their produce through appropriate channels which is most beneficial to them. The modes of selling vegetables by conventional and organic farmers are given in table 4.15.

Table 4.15 Mode of sale of vegetables by farmers

Sl.No	Channel	Conventional farmers(n=30)	Organic farmers(n=6)
1	Direct sale to consumers		6(100)
2	Through commission agents		
3	In wholesale market		
4	In Retail shop		1(16.67)
5	Through farmers market		
6	VFPCK	30(100)	

Source: Primary data

Note: Figures in parentheses are percentage of total

From the above table, it can be noticed that all the conventional farmers were selling their vegetables to Vegetable Fruit Promotion Council Keralam (VFPCK) market. It is mainly because all the selected farmers have tie up with VFPCK and it helps them by providing crop insurance facility. Farmers are getting payment fortnightly.

In the case of organic vegetable farmers they sold their vegetables directly to consumers. They opined that they have large number of bulk customers even from outside Kerala especially from Tamil Nadu. However, there is no separate sales outlet for them. As and customer approaches, they would pluck fresh vegetables from the farm and sold it to them. The customers were mainly individuals and families.

4.1.14 Interest of the farmers in organic farming

Since January 1994 'Sevagram declaration' for promotion of organic agriculture in India, organic farming has grown manifold and number of initiatives at government and non government levels has been given it a firm direction. Moreover number of organizations are come forward by launching various programmes for encouraging organic farming. Therefore an attempt also made here to identify the conventional farmer's interest to go for organic farming.

Table 4.16 Interest in organic farming by conventional farmers

Interest in organic farm	**Thrissur**	**Palakkad**	**Ernakulum**	**Total (n=30)**
Yes	10 (10)	9 (90)	7 (70)	26 (86.7)
No	0	1 (10)	3 (30)	4 (13.3)
Total	10 (100)	10 (100)	10 (100)	30 (100)

Source: Primary data
Note: Figures in parentheses are percentage of total

Above table shows that, majority of the respondents (86.7 percent) were interested in organic farming practices. But they are of the opinion that they are not interested to enter into organic vegetable cultivation for commercial purposes. Considering the health aspect and nutritional value, they are interested to grow vegetables in an organic way by minimizing chemical application.

4.1.15 Willingness of farmers to convert to organic farming

Willingness of farmers to convert from conventional farming to organic farming is important to know, whether their interest in organic farming result in organic cultivation. The survey results of the willingness of farmers to go for organic vegetable farming is presented in Table 4.17.

Table 4.17 Willingness of conventional farmers to convert to organic farming

Willingness	Thrissur	Palakkad	Ernakulum	Total (n=30)
Full conversion	-	-	-	-
Partial conversion	5(50)	8(80)	3(30)	16(53.33)
No conversion	5(50)	2(20)	7(70)	14(46.67)
Total	10(100)	10(100)	10(100)	30(100)

Source: Primary data

Note: Figures in parentheses are percentage of total

Table 4.17 revealed that majority of the respondents (53.33 percent) were willing for a partial conversion to organic farming. They believed that without the use of chemical inputs, output from vegetable cultivation is uncertain and the yield would be very low. But they want to adopt organic practices like mulching and manual plucking of weeds and use of organic manures and pesticides. The rest (46.67 percent) of the farmers are not ready for a conversion to organic farming as the conventional farming is an easy method of cultivation for them. No farmer was ready for full conversion due to the fear of financial risk.

4.1.16 Awareness about adverse effect of chemical inputs

Here an attempt is made to know whether the farmers are aware about adverse affects of chemical inputs.

Table 4.18 Awareness about adverse effect of chemical inputs

Awareness about Adverse effect of chemical inputs	**Thrissur**	**Palakkad**	**Ernakulum**	**Total (n=30)**
Yes	10 (100)	10 (100)	10 (100)	30 (100)
No	0	0	0	0
Total	10 (100)	10 (100)	10 (100)	30 (100)

Source: Primary data

Note: Figures in parentheses are percentage of total

Table 4.18 shows that 100 percent respondents were aware about the adverse affects of farming using chemical inputs. They pointed out that even drinking water is polluted by the use of chemicals. Even the colour of soil is changed due to pollution.

4.1.17 Change in the use of chemical application

Due to the increased awareness regarding the organic farming practices and health hazards related to the high chemical application in the vegetables, farmers are now in a transitional change to organic way of cultivation. The change is perceived mainly in the application of chemical inputs. Table 4.18 shows the change in chemical application over the years by conventional farmers.

Table 4.19 Change in chemical inputs over the years by conventional vegetable farmers

Change in chemical	**Thrissur**	**Palakkad**	**Ernakulum**	**Total (n=30)**
Reduced	7 (70)	8 (80)	7 (70)	22 (73.3)
Increased	-	-	-	-
No change	3 (30)	2 (20)	3 (30)	8 (26.7)
Total	10 (100)	10 (100)	10 (100)	30 (100)

Source: Primary data

Note: Figures in parentheses are percentage of total

Table 4.19 shows that majority of the respondents (73.3 percent) have reduced the chemical application in their vegetable farm. This shows that farmers aware about adverse effect of chemical application to the environment and they interested in change to organic farming. But some of them viewed that for the commercial cultivation, chemical inputs are suitable for getting better yield.

Table 4.20 Percentage reduction in the chemical application

Percentage change (%)	Thrissur	Palakkad	Ernakulum	Total (n=22)
Below 10	1 (14.27)	0	1 (14.27)	2 (9.1)
10-25	4 (57.14)	5 (62.5)	5 (71.43)	14 (63.62)
25-50	2 (28.57)	3 (37.5)	1 (14.27)	6 (27.27)
50 and more	-	-	-	-
Total	7 (100)	8 (100)	7 (100)	22 (100)

Source: Primary data

Note: Figures in parentheses are percentage of total

Previous table showed that conventional farmers are reduced the chemical application in vegetable cultivation. From the Table 4.20 it could be understand

that majority of the respondents have reduced the chemical application between 10-25 percent over the years. It means they couldn't avoid chemical inputs in the cultivation but the dose of application can be reduced.

4.1.18 Awareness of organic certification

Organic certification ensures the quality of organic vegetables. INDOCERT is the certifying agency which is granting the certification for organic vegetable cultivation based on the criteria fixed by them. Table 4.21 shows the awareness level of farmers towards organic certification.

Table 4.21 Awareness of conventional vegetable farmers about organic certification

Awareness org certification	Thrissur	Palakkad	Ernakulum	Total (n=30)
Yes	9 (90)	8 (80)	9 (90)	26 (83.3)
No	1 (10)	2 (20)	1 (10)	4 (16.7)
Total	10 (100)	10 (100)	10 (100)	30 (100)

Source: Primary data

Note: Figures in parentheses are percentage of total

From Table 4.21 it could understand that 83.3 percent respondents were aware about organic certification. However, they were not aware about the details or procedures of the certification and further requirements. They are also not much aware about the potential of organic vegetables in export markets.

4.1.19 Benefits from certified organic vegetables

The organic certification give assurance that organic food products confirm to the National Standards for Organic Products (NSOP) established in 2000. It ensures that the organic products were grown through organic farming without use of chemical fertilizers, pesticides or induced hormones. The certification is issued by the testing centers accredited by APEDA. The benefits received by the farmers from organic certification are given in Table 4.22.

Table 4.22 Benefits received from certified organic vegetables by organic farmers

Sl.No	Benefits	Number of farmers(n=6)
1.	Receive premium prices for their products	5(83.33)
2.	Access local, regional, and international market	6(100)
3.	Protect natural resources	6(100)
4.	Earn more profit	5(83.33)
5.	More market demand for certified products	5(83.33)

Source: Primary data
Note: Figures in parentheses are percentage of total

From Table 4.22 it could be noticed that all the organic farmers have received the premium price for their products, benefit of access local and regional market and the natural resources can be protected. Premium price means getting price more than the market price of inorganic vegetables. Further they opined that to earn more profit from organic vegetable farming due to the high demand and premium price received. Easy access to international market is an added advantage due to certification. However, sample farmers have not entered in export market as they have enough demand in the domestic market and it would be difficult for them to meet the regular demand of the countries unless and until they increase the area under vegetable cultivation.

4.1.20 Farmer's attitude towards organic vegetable farming

The term attitude refers to the degree of positive or negative effect towards a psychological object. Here the focus of the study is on to analyze the attitude of farmers towards organic vegetable farming. For this purpose different attitude variables were selected and data collected on a 5 point scale of Likert summated rating. Initially 20 statements were selected for measuring the attitude but after the pilot study 8 statements found to be irrelevant and finally the 12 statements were used. An attitude index was constructed by giving weightages to 5 points ranging

from 5 to 1(highly favourable to highly unfavourable). For the purpose of interpretation index score was rated as follows.

Less than 30 - Highly unfavourable (HUF);
30-50 - Moderately unfavourable (MUF)
50-70 -Indifferent (I)
70-90 - Moderately Favourable (MF)
90 and above - Highly Favourable (HF)

Table 4.23 Attitude of conventional farmers towards organic vegetable farming

Sl.No	Statements	Conventional farmers(n=30)								Level of attitude
		Thrissur		Palakkad		Ernakulum		Total		
		Score	Index	Score	Index	Score	Index	Score	Index	
1.	Organic farming improves fertility status of the soil	50	100	50	100	50	100	150	100	HF
2.	Organic farming is more easy than conventional farming	22	44	34	68	22	44	78	52	I
3.	Only good quality seeds of known source can be used in organic farming	38	76	33	66	42	84	113	75.33	MF
4.	Organic farming practices are environmental friendly	50	100	50	100	50	100	150	100	HF
5.	Organic fertilizer used in farm does not affect one's health	50	100	50	100	50	100	150	100	HF
6.	Use of organic farming practices is improves quality of vegetables	49	98	47	94	45	90	141	94	HF
7.	There is high market demand for organic vegetables	32	64	22	44	20	40	74	49.33	MUF
8.	Organic vegetables can be sold easily	22	44	21	42	30	60	73	48.67	MUF
9.	Total Organic farming cost is less than conventional farming cost	10	20	10	20	10	20	30	20	HUF
10.	Adoption of organic farming practices is practically feasible	13	26	14	28	24	60	51	34	MUF
11.	Adoption of organic farming practices involves no financial risk	19	38	16	32	19	38	54	36	MUF
12.	Organic vegetables will get premium price	30	60	32	64	26	52	88	58.67	I
	Composite index	385	64.17	379	63.17	388	64.67	1152	64	I

HF-HighlyFavourable, MF-Moderately Favourable,I-Indifferent, MUF-Moderately Unfavourable, HUF-Highly unfavorable

The analysis of attitude of conventional farmers towards the organic vegetable practices Table (4.23) highlights that the farmers were showed highly favourable attitude towards the statements like improve the fertility of soil, environmental friendly, improve the quality of vegetables and health aspects, whereas, their attitude is moderately unfavourable towards the aspects like market demand, easy to sell, practical feasibility and low financial risk. Their attitude towards the cost of cultivation was highly unfavourable. The composite index (64 percent) shows that in general they have an indifferent attitude towards organic vegetable farming.

Analysis of variance revealed that there is no difference noticed in the attitude of the farmers in the three districts (See Annexure IV).

Table 4.24 Attitude of organic farmers towards organic vegetable farming

Sl. no	Statements	Score	Attitude Index (n=6)	Level o attitude
1	Organic farming improves fertility status of the soil	30	100	HF
2	Organic farming is more easy than conventional farming	30	100	HF
3	Only good quality seeds of known source can be used in organic farming	30	100	HF
4	Organic farming practices are environmental friendly	30	100	HF
5	Organic fertilizer used in farm does not affect one's health	30	100	HF
6	Use of organic farming practices is improves quality of vegetables	30	100	HF
7	There is high market demand for organic vegetables	28	93.33	HF
8	Organic vegetables can be sold easily	27	90	HF
9	Total Organic farming cost is less than conventional farming cost	12	40	MUF
10	Adoption of organic farming practices is practically feasible	30	100	HF
11	Adoption of organic farming practices involves no financial risk	30	100	HF
12	Organic vegetables will get premium price	27	90	HF
13	Composite index	334	92.78	HF

Source: Primary data

In the case of attitude of organic farmers towards organic farming, farmers were highly favourable towards Organic farming as it is improves the fertility of the soil. The continuous use of organic inputs has helped to improve the fertility. Organic farmers opined that organic farming is easier than conventional farming. Organic farming requires prior soil treatment using organic manures in soil. Farmers were having highly favourable attitude towards the use of good quality seeds and improved quality of the vegetables through organic farming. Organic farmers expressed their highly favourable attitude towards the consumer demand of organic vegetables and easy to sell. They were highly satisfied with the price of organic vegetables. Practical feasibility of adoption of organic farming is also supported by the organic farmers. Moderately unfavourable attitude is indicated by the farmers for cost of organic vegetable farming which was more than the conventional farming..

Comparison between the attitude of the conventional and organic farmers revealed that conventional farmers have an indifferent attitude towards organic farming whereas, organic farmers have highly favourable attitude towards organic farming. Conventional farmers were having unfavourable attitude towards market demand, easy sale of vegetables and practical feasibility of adoption but for these variables, organic farmers were expressed highly favourable attitude based. It is to be noted that the organic farmers formed their attitude from the direct experience whereas, conventional farmer's attitude is based on their knowledge and perception regarding organic farming.

4.1.21 Satisfaction towards organic vegetable farming

Farmer's satisfaction level towards organic farming is important for the study as it is a measure of how the organic vegetable farming can meet or surpass the farmer's expectation. For this purpose different statements related to organic vegetables were selected and data were collected on 5 point scale of Likert summated rating. A satisfaction index was constructed by giving weightages to 5 points from 5

to 1 (highly satisfied to highly dissatisfied). For the purpose of interpretation, index score was rated as follows.

Less than 30 - Highly dissatisfied (HDS)
30-50 - Moderately Dissatisfied (MDS)
50-70 - Resigned(R)
70-90 - Moderately Satisfied (MS)
90 and above - Highly Satisfied (HS)

The organic vegetable farmer's satisfaction towards organic vegetable farming is given in Table 4.25.

Table 4.25 Satisfaction level of organic farmers towards organic vegetable farming

Sl.No	Statements	Score	Satisfaction Index (n=6)	Satisfaction level
1.	Demand for organic vegetables	30	100	HS
2.	Organic cultivation practices	30	100	HS
3.	Yield	27	90	HS
4.	Outlets for organic vegetables	12	40	MDS
5.	Availability of inputs	30	100	HS
6.	Availability of labour	30	100	HS
7.	Price	27	90	HS
8.	Technical assistance	6	20	HDS
9.	Government/institutional support	6	20	HDS
10.	Certification procedure	24	80	MS
11.	Services of INDOCERT	17	56.67	R
	Composite index	239	72.42	MS

Source: Primary data
(HS-Highly Satisfied, MS-Moderately Satisfied, R-Resigned, MDS-Moderately Dissatisfied, HDS-Highly Dissatisfied)

Table 4.25 showed that farmers were highly satisfied with the demand for organic vegetables, organic cultivation practices, availability of inputs, and availability of labour, yield and price of the organic vegetables. There is a high

demand for the certified organic vegetables not only from the local market but also from outside state. Regarding the availability of inputs they will able to manage by producing the organic fertilizers by using their own resources. Only for few items they need to depend on the retailers. With respect to the availability of labours, majority of the organic farmers are putting their own and family member's effort in the farm. Labour is hired from outside mainly for the application of fertilizers and pesticides at the time of soil preparation. It could also be noticed their high level of dissatisfaction towards technical assistance and government or institutional support. Farmers opined that that the cost of cultivation was high during the initial stage and government was not providing any subsidy or financial support for organic vegetable cultivation. Moreover, the financial assistance by way of providing loans is not sufficient for organic vegetable cultivation. Institutions providing technical assistance to them are also limited.

After assessing the level of satisfaction of organic vegetable farmers we can infer that there is an urgent need for government or institutional support to encourage organic farmers. Moreover, establishing marketing outlet exclusively for organic products is also the need of the hour. The organic certification procedure should be simplified and it is necessary to reduce the cost of getting organic certification so as to make it affordable to enter the marginal and small farmers.

Session 2.

4.2 Barriers in adoption process of organic vegetable cultivation and constraints in marketing of organic farming

Indian agriculture system is under a transition stage. The increasing demand for organic produce has created new opportunities and a small sector of farm holders are desired economic boom with lucrative export markets. On the other hand, majority of small farm holders are still dependent on government incentives to meet the cost of input and are striving for a rationale profit margin for their produce in indigenous market. Small farm holders in India therefore, are apprehensive in adopting organic farming practice. Major issues in adoption of organic farming in India include production barriers, economic barriers, technical barriers, environmental barriers and marketing constraints. Further, under adoption stage, economic viability depends on the status of the farm. Yield declines during first year of conversion and steadily increases in subsequent crop cycle. Accordingly, there may be a deficit in net income under organic farming compared to conventional one up to third year. As input cost declines, the net income increases progressively fourth year onward (IGNOU, 2007). However, the three initial year deficit coupled with certification associated constraints often make small farm holders apprehensive. The study attempted to find out the barriers perceived by conventional farmers and the real barriers faced by certified organic farmers.

4.2.1 Barriers perceived by conventional farmers in the adoption of organic vegetable farming

By seeking the opinion of conventional farmers, their perceived barriers for adoption of organic vegetable farming were identified and depicted in Table 4.26 to 4.31.

4.2.1.1 Production barriers

Production constraints are barriers related to the cultivation of vegetables in the initial stages of adoption of organic farming. The perceived production barriers by conventional farmers were in given in Table 4.26.

Table 4.26 Production barriers perceived by conventional vegetable farmers

Sl.No	Production factors	Conventional farmers (n=30)			
		Thrissur	Palakkad	Ernakulum	Total
1.	Weather-related production losses	8(80)	9(90)	8(80)	25(83.33)
2.	Pest-related production losses	8(80)	8(80)	9(90)	25(83.33)
3.	Disease-related production losses	9(90)	9(90)	9(90)	27(90)
4.	Low yield	10(100)	10(100)	10(100)	30(100)
5.	High cost of production	10(100)	10(100)	10(100)	30(100)
6.	Non-availability of organic inputs (seed, fertilizer, etc.)	4(40)	3(30)	4(40)	11(36.67)

Source: Primary data

Note: Figures in parentheses are percentage of total

From the Table 4.26 it could be found that majority of conventional farmers perceived weather, pest and disease related production losses, low yield and high cost as the major production barriers.

4.2.1.2 Economic barriers

Economic barriers are barriers which are hindering farmers from adopting organic farming due to financial and economical obstacles.

Table 4.27 Economic barriers perceived by conventional vegetable farmers

Sl.No	Economic factors	Conventional farmers(n=30)			
		Thrissur	Palakkad	Ernakulum	Total
1.	Organic cultivation needs huge capital	10(100)	10(100)	10(100)	30(100)
2.	Lack of availability of funds	3(30)	2(20)	4(40)	9(30)
3.	Lack of subsidies from government and other organizations	5 (50)	7(70)	4(40)	16(53.33)
4.	High labour cost	10(100)	10(100)	10(100)	30(100)
5.	Financial risk for adoption	4(40)	5(50)	7(70)	16(53.33)

Source: Primary data

Note: Figures in parentheses are percentage of total

The table revealed that 100 percent of conventional farmers perceived organic cultivation needs huge capital and high labour cost. They perceived that the initial investment for organic farming is high and an ordinary farmer may not undertake these challenges without any institutional support. Majority of the conventional farmers were also expecting financial risk for adoption due to low yield.

4.2.1.3 Knowledge barriers

Knowledge of farmer has an impact on their attitude and preference towards decision on the type of farming practice they chosen. Therefore an attempt is made here to identify whether lack of knowledge is a barrier perceived by conventional farmers.

Table 4.28 Knowledge barriers perceived by conventional vegetable farmers

Sl.No	Knowledge factors	Conventional farmers(n=30)			
		Thrissur	Palakkad	Ernakulum	Total
1.	Lack of knowledge of organic farming practices	7(70)	6(60)	5(50)	18(60)
2.	Lack of awareness regarding availability of organic inputs	5(50)	6(60)	5(50)	16(53.33)
3.	Lack of knowledge regarding organic certification procedure	7(70)	8(80)	7(70)	23(76.67)

Source: Primary data
Note: Figures in parentheses are percentage of total

It is observed from the table that majority of the respondents irrespective of region considered all the variables coming under the knowledge barriers are important. The farmers perceived that lack of knowledge regarding the organic certification procedures as the most important barrier (76.67 percent).

4.2.1.4 Technical barriers

Technical barriers also may affect the adoption of organic farming. Table 4.29 presents the technical barriers perceived by conventional farmers.

Table 4.29 Technical barriers perceived by conventional vegetable farmers

Sl.No	Technical factors	Conventional farmers(n=30)			
		Thrissur	Palakkad	Ernakulum	Total
1.	Lack of training regarding organic farming practices	3(30)	2(20)	3(30)	8(26.67)
2.	Difficulties in getting organic certification	3(30)	2(20)	2(20)	7(23.33)

Source: Primary data
Note: Figures in parentheses are percentage of total

As depicted in Table 4.29 only 27 percent of conventional farmers perceived lack of training regarding organic farming practices stand as the barrier for adoption of organic vegetable farming. Very few farmers perceived the difficulties in getting organic certification.

4.2.1.5 Environmental barriers

Organic farming practices have a close relationship with the environment as environment friendly techniques are normally used for it. Unsuitability of land and cultivations of neighboring farms are the major variables studied for this purpose.

Table 4.30 Environmental barriers perceived by conventional vegetable farmers

Sl.No	Environmental factors	Conventional farmers(n=30)			
		Thrissur	Palakkad	Ernakulum	Total
1.	Problems related to cultivation practices of neighbour farm	9(90)	8(80)	8(80)	25(83.33)
2.	Unsuitability of land	9(90)	8(80)	8(80)	25(83.33)

Source: Primary data

Note: Figures in parentheses are percentage of total

Among the environmental barriers problems related to cultivation practices of neighbor farms and unsuitability of land perceived by 84 percent of conventional farmers. It may be due to the fact that conventional practices of the neighbor farms cause negative impact on the organic farming. Pest attack would be more in organic vegetable farm due to the use of chemical inputs in the neighbor farms. It is also observed that only after one year of cultivation the farmer could understand that the suitability of land for organic vegetable farming. Sometimes the land would be irresponsive to the organic farming because of the chemical content in soil.

4.2.2 Barriers experienced by certified organic vegetable farmers in the adoption of organic vegetable farming

We have already identified the barriers which are perceived by conventional farmers at the time of adoption of organic farming. But the real problems and constraints experienced by organic farmers may differ from the expected problems. Here the constraints which are faced by the certified organic vegetable farmers were given in Table 4.31.

Table 4.31 Barriers experienced by certified organic vegetable farmers

Sl.No	Barriers	No: of respondents(n=6)
	Production barriers	
1.	Pest-related production losses	6(100)
2.	Low yield	6(100)
3.	High cost of production	6(100)
	Economic barriers	
4.	Organic cultivation needs huge capital	6(100)
5.	Lack of availability of funds	6(100)
6.	Lack of subsidies from government and other organizations	6(100)
7.	High labour cost	6(100)
8.	Financial risk for adoption	3(50)
	Technical barriers	
9.	Difficulties in getting organic certification	3(50)
	Environmental barriers	
10.	Problems related to cultivation practices of neighbour farm	4(66.67)
11.	Unsuitability of land	4(66.67)

Source: Primary data
Note: Figures in parentheses are percentage of total

Table clearly depicts the barriers which were faced by the certified organic farmers when adopted organic vegetable farming. With respect to production barriers all the farmers pointed out that high cost of production as their major problem. In the initial stage of adoption, organic farmer's cost of production was high for organic

cultivation when compared to conventional farming due to the cost of organic inputs and cultivation practices. In the initial stage of cultivation to convert the land into organic, more organic inputs and more labour is needed so the cost will be high in the initial stage. Organic farmers were faced pest attack and disease related production losses in organic cultivation. Moreover the problem of low yield was another barrier for organic farmers. Among conventional farmers 83 percent respondents were expecting pest related problems in the adoption. However the organic farmers were observed that the application of organic pesticides cannot make an immediate impact on the pest removal from the farm. This will be result in low yield and high cost of production. Crop rotation is a solution for the organic farming to free from pest attack.

Among economic barriers all the organic farmers stated that organic cultivation needs huge capital. They also added that once it is invested, then for three or four years the profit will be uncertain. But after that the organic farming will be much profitable than conventional farming. But the farmer should be willing and capable to do organic farming without expecting a profit in the initial years of cultivation. Lack of availability of funds was another economical barrier of adoption of organic farming. The funds for the organic farming should be raised by farmer themselves. No other financial help is provided by any other sources. Lack of subsidy from government and other organizations are also pointed out by the farmers. They opined that though the government is promoting the farmers to adopt organic farming, it is only by words not through granting subsidies or any other services. High labour cost is also a problem in adopting organic farming. It may be due to the fact that much more care is needed when adopting organic farming due to the pests and weeds attack in the initial stage of adoption. It will in turn necessitate more labour hours and thereby high labour cost.

Among the technical barriers 50 percent of organic farmers experienced that they were faced the problem of difficulties in getting organic certification. For getting

certification, lengthy procedures are needed. After the first inspection of the INDOCERT, minimum of three years were needed to get certification.

Majority of the farmers were considered problems related to cultivation practices of neighbour farm and unsuitability of land as the environmental barriers at the time of adoption of organic vegetable farming.

From the comparison of perceived barriers of conventional farmers and certified organic vegetable farmers it could be understand that conventional farmers perceived more problems than problems faced by the farmers who adopted organic vegetable farming. These perceptions are the main reason for discouraging conventional farmers to adopt organic vegetable farming. Among the various constraints, an economic constraint was considered as very important by both conventional and organic farmers. The problem related to huge investment, lack of financial support, high labour cost and the financial risk which are actually faced by the organic farmers. calls for the need for extending financial support from government and other institutions so as to encourage an ordinary conventional farmer to adopt organic farming.

4.2.2 Marketing constraints

In the analysis of consumer attitude we could able to notice that consumers have favourable attitude towards the quality, nutrient value and health aspect of organic vegetables (Table 4.23). But the market demand of a product is not only determined by quality but also by affordability, competition and the promotion strategies adopted by producers and manufactures.

To succeed a product in a market, it is necessary to have sustainable market demand for the product. Here an attempt was made to identify the marketing constraints perceived by conventional vegetable farmers and actual constraints faced by the certified organic vegetable farmers. For identifying marketing constraints, variables like price information, price of the vegetables, availability, competition, marketing networks and market demand were taken.

Table 4.32 Marketing constraints perceived by conventional vegetable farmers

Sl.No	Marketing factors	Conventional farmers(n=30)			
		Thrissur	Palakkad	Ernakulum	Total
1.	Difficulty in obtaining organic price information	1(10)	2(20)	-	3(10)
2.	Uncertainty in organic premium price	3(30)	1(10)	2(20)	6(20)
3.	Distance to available organic markets	3(30)	3(30)	2(20)	8(26.67)
4.	Competition with non-organic vegetables	5(50)	5(50)	6(60)	16(53.33)
5.	Lack of organic marketing networks	10(100)	8(80)	10(100)	28(93.33)
6.	Lack of demand for organic vegetables	2(20)	2(20)	3(30)	7(23.33)

Source: Primary data

Note: Figures in parentheses are percentage of total

From the Table 4.32 it is clear that lack of organic marketing networks (93 percent) and competition with non organic vegetables were perceived as the most important marketing constraints by conventional farmers. It may be due to the fact that at present the organic vegetable products is not at all sufficient to meet the market demand and an exclusive organic marketing channels for vegetables need not be here and existing channels are sufficient to channelize the organic products. However, conventional farmers perceive this as a barrier and faced an uncertainty in the sale of organic vegetables. Moreover, the price of organic vegetables are very high compared

to the inorganic vegetables. This may cause high competition because the consumers are still price conscious.

4.2.3.1 Marketing constraints of organic vegetables experienced by certified organic vegetable farmers

In order to identify real marketing constraints with respect to the organic vegetables, the certified organic vegetable farmers were also surveyed. The major constraints identified by them were given in Table 4.33.

Table 4.33 marketing constraints experienced by certified organic vegetable farmers

Sl.No	Marketing constraints	No: of respondents (n=6)
1.	Difficulty in obtaining organic price information	1(16.67)
2.	Uncertainty in organic premium price	1(16.67)
3.	Lack of organic marketing networks	1(16.67)

Source: Primary data

Note: Figures in parentheses are percentage of total

From the table it is clear that only one farmer (16.67 percent) opined difficulty in getting price information, uncertainty in getting premium price and lack of organic networks as the marketing constraints. For other certified organic farmers at present there are no marketing constraints.

It is observed that there is sufficient market for certified organic vegetables. All the selected (except one) certified organic farmers were selling their vegetables directly to consumers and many times they couldn't meet the entire demand. They also opined that they are receiving premium price for their vegetables.

From Table 4.32 and 4.33 we could able to infer that conventional farmers perceived more marketing constraints than the certified organic vegetable farmers. In reality certified organic farmers were not faced any marketing problems. However as the study was limited to 6 certified organic vegetable farmers, it will be difficult to

generalize this findings. Moreover, at present the demand for organic vegetables is higher than the supply. Therefore getting a premium price is not at all a problem for organic farmers.

After the analysis of farmer behaviour highlighted the behaviour of farmers with respect to organic farming and perceived barriers in the adoption of organic farming. To get a clear picture of the market potential of organic vegetables, analysis of the consumers were also done and analyzed in the coming session.

Session 3.

4.3 Consumer behaviour towards organic vegetables

The term consumer behaviour can be defined as the behaviour that consumers display in searching for purchasing, using, evaluating and disposing of product and services that they expect will satisfy their needs. One of the objectives of the present study is to examine the consumer behaviour towards organic vegetables. As vegetables constitute a major portion of food consumption of people, changes has undergone in the nature, type and quality of vegetables consumed by them. Now a day's vegetables are used not only to add their food habit but to provide nutrient and prevent nutritious related diseases and improves physical and mental well being of consumers. In the context of changing behaviour of consumers towards vegetables, study on consumer behaviour towards organic vegetables which is very important.

For the purpose of analysis of the objective the following variables were selected.

1. Socio-economic profile of consumers
2. Periodicity of purchasing
3. Source of purchase of vegetables
4. Usage pattern
5. Attributes that influence purchase of vegetables
6. Awareness and nature of awareness towards organic vegetables
7. Source of awareness
8. Preference and reasons for preference of organic vegetables
9. Consumer attitude
10. Level of consumer satisfaction

4.3.1 Socio-Economic profile of consumers

Socio economic status is the measure of economic and social prospects of the individuals. It indicates the social position of an individual with respect education, income and occupation. In order to examine the socio-economic characteristics of the respondents, seven indicators, viz., sex, age, education, occupation, family type and monthly family income are considered and they are given in Table 4.34.

Table 4.34 Socio-economic profile of sample consumers

Sl. No	Characteristics	Thrissur	Palakkad	Ernakulum	Total (n=60)
1	**Gender**				
1.1	Male	12 (60)	10 (50)	14 (70)	36 (60)
1.2	Female	8 (40)	10 (50)	6 (30)	24 (40)
2	**Age level (Years)**				
2.1	Below 30	1 (5)	2 (10)	3 (15)	6 (10)
2.2	30-40	-	4 (20)	6 (30)	10 (16.67)
2.3	40-50	6 (30)	7 (35)	-	13 (21.67)
2.4	50-60	6 (30)	6 (30)	5 (25)	17 (28.33)
2.5	Above 60	7 (35)	1 (5)	6 (30)	14 (23.33)
3	**Educational level**				
3.1	Below high school	4 (20)	2 (10)	8 (40)	14 (23.3)
3.2	Up to 12th standard	8 (40)	10 (50)	7 (35)	25 (41.67)
3.3	Graduation	7 (35)	7 (35)	5 (25)	19 (31.67)
3.4	Post Graduation	1 (5)	1 (5)	–	2 (3.3)
4	**Family size**				
4.1	Joint family		2 (10)		2 (3.3)
4.2	Nuclear family	20 (100)	18 (90)	20 (100)	58 (96.67)
5	**Occupation**				
5.1	Agriculturist	1 (5)	2 (10)	7 (35)	10 (16.67)
5.2	Private employee	12 (60)	10 (50)	6 (30)	28 (46.67)
5.3	Govt.employee	6 (30)	7 (35)	5 (25)	18 (30)
5.4	Student	1 (5)	1 (5)	2 (10)	4 (6.67)
6	**Average monthly income(In Rs)**				

6.1	10000-20000	7 (35)	4 (20)	0	10 (16.67)
6.2	20000-30000	13 (65)	11 (55)	19 (95)	43 (71.67)
6.3	30000-40000	0	5 (25)	1 (5)	6 (10)
6.4	Above 40000	0	1 (5)	0	1 (1.67)

Source: Primary data

Note: Figures in Parenthesis represents percentage to total

Table 4.34 reveals that majority of the respondents (60 percent) were male. 28.33 percent of respondents were in the age group of 50-60 years. Regarding the educational level of respondents, 41.67 percent of the respondents were qualified up to 12th standard. 96.67 percent respondents belongs nuclear family. Regarding occupation of respondents, (46.67) were private employees. Most of the respondents (71.67 percent) were having income of ₹ 20000-30000 monthly.

4.3.2 Average monthly expenditure for vegetables

Monthly expenditure incurred for vegetables is different for consumers. Spending nature of consumers for vegetables is given in Table 4.35.

Table 4.35 Average monthly expenditure incurred for vegetables by consumers

Sl.No	**Average monthly expenditure for vegetables**	**Thrissur**	**Palakkad**	**Ernakulum**	**Total (n=60)**
1.	Below 500	5 (25)	6 (30)	3 (15)	14 (23.33)
2.	500-1000	12 (60)	11 (55)	15 (75)	38 (63.33)
3.	1000 and above	3 (15)	3 (15)	2 (10)	8 (13.33)
	Total	20(100)	20(100)	20(100)	60(100)

Source: Primary data

Note: Figures in Parenthesis represents percentage to total

From table 4.35 it could be understand that majority of the respondents (63.33 percent) were spending about ₹500 to 1000 per month for purchasing vegetables.

4.3.3 Periodicity of purchasing vegetables

Frequency of purchasing vegetables can be considered as an indication towards preference for fresh vegetables and importance they assigned in their day to day life.

Table 4.36 Frequency of purchasing vegetables by consumers

Periodicity of purchasing	**Thrissur**	**Palakkad**	**Ernakulum**	**Total (n=60)**
Daily	12 (60)	15 (75)	17 (85)	44 (73.33)
Twice in a week	8 (40)	5 (5)	3 (15)	16 (26.67)
Weekly	-	-	-	-
Total	20 (100)	20 (100)	20 (100)	60 (100)

Source: Primary data

Note: Figures in Parenthesis represents percentage to total

Table 4.36 revealed that 73.33 percent respondents were daily purchasing the vegetables. It might be an indication of consumer preference towards fresh vegetables.

4.3.4 Source of purchase of vegetables

The information regarding preferred source of produce of farmers will help the producers to stream line their distribution channel. Consumers were depending more than one source for purchase of vegetables. Table 4.37 shows the different sources of purchase preferred by sample consumers.

Table 4.37 Source of purchase of vegetables by consumers

Source of purchase	**Thrissur**	**Palakkad**	**Ernakulum**	**Total (n=60)**
Own farm production	10 (50)	13 (65)	8 (40)	31 (51.67)
Direct from neighbor farms	14 (70)	9 (45)	12 (60)	35 (58.33)
Wholesale market	6 (30)	2 (10)	4 (20)	12 (20)
Retail market	14 (70)	18 (90)	20 (100)	52 (86.67)

Source: Primary data

Note: Figures in Parenthesis represents percentage to total

It could be observed that majority of the respondents (86.67 percent) are depending on retail markets. They opined that convenience, proximity and availability were the major reason for same preferred. It can also be noticed that 51.67 percent depend on own farm production and 58.33 percent purchased vegetables from neighbor farms. This result indicates the consumer preference towards own farm products either from their own farms or direct from neighbor farms.

4.3.5 Nature of vegetable consumed by the respondents

Consumers vary in their consuming pattern. The nature of consuming vegetables by consumers is given in the table 4.38.

Table 4.38 Nature of vegetables consumed by consumers

Consumer of	Thrissur	Palakkad	Ernakulum	Total (n=60)
Inorganically grown vegetables	-	-	-	-
Organically grown vegetables	-	-	-	-
Both	20 (100)	20 (100)	20 (100)	60 (100)
Total	20 (100)	20 (100)	20 (100)	60 (100)

Source: Primary data

Note: Figures in Parenthesis represents percentage to total

From the Table 4.38 we could understand that irrespective of districts 100 percent of respondents in selected districts were consumed both inorganic and organic vegetables. Lack of sufficient quantity of organic vegetables and high price prompt them to purchase both. None of the respondents were preferred organic or inorganic vegetables.

4.3.6 Attributes that influence the purchase of vegetables

The important attributes which are influencing the consumers for the purchase of vegetables are given in table 4.39.

Table 4.39 Attributes that influence the purchase of vegetables by consumers

Attributes	Thrissur	Palakkad	Ernakulum	Total (n=60)
Price	20(100)	20(100)	20(100)	60(100)
Freshness	18(90)	19(95)	16(80)	53(88.33)
Nutrient value	17(85)	17(85)	18(90)	52(86.67)
Hygiene	20(100)	20(100)	20(100)	60(100)
Taste	4(20)	5(25)	7(35)	16(26.67)
Chemical Pesticide free	15(75)	17(85)	18(90)	50(83.33)
Organic nature	7(35)	6(30)	16(80)	29(48.33)
Quality Certification	4(20)	3(15)	6(30)	13(21.67)
Packaging	5(25)	6(30)	9(45)	20(33.33)

Source: Primary data

Note: Figures in Parenthesis represents percentage to total

Among the attributes listed in table 4.39 all the respondents irrespective of regions were opinioned that price and hygiene (100 percent) are the important attributes which they looked for while purchasing the vegetables. This shows that consumers are both price and health conscious.

Consumers are looking into the freshness (88.33 percent) and nutrient value of vegetables. Chemical and pesticide free vegetables are also an attribute of consumers looking for. It can infer from the above analysis that there is enough market potential for organically cultivated vegetables.

4.3.7 Awareness about Organic vegetable

The awareness level of selected consumers about organic vegetables is depicted in table 4.40.

Table 4.40 Awareness of consumers about Organic vegetables

Aware or not	Thrissur	Palakkad	Ernakulum	Total (n=60)
Yes	20 (100)	20 (100)	20 (100)	60 (100)
No	-	-	-	-
Total	20 (100)	20 (100)	20 (100)	60 (100)

Source: Primary data

Note: Figures in Parenthesis represents percentage to total

Table 4.40 shows that all the consumers were aware about the organic vegetables. Organic vegetable is not a new concept for the people. It may be due to the increased awareness programme conducted by government and other organizations.

4.3.8 Nature of awareness towards organic vegetables

Consumers are aware about the organic vegetables. But the level or nature of awareness is different from consumer to consumer. The nature of awareness certainly has an impact on the purchase decision of consumer. For this purpose different statements related to organic vegetables were selected and data collected on 3 point scale of Likert summated rating, as fully aware, partially aware and not at all aware. An awareness index was constructed by giving weightages of 3 points i.e., 2, 1 and 0. For the purpose of interpretation index score was rated as follows.

Less than 25 -Not Aware (NA)

25-75 -Partially Aware (PA)

75 and above -Fully Aware (FA)

Table 4.41 Nature of awareness towards organic vegetables

Items	Thrissur		Palakkad		Ernakulum		Total (n=60)		Rating of index
	Score	Index	Score	Index	Score	Index	Score	Index	
Organic vegetables are available In the market	40	100	40	100	40	100	120	100	FA
Organic vegetables are of best quality	40	100	40	100	40	100	120	100	FA
Organic vegetables are nutritious than others	40	100	40	100	40	100	120	100	FA
Organic vegetables are healthy	40	100	40	100	40	100	120	100	FA
Organic vegetables are costlier.	32	80	35	87.5	38	95	105	88	FA
Retail outlets for organic vegetables	20	50	14	35	9	22.5	43	36	PA
Standards fixed for organic vegetable producers	6	15	8	20	9	22.5	23	19	NA
Certification of organic vegetables	24	60	10	25	16	40	50	42	PA
Organic vegetables are labeled with accurate information or organic status of products	12	30	8	20	10	25	30	25	NA
Organic vegetable production is environment friendly	34	85	36	90	32	80	102	85	PA
Composite index	288	**72**	271	**67.5**	274	**68.5**	833	**69.42**	**PA**

Source: Primary data
(FA-Fully Aware, PA- Partially Aware, NA-Not Aware)

Consumers were fully aware about the availability of organic and inorganic vegetables in the market and the quality of organically produced vegetables. They are familiar with the concept of organic vegetables. They know that organic vegetables are nutritious and chemical free than others. So that by consuming organic vegetables consumers can keep good health.

Consumers were fully aware that high cost of organic vegetable can compensate by its quality and organic vegetable cultivation is compatible with the conservation of the environment. But the consumers were partially aware about retail outlets for organic vegetables, labeling of organic products with accurate information and about certification of organic vegetables. Consumers were not at all aware about the standards to be followed by organic vegetable producers.

The overall awareness index level of consumers about organic vegetables showed that they are only partially aware about organic vegetables. This may be the reason for indifferent attitude of consumers towards organic vegetables (See Table 4.46). The awareness programmes of organic vegetables and its benefits may help the consumers to distinguish the advantages and disadvantages of organic from inorganic vegetables.

The analysis of variance results indicates that difference in the awareness level of consumers about organic vegetables in the selected districts was not significant (See Annexure IV).

4.3.9 Source of awareness of organic vegetables

There are various sources which provide information regarding the different aspects of organic vegetables. Consumers may aware about organic vegetables through more than one source. Different sources which consumer depends for information is depicted in Table 4.42.

Table 4.42 Source of awareness of consumers about organic vegetables by consumers

Source of awareness	Thrissur	Palakkad	Ernakulum	Total (n=60)
Newspaper	13 (65)	12 (60)	9 (45)	34 (56.67)
Magazines (Kerakarshakan, Karshakasree etc.)	18 (90)	16 (80)	17 (85)	51 (85)
Radio			4 (20)	4 (6.67)
Television	17 (85)	14 (70)	18 90)	49 (81.67)
Krishi bhavan	6 (30)	5 (25)	-	11 (18.33)

Source: Primary data

Note: Figures in Parenthesis represents percentage to total

The table showed that magazines (85 percent) and television (81.67 percent) are the most important source of information to consumers. Newspaper is a source for 56.67 percent of consumers. The role of radio and krishibhavan is negligible.

4.3.10 Preference towards organic vegetables

Table 4.43 depicts whether the consumers prefer organic vegetables for their consumption or not.

Table 4.43 Respondents who prefer organic vegetables

Prefer	**Thrissur**	**Palakkad**	**Ernakulum**	**Total (n=60)**
Yes	12 (60)	14 (70)	11 (55)	37 (61.67)
No	8 (40)	6 (30)	9 (45)	23 (38.33)
Total	20 (100)	20 (100)	20 (100)	60 (100)

Source: Primary data

Note: Figures in Parenthesis represents percentage to total

The table shows that majority of the respondents (61.67 percent) preferred organic vegetables. The reasons behind the preference and non preference are presented in Table 4.44 and Table 4.45.

Table 4.44 Reasons for preferring organic vegetables by consumers

Motives	**Thrissur**		**Palakkad**		**Ernakulum**		**Total (n=37)**		**Rank**
	Score	Index	Score	Index	Score	Index	Score	Index	
Hygiene health factor	39	32.50	61.00	43.57	36.00	32.73	136.00	36.76	3
Eco-friendly	44	36.67	44.00	31.43	49.00	44.55	137.00	37.03	4
Better taste	68	56.67	55.00	39.29	66.00	60.00	189.00	51.08	6
Lower residues	28	23.33	34.00	24.29	12.00	10.91	74.00	20.00	1
Nutrient value	62	51.67	61.00	43.57	40.00	36.36	163.00	44.05	5
For diet	89	74.17	124.00	88.57	74.00	67.27	287.00	77.57	8
Availability	88	73.33	113.00	80.71	92.00	83.64	293.00	79.19	9
Freshness	96	80.00	95.00	67.86	92.00	83.64	283.00	76.49	7
Better value for money	30	25.00	54.00	38.57	47.00	42.73	131.00	35.41	2
Influence of friends or relatives	103	85.83	121.00	86.43	89.00	80.91	313.00	84.59	10
Total	647.00	53.92	762.00	54.43	597.00	0.54	2006.00	54.22	
Kendall's coefficient	**0.567****								

The above table revealed that lower residues and belief that organic vegetables will give better value for money are the major reason for preference followed by hygiene or health factor and eco-friendly nature.

Here Kendall's coefficient is calculated for measuring the agreement among the consumers in indicating the preference. The test statistic it is significant at 95 percent. It means that perfect agreement among the consumers was prevailed in indicating their preference.

Table 4.45 Reasons for not preferring organic vegetables by the consumers

Difficulties	**Thrissur**		**Palakkad**		**Ernakulum**		**Total (n=23)**		**Rank**
	Score	Index	Score	Index	Score	Index	Score	Index	
Too costly	15	26.79	8	19.05	15	23.81	38	23.60	1
Lack of confidence in the authenticity of organic vegetables	32	57.14	22	52.38	38	60.32	92	57.14	4
Lack of information to indicate the source of organic production	43	76.79	31	73.81	50	79.37	124	77.02	6
Don't trust the label	53	94.64	34	80.95	44	69.84	131	81.37	7
No noticeable difference in quality with inorganic vegetables	38	67.86	34	80.95	49	77.78	121	75.16	5
Lack of continuous availability of organic vegetables	16	28.57	17	40.48	24	38.10	57	35.40	2
No difference in taste of organic and inorganic vegetables	27	48.21	22	52.38	32	50.79	81	50.31	3
Total	224	57.14	168	57.14	252	57.14	644	57.14	
Kendall's coefficient	**0.516****								

From Table 4.45, it could be understood that the reasons behind the non preference of organic vegetables by consumers. The score is calculated based on the ranks given by the respondents.

Consumers opined that organic vegetables are too costly. Though it is providing value for the given money in quality aspects, all the time it is not affordable for common men. Lack of

availability is another reason for non preferring organic vegetables. Lack of information and trust in labeling of the organic vegetables were not an important reason for non preference.

Here Kendall's coefficient is calculated for measuring the agreement among the consumers. Here the P value is significant at 95 percent. Perfect agreement was noticed among the consumers in the case of indicating their non preference.

4.3.11 Consumer attitude towards organic vegetables

Consumer attitude is a composite of a consumer's beliefs, feelings and behavioural intentions towards some object. Understanding consumer attitude towards organic vegetable can help the producers to take decisions on organic vegetable farming and even organic farmer can determine the market potential of their vegetables. For this purpose different statements related to organic vegetables were selected and data collected on 5 point scale of Likert summated rating. An attitude index was constructed by giving weightages of 5 points from 5 to 1 (highly favourable and highly unfavourable). For the purpose of interpretation index score was rated as follows.

Less than 30- Highly unfavourable (HUF)

30-50 - Moderately Unfavourable (MUF)

50-70 -Indifferent (I)

70-90 - Moderately Favourable (MF)

90 and above- Highly favourable (HF)

Kruskal wallis and one way ANOVA was conducted to test the hypothesis that the obtained ranks provided by the consumers in the three districts do not differ significantly.

Consumer attitude about the organic vegetables is given in Table 4.46

Table 4.46 Consumer attitude towards organic vegetables

Statements	Thrissur		Palakkad		Ernakulum		Total (n=60)		Rating of index	Kruskall wallis	
	Score	Index	Score	Index	Score	Index	Score	Index		H	Asym p.sig
Organic vegetables are less perishable than inorganic vegetables	73	73	92	92	88	88	253	84	MF	13.902**	0.001
Organic vegetables are more cheaper than inorganic vegetables	20	20	20	20	20	20	60	20	HUF		
Organic vegetables are good quality vegetables	100	100	100	100	100	100	300	100	HF		
Organic vegetables are affordable for common men	45	45	53	53	58	58	156	52	I		
Availability of organic vegetables are proper	58	58	48	48	52	52	158	52	I		
Organic vegetables are more nutritious than conventionally produced vegetables	80	80	95	95	92	92	267	89	MF	25.030**	0.000
Organic farming conserves soil and less negative impact on environment	80	80	92	92	90	90	262	87	MF	17.502**	0.000
Organic vegetables contains less pesticide residue than inorganic vegetables	80	80	90	90	85	85	255	85	MF	13.111**	0.001
Source of information on organic vegetables are adequate	48	48	49	49	45	45	142	47	MUF		
Composite index	584	64.89	639	71	630	70	1853	68.63	I		

Source: Primary data

(HF-Highly Favourable. MF- Moderately Favourable, I-Indifferent, MUF-Moderately Unfavourable, HF- Highly Unfavourable)

All the respondents highly favoured that organic vegetables are good quality vegetables. They opined that it is more nutritious and chemical free. Consumers have moderately favourable attitude towards shelf life of organic vegetables, nutrient value, environmental friendliness and chemical free nature of the organic vegetables. However, they were having an indifferent attitude for affordability and availability of organic vegetables. They were moderately unfavoured towards the source of information of organic vegetables. They opined that information regarding organic vegetable is not adequate. Consumers showed highly unfavourable attitude towards the price of organic vegetables. They opined that price of organic vegetables are more than inorganic vegetables and it is not affordable for common men.

Analysis of variance revealed that that there is difference in the attitude of consumers of three districts towards organic vegetables (See Annexure IV). It could be infer that the attitude of consumers are similar in Palakkad and Ernakulum and both are different from Thrissur. Based on the Kruskal Wallis test, it could be inferred that differences in attitude of consumers in the three districts were mainly on perishability, nutritious value, and conservation of environment and pesticide free nature of organic vegetables.

4.3.12 Consumer satisfaction towards organic vegetables and inorganic vegetables

Here the consumer satisfaction measures how the organic vegetables can meet or surpass a consumer's expectation. Consumer satisfaction is important because it provides farmers with a measure that they can use to manage and improve their decisions on organic vegetable farming.

For this purpose different statements related to organic vegetables were selected and data collected on 5 point scale of Likert summated rating. A satisfaction index was constructed by giving weightages of 5 points from 5 to 1 (highly satisfied and highly dissatisfied). For the purpose of interpretation index score was rated as follows.

Less than 30- Highly Dissatisfied (HDS)
30-50 – Moderately Dissatisfied (MDS)
50-70- Resigned (R)
70-90 – Moderately Satisfied (MS)
90 and above- Highly Satisfied (HS)

Kruskal wallis and one way ANOVA was applied to test the hypothesis that the obtained ranks provided by the consumers in the three districts do not differ significantly.

Here the consumer satisfactions towards organic and inorganic vegetables are given in Table 4.47 and 4.48.

Table 4.47 Level of consumer satisfaction towards organic vegetables

Statements	**Thrissur**		**Palakkad**		**Ernakulum**		**Total (n=60)**		**Rating of index**	**Kruskal wallis**	
	Score	Index	Score	Index	Score	Index	Score	Index		H	Asymp .sig
Price	40	40	56	56	52	52	148	49.3	**DS**	9.528**	0.009
Taste	80	80	80	80	80	80	240	80	**MS**		
Nutrient value	80	80	80	80	80	80	240	80	**MS**		
Freshness	70	70	80	80	66	66	216	72	**MS**	9.746**	0.008
Shelf life	100	100	80	80	80	80	260	86.67	**MS**	59**	0.00
Availability of vegetables	34	34	60	60	46	46	140	46.67	**MDS**	31.145**	0.000
Marketing channels	40	40	56	56	40	40	136	45.33	**MDS**	42.909**	0.000
Eco-friendliness	80	80	64	64	60	60	210	70	**MS**	29.893**	0.000
Hygiene	80	80	74	74	48	48	202	67.33	**MS**	51.729**	0.000
Source of information	76	76	66	66	68	68	210	70	**MS**	9.391**	0.009
Authenticity of organic nature	44	44	56	56	58	58	158	52.67	**R**	24.278**	0.000
It gives value for money	100	100	80	80	80	80	260	86.67	**MS**	59**	0.000
Composit index	844	70.33	832	69.33	764	63.67	2440	67.78	R		

Source: Primary data
(HS-Highly Satisfied, MS-Moderately Satisfied, R-Resigned, MDS-Moderately Dissatisfied, HDS-Highly Dissatisfied)

Table 4.47 reveals that consumers were not highly satisfied with any of the feature of the organic vegetables and they were moderately satisfied with taste, nutrient value, freshness, shelf

life and that organic vegetable gives value for money. Organic vegetables are tasty vegetables and it contains nutrient value and it is fresh vegetable. Shelf life of the organic vegetables is more when compared to inorganic vegetables. Source of information and eco friendliness are also moderately satisfied by the consumers. Consumers are resigned to hygiene and authenticity of organic nature of vegetables. Consumers were moderately dissatisfied with price, availability and marketing channels of the vegetables.

Table 4.48 Level of consumer satisfaction towards inorganic vegetables

Statements	**Thrissur**		**Palakkad**		**Ernakulum**		**Total (n=60)**		**Level of SI**
	Score	Index	Score	Index	Score	Index	Score	Index	
Affordable Price	68	68	64	64	56	56	188	62.67	R
Taste	60	60	72	72	74	74	206	68.67	R
Nutrient value	54	54	36	36	34	34	124	41.33	MDS
Freshness	78	78	76	76	48	48	202	67.33	R
Shelf life	36	36	44	44	32	32	112	37.33	MDS
Availability of vegetables	100	100	100	100	100	100	300	100	HS
Marketing channels	100	100	100	100	100	100	300	100	HS
Eco-friendliness	34	34	38	38	30	30	102	34	MDS
Hygiene	54	54	52	52	32	32	138	46.00	MDS
Source of information	100	100	100	100	100	100	300	100	HS
It gives value for money	88	88	94	94	76	76	258	86.00	MS
Composite index	772	70.18	776	70.55	682	62.00	2230	67.58	R

Source: Primary data

(HS-Highly Satisfied, MS-Moderately Satisfied, R-Resigned, MDS-Moderately Dissatisfied, HDS-Highly Dissatisfied)

Table 4.48 clearly depicts that availability of vegetables, marketing channels and source of information are highly satisfied by the consumers. Because inorganic vegetables are available

in the nearest markets at any time. Information about inorganic vegetable is available from the various sources like neighbor farms, friends and relatives etc. Consumers were moderately satisfied that inorganic vegetables which gives value for money. They have resigned stage in respect to price, taste and freshness of the inorganic vegetables as it changes in every time. Consumers were moderately dissatisfied with nutrient value, shelf life, eco-friendliness and hygiene features of inorganic vegetables and authenticity of organic nature. Even though organic manures are used in conventional farming, high level usage of chemicals and pesticides made the vegetables as inorganic in nature.

The satisfaction of consumer gets from organic and inorganic vegetables significantly vary in the three districts. Consumers vary in their behaviour and their satisfaction level also different according to their socio- economic characteristics.

Analysis of variance results indicates that Thrissur and Palakkad districts were similar with respect to satisfaction of consumers towards organic as well as inorganic vegetables whereas consumers in Ernakulum district differed significantly from the other two (See Annexure IV).

Based on the Kruskal Wallis, it can be inferred that difference in satisfaction is due to the difference in price, quality, availability, marketing channels, source of information and authenticity of organic nature.

This session could be concluded that consumer behaviour towards organic vegetables shows a preference for consuming organic vegetables. Consumers are aware about the advantages of organic vegetables and adverse effects of inorganic vegetables. They prefer organic vegetables as they are health conscious but the high price of organic vegetables is discouraging them from the purchase of organic vegetables. Attitude and satisfaction level of consumers towards organic vegetables shows significant difference among consumers. Strategies for marketing the organic vegetables have to be formulated with exclusive outlets for organically grown crops so as to increase their trust in the labeled organic vegetables.

Session 4.

4.4 Determinants of consumer behaviour towards organic vegetables

Consumer decision making is dynamic in nature. It involves pre purchase, purchase and post purchases decisions and also after use satisfaction. Positive attitudes from frequent use lead to recurring purchase. Similarly both economic and social factors influence the decision process. In the conventional economics it believed that price is the most important factor. Empirical evidences identify price as only one of the determinants. Empirical studies further indicate that there are many non economic factors with significant influence over purchase decisions

In this session, an attempt has been made to identify the determinants of consumer behaviour towards organic vegetables. Various factors have been identified, which can or may influence the buying behaviour of consumers towards organic vegetables. They are mainly demographic factors, economic factors and quality related factors environmental factors, personal factors availability factors etc.

4.4.1 Factors influencing consumer behaviour towards organic vegetables

In order to identify the economic, quality, environmental and personal factors which influences the attitude of consumers towards organic vegetables, index method was employed. Various factors were identified which influences the attitude of consumers towards organic vegetables and index was calculated with three point scale. For each factors three degrees of influence were asked namely no influence, moderate influence and high influence and scores of zero, one and two were assigned respectively. For each statement total scores has been calculated separately and finally index was rated as follows.

Less than 25- Not Important (NI)

26-75 Important (I)

76 and above- Very important (VI)

The results are presented in table 4.49.

Table 4.49 Factors influencing consumer behaviour towards organic vegetables (Variable wise)

Sl.No	Items	Thrissur		Palakkad		Ernakulum		Total (n=60)		
		Score	Index	Score	Index	Score	Index	Score	Index	
	Economic factors									
1.	Affordable price	40	100	40	100	40	100	120	100	VI
2.	Economic status	0	0	3	7.5	9	22.5	12	10	NI
3.	Value for money	30	75	13	32.5	13	32.5	56	46.67	I
	Composite index	**70**	**58.33**	**56**	**46.67**	**62**	**51.67**	**188**	**52.22**	**I**
	Quality factors									
4.	High nutrient value	26	65	16	40	14	35	56	46.67	I
5.	More calories	17	42.5	17	42.5	32	80	66	55	I
6.	Chemical & pesticide free	40	100	40	100	40	100	120	100	VI
7.	Hygienic	25	62.5	15	37.5	24	60	64	53.33	I
8.	Taste	13	32.5	18	45	22	55	53	44.17	I
9.	Freshness	19	47.5	23	57.5	20	50	62	51.67	I
	Composite index	140	58.33	129	53.75	152	63.33	421	58.47	**I**
	Environmental factors									
10.	Eco-friendly vegetables	32	80	30	75	31	77.5	93	77.50	VI
11.	Enviormental concern	20	50	13	32.5	15	37.5	48	40	I
	Composite index	52	65	43	53.75	46	57.5	141	58.75	**I**
	Personal factors									
12.	Awareness on organic vegetables	32	80	26	65	24	60	82	68.33	I

13.	Influence of family	24	60	21	52.5	22	55	67	55.83	I
14.	Health concern	32	80	28	70	33	82.5	93	77.50	VI
	Composite index	88	73.33	75	62.50	79	65.83	242	67.22	**I**
	Availability factors									
15.	Availability of vegetables	40	100	38	95	35	87.5	113	94.17	VI
16.	Availability of information	29	72.5	12	30	14	35	55	45.83	I
17.	Distance to the market	38	95	31	77.5	33	82.5	102	85	I
	Composite index	107	65	81	52	82	55.56	270	60	**1**

The above table reveals that among the economic factors, affordable price is the most important determinant and they consider value for money is also important for them. If organic vegetables are available at reasonable price, consumers are ready to buy them. Health aspect is very important factor which create an interest in consumers to buy organic vegetables. In the present era, almost all people are capable of buying vegetables but pure and quality vegetables are not available. By consuming inorganic vegetables diseases are increasing especially cancer and related diseases. It becomes a threat to the survival of human being in the world. Value for money is an important factor for consumers. If they get better value for their spending, they are ready to buy organic vegetables. In the case of organic vegetables, if it is purely organic and gives value they will buy it.

Personal factors like awareness on organic vegetables, influence of family and health concern are also important for the consumers. Availability of vegetables and distance to markets are also important. The vegetables are purchased daily by consumers. Therefore the availability and distance to market is very important. Economic status is not an important determinant for consumers.

Table 4.50 Composite index of determinants of consumer attitude towards organic vegetables (Factorwise)

Composite index of factors	**Thrissur**		**Palakkad**		**Ernakulum**		**Total (n=60)**		**Importance**
	Score	Index	Score	Index	Score	Index	Score	Index	
Economic	70	58.33	56	46.67	62	51.67	188	52.2	(I)
Quality factors	140	58.33	129	53.75	152	63.33	421	58.47	(I)
Environmental factors	52	65	43	53.75	46	57.5	141	58.75	(I)
Personal factors	88	73.33	75	62.50	79	65.83	242	67.22	(I)
Availability factors	107	65	81	52	82	55.56	270	60	(I)

The composite index of various factors showed that all the listed factors are act as the important factors that influence the behaviour of consumers.

4.4.2 Relationship of demographic nature of consumers and consumer's attitude

In the previous objective it is already analyzed the consumer attitude towards organic vegetables. To examine whether the consumer attitude is associated with demographic factors like age, education, occupation and income, χ^2 test has been used and results are presented in Table 4.51.

Table 4.51 Association between consumer attitude towards organic vegetables and demographic nature of consumers

Sl. No.	Demographic factors	Attitude Index (%) (n=60)	
		Indifferent	Moderately favourable
1	**Age (in years)**		
	Less than 30	4	2
	30-40	4	6
	40-50	9	4
	50-60	10	7
	Above 60	9	5
	Chi-square statistic	2.356^{NS} (df=4)	
2	**Education**		
	SSLC	8	6
	Plus two	15	10
	Graduation	12	7
	Post graduation	1	1
	Chi-square statistic	0.210^{NS} (df=3)	
3	**Occupation**		
	Agriculture	5	5
	Private	17	11
	Government	11	7
	Student	3	1
	Chi-square statistic	0.807^{NS} (df=3)	
4	**Income (in Rs.)**		
	Less than 20000	4	2
	20000-30000	27	13
	30000-40000	4	8
	above 40000	1	1
	Chi-square statistic	4.688^{NS} (df=3)	

Table 4.51 reveals that demographic factors were not determinants of buying attitude of consumers towards organic vegetables.

4.4.3 Relationship of demographic factors of consumers and consumer satisfaction

In order to check whether demographic factors are significant determinants of consumer satisfaction towards organic vegetables, chi-square test was applied

Table 4.52 Association between consumer satisfaction towards organic vegetables and demographic factors of consumers

Sl. No.	Demographic factors	Satisfaction Index (%) (n=60)	
		Resigned	Moderately satisfied
1	**Age (in years)**		
	Less than 30	3	3
	30-40	7	3
	40-50	7	6
	50-60	10	7
	Above 60	12	2
	Chi-square statistic	**4.340^{NS} (df=4)**	
2	**Education**		
	SSLC	13	1
	Plus two	18	7
	Graduation	7	12
	Post graduation	1	1
	Chi-square statistic	**12.134^{**} (df=3)**	
3	**Occupation**		
	Agriculture	9	1
	Private	20	8
	Government	8	10
	Student	2	2
	Chi-square statistic	**6.995^{NS} (df=3)**	
4	**Income (in Rs.)**		
	Less than 20000	2	4
	20000-30000	30	10
	30000-40000	6	6
	above 40000	1	1
	Chi-square statistic	**5.788^{NS} (df=3)**	

From table 4.52 it is clear that among the demographic characteristics level of education had an impact on the level of satisfaction level of consumers towards organic vegetables. Age, Occupation and income were not considered as determining factors for the level of satisfaction of consumers.

4.4.4 Relationship between demographic factors and consumer preference

Ordered probit model is an econometric tool used to find out the independent variables which are influencing or determining the dependent variables. Here the probit model is applied

to find out whether demographic variables like age, education, occupation and income are determinant of the consumer preference towards organic vegetables.

Table 4.53 Ordered probit estimates for determinants of consumer preference of organic vegetables

Variables	Estimate	S.E.	Wald	df	Sig.
Age	-0.1384**	0.048827	8.03467	1	0.004589
Educational qualification			4.621448	3	0.20171
Below high school	4.155516	2.535507	2.686089	1	0.101228
Up to 12th standard	3.408167	2.102279	2.628215	1	0.10498
Graduation	4.608502*	2.198633	4.393535	1	0.036075
Occupation			2.702088	3	0.439873
Agriculturist	-21.0947	28417.51	5.51E-07	1	0.999408
Private employee	-20.1181	28417.51	5.01E-07	1	0.999435
Government employee	-22.4203	28417.51	6.22E-07	1	0.999371
Income	-0.01576	0.054976	0.082149	1	0.774406
Constant	25.32288	28417.51	7.94E-07	1	0.999289
-2 Log likelihood	60.50748				
Cox & Snell R Square	0.275944				
Chi-square	19.37321*				
Signifcance prob.	0.012986				

Table 4.53 revealed that demographic factors shows an overall significance (χ^2=19.37) in the probit analysis which means that the variables under demographic factors are determining the preference of consumers towards organic vegetables. Among the demographic factors, age and educational qualification are the two determinants for the consumer preference towards organic vegetables. Age is negatively related with the preference level of consumers towards organic vegetables. Aged consumers preferred to buy less when compared with youth. Education is a determinant for the consumer preference towards organic vegetables. It is positively related with the consumer preference towards organic vegetables. From this we can infer that highly educated respondents preferred to purchase organic vegetables. Income and occupation were not considered as the determinant for preference towards organic vegetables.

Thus it can be concluded that there are various factors which influence consumer behaviour towards organic vegetables like economic, quality, environmental, personal and availability factors. However the influence level of different variables under each factor is different. The most important factors that determine consumer attitude towards organic vegetables are price, chemical pesticide free nature, health aspect, and availability of vegetables and distance to the market and availability of the product. Attitude is not determined by any of the demographic factors but the satisfaction of consumers towards organic vegetables determined by education of the individuals. Further age and education were found as important determinant for consumer preference towards organic vegetables

SUMMARY & CONCLUSION

CHAPTER 5

SUMMARY OF FINDINGS AND CONCLUSION

Kerala is a consumer state, where lion share of the vegetable and other food items are coming from nearby states. These produces contain pesticide residues above permissible limits. In recent times, there is awareness among the people about the hazardous effects of such vegetables cereals etc. But the farmers are afraid to adopt organic farming due to many reasons. In this situation to understand the farmer and consumer response to the organic vegetable is needed to analyze the importance of organic farming. The study entitled with "Farmer and consumer behaviour towards organic vegetables" is mainly focusing on the behaviour of conventional and certified organic farmers towards organic vegetable farming and also the consumer behaviour towards organic vegetables.

In this context that the present study was undertaken with the following objectives.

- To study the behaviour of farmers towards organic vegetable farming
- To identify the barriers in adoption process of organic vegetable cultivation and the constraints in marketing of organic vegetables
- To examine the consumer behaviour towards organic vegetables
- To identify the determinants of consumer behaviour towards organic vegetables

The study consists of three districts viz, Thrissur, Palakkad and Ernakulum representing central Kerala. The districts were selected based on the prominence of vegetable cultivation and the expert opinion. 30 conventional farmers, 8 certified organic vegetable farmers and 60 consumers constitute the sample for primary survey. The objectives of the study were analysed with the help of statistical tools

like Percentage analysis, Indices, Rank order scale, Likert scale of summated rating, Chi-square, Kendall's coefficient, Kruskall Wallis test and Probit model.

The findings of the study were classified based on the objectives and presented below.

5.1.1 Farmer behaviour towards organic vegetable farming

1. Socio economic profile of the conventional farmers revealed that majority of them were in the age group of above 55 years and majority of them were having educational qualification up to 12th standard. Moreover majority of the farmers were having main occupation as agriculture and the income status shows that 40 percent of respondents were earning annual income of above Rs 200000 and other major category is Rs 100000-200000 annually. The type of family is nuclear for 100 percent of respondents.

2. Majority of the organic farmers aged between 45 to 55 years and most of them were having education up to 12th standard. Similar to conventional farmers majority of the organic farmers have agriculture as their main occupation. Their annual income coming under the range of Rs 200000-400000 and above Rs 400000 annually for 33.33 percent of farmers of both categories.

3. Majority of the conventional farmers were cultivating in wet land. But organic farmers are cultivating in garden land.

4. Majority (56.67 percent) of conventional farmers were small farmers followed by marginal farmers whereas, majority (66.67 percent) of organic farmers were large farmers.

5. In general majority of conventional farmers (70 percent) have land holding of 1-2 acres under vegetable cultivation. However the area under Palakkad

district is comparatively higher than the other districts where majority comes under the category of 2-3 acres of land.

6. Majority of the certified organic farmers were cultivating vegetables in less than 1 acres of land.

7. Majority of the conventional farmers were having 5-10 years of experience in vegetable farming whereas majority of the organic farmers are having 10-15 years experience.

8. Major crops cultivated by conventional farmers include cowpea, snake gourd and bitter gourd. In addition to these crops organic farmers are also cultivating cabbage, okra, ash gourd and tomato as major crops.

9. Snake gourd is growing in a larger area by conventional farmers and cowpea is growing in smaller area than snake gourd and bitter gourd. Productivity of cowpea is less when compared to other crops. Further it is found that the area under vegetable cultivation and productivity is comparatively more in Palakkad district. Productivity also varied from crop to crop.
10. In the case of organic farmers they are growing snake gourd and bitter gourd in an average area of 0.26 acres and cowpea is in 0.3 acres. A comparison between productivity of vegetables from organic farming and conventional farming shows that that it is very low in the case of organic farming.
11. The total cost of vegetable cultivation irrespective of crops was low in organic farming. Due to the involvement of family labour and own inputs used. In the case of conventional farmers, the cost of cultivation was higher than the organic farming as they are purchasing chemical fertilizers and the other inputs from outside sources.
12. Both the cost and net income was comparatively high in Palakkad district than Thrissur and Ernakulum district.

13. Organic farmers were earning a higher income than conventional farmers and income was comparatively high for cowpea.

14. Farmer both conventional and organic farmers opined that government and other institutional support system is insufficient.

15. Majority of the conventional farmers were participated in the trainings on organic farming whereas, it is interesting to note that no organic farmers have attended these type of training.

16. Majority of the conventional and organic farmers were exposed to agricultural programmes in agriculture magazines like Kerakarshakan and Karshakasree and televisions. The dependence on all India radio is comparatively less for organic farmer.

17. 100 percent of conventional farmers surveyed were selling their produce to Vegetable and Fruit Promotion Council of Keralam (VFPCK) whereas majority of the organic farmers were directly selling to consumers. Only one farmer sold a portion of his vegetables to the nearby retail shops.

18. Majority (86.7 percent) of the conventional farmers were interested in organic farming practices. But they were willing for only partial conversion of their farm to organic farms.

19. The awareness towards adverse affects of using chemical inputs shows that 100 percent respondents were aware regarding this aspect and majority of the farmers reduced their chemical application to 10 to 25 percent.

20. Majority of the conventional farmers were aware about organic certification.

21. Certified organic vegetables received the benefits like access to local and international markets and premium price.

22. Conventional farmers had highly favourable attitude towards improving fertility of soil, environmental friendly, health protection and the quality aspects of vegetables. But their attitude is moderately unfavourable to market demand, practical feasibility and low financial risk. Moreover their attitude towards cost of cultivation is highly unfavourable.

23. Organic farmers had highly favourable attitude towards majority of the selected attitude variables like improve fertility status of soil, environmental friendly, health protection, market demand and premium price for the organic vegetables. They have moderately unfavourable attitude towards only for cost of organic farming.

24. The overall attitude index of the conventional and organic farmers revealed that conventional vegetables farmers have an indifferent attitude towards organic farming whereas organic vegetable farmers have highly favourable attitude towards organic farming.

25. Certified organic farmers were highly satisfied with the market demand, cultivation practices, availability of inputs, availability of labour and price of organic vegetables. But they are highly dissatisfied with the technical assistance provided and institutional support system for organic vegetable cultivation.

26. The overall index showed that organic farmers were moderately satisfied with organic vegetable farming.

5.1.2 Barriers in adoption and marketing constraints of organic vegetable farming

1. Most important production barriers perceived by conventional farmers were high cost of production, low yield, pest, disease and weather related production losses.

2. Among the economic barriers majority of the conventional farmers perceived huge capital investment, higher labour cost, lack of subsidies from government and financial risk involved in adoption.

3. Lack of knowledge of organic farming practices, availability of organic inputs and organic certification procedures were the perceived knowledge barriers by majority of the conventional farmers.

4. Major environmental barriers expected by both conventional and organic farmers were problems related to cultivation practices of neighbor farm and unsuitability of land.

5. With respect to marketing barriers, lack of organic marketing networks and competition with non-organic vegetables are perceived as barriers by conventional farmers

6. Organic farmers were experienced production related problems like pest related production losses, low yield and high cost of production especially in the initial stage of adoption of organic vegetable farming.

7. Organic farmers identified all the variables under economic barriers like huge capital investment, lack of availability of funds, lack of subsidies, high labour cost in the initial stages and financial risk for adoption as the barriers they faced when they adopted organic farming.

8. Difficulties in getting organic certification identified as major technical barrier by organic farmers.

9. Major environmental barriers identified by organic farmers were problems related to cultivation practices of neighbor farm and unsuitability of land.

10. With respect to marketing barriers, no major marketing barriers were identified by organic farmers.

11. Perceived barriers of conventional farmers were more than the barriers experienced by organic farmers at the time of adoption of organic vegetable farming. The perceptions about economic problems by conventional farmers were same as what the organic farmers experienced. So financial viability of farmer is important for adoption of organic vegetable farming.

5.1.3 Consumer behaviour towards organic vegetables

1. The socio-economic profile of consumers shows that majority of them are male and in the age group of 50-60 years. Most of the respondents were qualified up to 12^{th} standard and about 96 percent were living in nuclear family. Most of the respondents were private employees and majority of the respondents were earning monthly income between Rs 20000-30000.

2. Majority of the respondents were spending about Rs.500-1000 for vegetables per month.

3. Majority of the respondents were purchasing vegetables daily.

4. The major source of purchase of vegetables were from retail markets (86.67 percent) and more than 50 percent of respondents depend on own farm produce and neighbour's farms.

5. 100percent of the respondents were used both inorganic and organic vegetables in their consumption.

6. Regarding the attributes that influence the purchase of vegetables price and hygiene considered as most important followed by freshness and nutrient value of vegetables.

7. All the selected consumers heard about organic vegetables.

8. Majority of the consumers have full awareness regarding availability, quality, nutrient value, healthy aspects, environmental friendliness and price of the organic vegetables. Whereas they were not at all aware about standards fixed for organic vegetables and its labeling. They expressed their partial awareness regarding organic retail outlet and organic certification.

9. No significant difference was noticed with respect to nature of awareness of consumers in selected districts.

10. Consumers opined that print and visual media were the major source of information with respect to organic vegetables.

11. Majority of the respondents (61.67 percent) preferred organic vegetables.

12. Lower residues, better value, hygiene and eco friendly attitude were the major reasons for preference towards organic vegetables. Kendall's coefficient shows that perfect agreement among the consumers was prevailed in indicating their preference in reasons.

13. All the respondents have highly favourable attitude towards quality of organic vegetables. They expressed their moderately favourable attitude towards shelf life, nutritional value, environmental friendliness and chemical free nature of organic vegetables, whereas they were moderately unfavourable towards price of the organic vegetables.

14. Analysis of variance revealed that that there is difference in the attitude of consumers of three districts towards organic vegetables. Based on the Kruskal Wallis test, the differences in attitude of consumers in the three districts were mainly on perishability, nutritious value, and conservation of environment and pesticide free nature of organic vegetables.

15. The level of consumer satisfaction towards organic vegetables shows that they were moderately satisfied with taste, nutrient value, freshness, eco friendliness, shelf life, value for money and source of information. However they were moderately dissatisfied with price, availability and marketing channels. Composite index shows that as a whole consumer were in the resigned stage that is neither satisfied nor unsatisfied.

16. Analysis of variance shows that satisfaction levels of consumers in Ernakulum district were different between Palakkad and Ernakulum districts. Based on the Kruskal Wallis, the difference in satisfaction is due to the difference in price, quality, availability, marketing channels, and source of information and authenticity of organic nature of the organic vegetables.

5.1.4 Determinants of consumer behaviour towards organic vegetables

1. The important factors that determine consumer behaviour towards organic vegetables are price, chemical and pesticide free, health aspects, availability of vegetables and distance to the market.

2. Value for money and quality factors like nutrient value, more calories, hygiene, taste and freshness are the important determinants of consumer behaviour towards organic vegetables.

3. Consumer attitude towards organic vegetables was not determined by the demographic nature of consumers

4. Chi-square statistic shows that education (12.134^{**}) is a determinant of the consumer satisfaction towards organic vegetables. Study shows that higher the level of the education, level of satisfaction also higher.

5. Probit analysis revealed that age (-0.1384**) and education (4.608502*) determines the consumer preference towards organic vegetables. Age is

negatively related with consumer preference. Study shows that highly educated consumers have more preference for organic vegetables.

5.2 Conclusion

The analysis and findings of the study throw light on the behaviour and attitude of both conventional and certified organic farmers towards organic vegetable cultivation and the barriers for adoption of organic vegetable farming. The study also highlighting the consumer behaviour and the factors determine the behaviour towards organic vegetable consumption. The study revealed their attitude towards market demand for organic vegetables and cost of cultivation is highly unfavourable. The findings also highlight the fact that majority of the conventional farmers were ready only for a partial conversion from conventional farming to organic farming. This may be due to their perception regarding the huge capital investment, low yield and uncertainty market demand. They were also having the doubt about the practical feasibility of adoption of organic vegetable farming due to the economic and environmental barriers. Moreover, they are not ready for obtaining any certification as it involves lengthy procedure and many of them are not aware about its procedures and formalities. Certified organic vegetable farmers were also agreeing with the high investment and low yield from organic vegetable cultivation. However, they were not faced much marketing barriers as perceived by conventional vegetable farmers. All the farmers agree with the nutritional value and health aspect of organic vegetables. Consumers overall attitude towards organic vegetables were also not favourable due to its high price and non availability. However they agree with the health aspects, quality, nutrient value and environmental friendly nature of the organic vegetables. All these findings calls for the need for creating awareness in the society on the ill effects of conventional agriculture and the positive qualities and advantages of organic agriculture. The results also indicate that government and other institutional support for organic vegetable cultivation is insufficient. Therefore it may be suggested that government and other institutions may extend financial and technical

support to farmers to minimize financial risk in adoption of organic farming. Moreover consumers should be properly informed on the value for money and health aspect of the organic vegetables.

As a whole we could able to conclude that an immediate and complete change from conventional vegetable farming to purely organic vegetable farming practices is not practically feasible in the present agriculture scenario. The policy makers may encourage Good Agriculture Practices (GAP) among farmers by following judicious chemical application. Moreover, there is dire need to simplify the procedures for organic certification. It may be suggested that certification of organic products should not be entrusted with private agencies as it is practiced now. Government or agencies in the public domain like Kerala Agricultural University can be competent authority for organic certification which will make organic certification accessible for small and marginal farmers. A gradual change from conventional to organic vegetable farming will be possible by framing long time plans on awareness campaigns, financial support and efficient market development for organic vegetables.

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ABSTRACT

FARMER AND CONSUMER BEHAVIOUR TOWARDS ORGANIC VEGETABLES

By

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(2012-15-107)

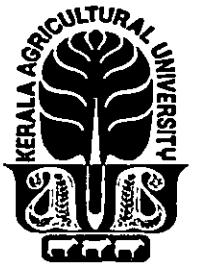
ABSTRACT OF THE THESIS

Submitted in partial fulfillment of the requirement for the degree of

Master of Science in Cooperation & Banking
(Rural Marketing Management)

Faculty of Agriculture

Kerala Agricultural University, Thrissur



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ABSTRACT

Farmer and Consumer Behaviour towards Organic Vegetables

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Organic farming is one of the several approaches found to meet the objectives of sustainable agriculture. The need for organic farming in India arises from non sustainability of agricultural production and the damage caused to ecology through the conventional farming practices. Organic farming practices are based on a maintaining harmonious relationship with nature aiming at the protection of the environment. India being an agriculture based on country has vast opportunities to go ahead in the field of organic farming. However, Currently, India ranks 10th among the top ten countries in terms of cultivable land under organic certification. The total area under organic certification is 4.72 million ha (APEDA 2013-14). This signals that potentials are huge and still it has to move forward.

The study entitled "Farmer and Consumer Behaviour towards Organic Vegetables" was conducted with the main objectives to study the behaviour of farmers towards organic vegetable farming, to identify the barriers in the adoption process of organic vegetable cultivation and the constraints in marketing of organic vegetables; to examine the consumers behaviour towards organic vegetables and to identify the determinants of consumer behaviour towards organic vegetables.

The study covered three districts representing central Kerala. The districts selected were Thrissur, Palakkad and Ernakulum based on the prominence of vegetable cultivation. Three blocks were selected from each district namely Pazhayannur block of Thrissur district, Elevanchery block of Palakkad district and Moovattupuzha block of Ernakulum district based on purposive sampling and expert opinion of field scientist. Thirty conventional farmers (10 each) from the three selected blocks were selected based on purposive sampling. Six organic farmers

certified by INDOCERT were also selected for the study. Twenty consumers from each block were selected as sample respondents through snow ball sampling. Thus the total sample respondents consists of 30 conventional vegetable farmers, 6 certified organic vegetable farmers and sixty vegetable consumers. The objectives of the study were analysed with the help of statistical tools like Percentage analysis, Indices, Rank order scale, Likert scale of summated rating, One way ANOVA, Chi-square, Kendall's coefficient, Kruskal Wallis test and probit model.

Farmer behaviour towards organic vegetable farming is analyzed based on the variables like area under vegetable cultivation, major crop cultivated, mode of sale by farmers, interest in organic farming, and attitude and satisfaction level of farmers. The major crops cultivated by selected farmers include cowpea, snake gourd and bitter gourd .The study revealed that average area and productivity of crops from conventional farming is more. But the net income of organic farmers is more than the conventional farmers. All the selected conventional farmers prefer to sell their vegetables through VFPCK whereas organic farmers prefer direct sale. Majority of the farmers expressed their interest in organic farming but they are willing for only partial conversion by gradually reducing chemical application. The analysis of the attitude of the farmer respondents shows that both conventional farmers and organic farmers have highly favorable attitude towards to the statements related to fertility of soil, environmental friendly, health protecting and the quality of vegetables. Organic farmers have highly favorable attitude towards market demand, practical feasibility and low financial risk and premium price. . But the conventional farmer's attitude is moderately unfavorable to market demand, practical feasibility and low financial risk. The result of ANOVA shows that there is no difference in the attitude of farmers in three districts. Based on the satisfaction index, study found that certified organic farmers are highly satisfied towards market demand, cultivation practices, availability of inputs, availability of labour and price of organic vegetables whereas, they are highly dissatisfied towards technical assistance provided and institutional support system for organic vegetable cultivation.

The major barriers identified by the conventional farmers include disease, pest and weather related losses, high cost of production, huge capital investment, high labour cost, lack of knowledge of organic farming practices and organic certification procedures. On the other hand

organic farmers identified pest related production loss, difficulties in getting organic certification, huge investment and lack of institutional support as the major barriers in adoption of organic vegetable cultivation. Major environmental barriers identified by all the selected farmers are the cultivation practices of neighbour farms and non suitability of land. Lack of organic marketing networks and competition with non-organic vegetables are perceived as marketing barriers by conventional farmers.

Consumer behaviour towards organic vegetables is analyzed mainly based on their preference, awareness, attitude and satisfaction towards organic vegetables. Consumers have partial awareness towards various features of the organic vegetables. Majority of the consumers have complete awareness regarding availability, quality, nutrient value, health aspects, environment friendliness and price of the organic vegetables. However, they are not at all aware about standards fixed for organic vegetables and its labeling. There is no significant difference in the awareness level among district as per the result of ANOVA. Majority of the respondents (61.67 percent) preferred organic vegetables. Reasons for preference to organic vegetables are lower residues, better value for money followed by hygiene and eco friendly attitude of consumers. Kendall's W shows perfect agreement among the consumers in the ranking of the variables.

The study found that all the selected consumers have highly favorable attitude towards the quality of organic vegetables. They have moderately favorable attitude towards shelf life, nutritional value, environmental friendliness and chemical free features of organic vegetables whereas they have highly unfavourable attitude towards price of the organic vegetables. ANOVA shows difference in the attitude among the consumers of three districts. Based on the Kruskkal Wallis test the differences are mainly on perishability nutritious value conservation of environment and pest free nature of organic vegetables. The level of consumer satisfaction towards organic vegetables revealed that they are moderately satisfied with taste, nutrient value, freshness, eco friendliness, shelf life, value for money and source of information. However they are moderately dissatisfied with price, availability and marketing channels. ANOVA shows significant difference in the level of satisfaction in three districts. Based on Kruskal wallis, the differences are mainly on price, quality, availability, marketing channels, source of information and authenticity of organic nature.

The important factors which influence the consumer behaviour towards organic vegetables are price, chemical and pesticide free, eco friendly vegetables, health aspect, availability of vegetables and distance to the market. Value for money and quality factors like nutrient value, more calories, hygiene, taste and freshness are also influencing them to certain extent. Study also revealed that consumer attitude towards organic vegetables is not determined by demographic nature of consumers whereas age is a determinant of the consumer satisfaction towards organic vegetables. Further, study points out that age and education are the determinants of consumer preference towards organic vegetables.

As a whole, we could able to conclude that a complete change from conventional farming to organic farming practices is not practically feasible in the present agricultural scenario. The study found that the farmer's attitude towards organic vegetable cultivation is indifferent. The farmers are not ready for complete change of their farming practice to organic farming especially due to their perception regarding huge investment, low yield and uncertainty in market demand. Moreover, consumers have also expressed their concern about high price of the organic vegetables. The limited in number of certified organic vegetable farmers also shows the reluctance of conventional farmers to enter into organic vegetable farming. Therefore it may be suggested that policy makers may encourage good agricultural practices among farmers by following judicious chemical application rather than focusing on purely organic farming practices. Government may also take measures to provide institutional support by conducting training programme awareness campaign and also by extending financial support. Moreover, the NGO's, consumer organizations, farmer groups and Kudumbasree units can also come forward to encourage organic vegetable cultivation. It may be suggested that certification of organic products should not be entrusted with private agencies as it practiced now. Government or agencies in the public domain like Kerala Agricultural University can be competent authority for organic certification which will make organic certification accessible for small and marginal farmers.

ANNEXURE

ANNEXURE-I

SURVEY SCHEDULE FOR CONVENTIONAL VEGETABLE FARMER

Socio-Economic Profile

Name of panchayathand ward:

I. Individual details

1. Name :
2. Address :
3. Age :
4. Tel .no :
5. Educational qualification:

Illiterate ☐
UP to 12th standard ☐
Graduate ☐
P G ☐
Others ☐

II. Family details

1. Type of family: Nuclear ☐
   Joint ☐

2. Household information:

Sl.no	Name and their Relation with respondent	Sex	Age	Education	Primary occupation
1					
2					
3					
4					

3. Primary occupation

Agriculture ☐ Non agriculture ☐ Govt.employee P☐ employee Not ☐

working ☐ usiness ☐ hers(Specify)

4. Annual family income:

IV.Farm details

1.Total area under cultivation:

2.Land particulars

Particulars	Wet land	Garden land	Dry land	Total
1.Area owned				
2.Area leased in				
3.Area leased out				
4. Area owned and leased in land				

3. Types of farming

- Conventional farming ☐
- Organic farming ☐
- Both conventional and organic farming ☐

4. Details of cultivation of the vegetables under study:

Sl.No	Vegetables	Area in acre		Production
		Organic	Conventional	

5. How much will be the cost and return for the vegetable farming?

Vegetables	Expenditure	Price
Vegetable 1		
Vegetable 2		
Vegetable 3		

6. Practice in conventional farming (years):
7. How many hours you spend in your vegetable farm for managing?
8. Have you faced any problem in availing financial assistance from government or other institutions? Yes ☐ No ☐
9. Have you attended any training programme in IPM/organic practices?

Yes / No

10. Do you listen agricultural programmes in All India Radio?

Yes ☐ No ☐

11. Do you watch agricultural programmes in TV Channels?

Yes☐ No☐

12. Do you read any agricultural related magazines/ journals?

Yes☐ No☐

13. How do you sell your vegetable produce?

Sl.No	Channel	Organic vegetables	Inorganic vegetables
1	Direct sale to consumers		
2	Through commission agents		
3	In wholesale market		
4	In Retail shop		
5	At the Farm gate		
6	VFPCK		

14. Are you interested in practicing organic farming?

Yes ☐ No ☐

15. Which type of conversion you willing to have? Full conversion ☐ Partial conversion ☐ No conversion ☐

16. Have you increased/ reduced the application of chemical inputs over years?(for last 5 years)

Yes ☐ No ☐

17. If yes, how much percentage you changed?

18. Are you aware that chemical inputs cause adverse effects in the ecosystem?

Yes ☐ No ☐

19. Are you aware about the organic certification?Yes No

20. If yes, why don't go for certification?

Not pure organic ☐ Lengthy procedure ☐ on't want the label ☐

Costly ☐ Less benefit ☐ er reason(specify)

III. Attitude of farmers towards organic farming practices in vegetable cultivation

Sl. no	Statements	SA	A	NO	DA	SDA
1.	Organic farming improves fertility status of the soil					
2.	Organic farming is more easy than conventional farming					
3.	Only good quality seeds of known source can be used in organic farming					
4.	Organic farming practices are environmental friendly					
5.	Organic fertilizer used in farm does not affect one's health					

6.	Use of organic farming practices is improves quality of vegetables					
7.	There is high market demand for organic vegetables					
8.	Organic vegetables can be sold easily					
9.	Total Organic farming cost is less than conventional farming cost					
10.	Adoption of organic farming practices is practically feasible					
11.	Adoption of organic farming practices involves no financial risk					
12.	Organic vegetables will get premium price					

IV. Barriers and constraints in Adoption of Organic Farming

Indicate the constraints which you feel in adoption of organic farming

Reasons	Tick mark
Production Factors	
Weather-related production losses	
Pest-related production losses	
Disease-related production losses	
Weed-related production losses	
Fertility-related production losses	
Low yield	
High cost of production	
High input costs	
Availability of organic inputs (feed, fertilizer, etc.)	
Availability of organic processing facilities	
Lack of understanding regarding organic production methods	
Other (please specify)	

Economic Factors	
Organic cultivation needs huge capital	
Lack of availability of funds	
Lack of subsidies	
High labour cost	
Knowledge Factors	
Lack of knowledge of organic farming practices	
Lack of awareness regarding availability of organic inputs	
Lack of knowledge regarding organic certification procedure	
Technical Factors	
Lack of training regarding organic farming practices	
Lack of training regarding organic inputs	
Lack of awareness programme regarding organic certification	
Difficulties in getting organic certification	
Difficult to access information about organic agriculture	
Environmental Factors	
Frequent climate change	
Problems related to cultivation practices of neighbor farm	
Unsuitability of land	
Marketing Factors	
Difficulty obtaining organic price information	
Uncertainty in obtaining organic price premiums	
Instability in organic market and/or prices	
Distance to available organic markets	
Competition with "non-organic" products	
Lack of organic marketing networks	

ANNEXURE-II

Survey schedule for Organic vegetable farmer

Socio-Economic Profile

Name of panchayath :

I. Individual details

1. Name :
2. Address :
3. Age :
4. Tel .no :
5. Educational qualification:

Illiterate ☐

UP to 12th standard ☐

Graduate ☐

P G ☐

Others ☐

II. Family details

1. Type of family: Nuclear ☐

Joint ☐

2. Household information:

Sl.no	Name and their Relation with respondent	Sex	Age	Education	Primary occupation
1					
2					
3					
4					

3. Primary occupation

Agriculture ☐ Non agriculture ☐ Not working ☐ Student ☐

Business ☐ Others(Specify)

4. Annual income:

III. Farm details

1. Total area under cultivation:
2. Land particulars

Particulars	Wet land	Garden land	Dry land	Total
1.Area owned				
2.Area leased in				
3.Area leased out				

2. Details of cultivation of the vegetables under study:

Sl.No	Vegetables	Area in acre	Production

3. How much will be the cost and return for the vegetable farming?

Vegetables	Expenditure	Price
Vegetable 1		
Vegetable 2		
Vegetable 3		

IV. Farming details

1. Practice in vegetable farming (years):
2. Have you attended any training programme in IPM/organic practices?

   Yes / No
3. Have you availing any financial support from Government or other institution?
4. Do you listen to agricultural programmes in All India Radio?

   Yes ☐ No ☐
5. Do you watch to agricultural programmes in TV Channels?

   Yes ☐ No ☐
6. Do you read any agricultural related magazines/ journals?

   Yes ☐ No ☐
7. How do you sell your vegetable produce?

Sl.no	Channel	Organic vegetables	Inorganic vegetables
1	Direct sale to consumers		
2	Through commission agents		
3	In wholesale market		
4	In Retail shop		
5	Through farmers market		
6	Others		

V. Attitude of farmers towards organic farming practices in vegetable cultivation

Sl. no	Statements	SA	A	NO	DA	SDA
1.	Organic farming improves fertility status of the soil					
2.	Organic farming is more easy than conventional farming					
3.	Only good quality seeds of known source can be used in organic farming					
4.	Organic farming practices are environmental friendly					
5.	Organic fertilizer used in farm does not affect one's health					
6.	Use of organic farming practices is improves quality of vegetables					
7.	There is high market demand for organic vegetables					
8.	Organic vegetables can be sold easily					
9.	Total Organic farming cost is less than conventional farming cost					
10.	Adoption of organic farming practices is practically feasible					
11.	Adoption of organic farming practices involves no financial risk					
12.	Organic vegetables will get premium price					

VI. Benefits from the certified organic vegetable

Sl.No	Benefits	Mark
1.	Receive premium prices for their products	
2.	Access local, regional, and international market	
3.	Protect natural resources	
4.	Hygienic	
5.	Support local economies	

6.	Access additional funding and technical assistance programs	
7.	Earn more profit	
8.	To aware the consumers	
9.	More demand for certified products	
10.	Financial assistance for certified organic vegetable farmers	
11.	Government subsidies can be easily available	

VII. Level of Satisfaction towards organic vegetable farming:

Sl.No	Statements	HS	S	NO	DS	HDS
1.	Demand for organic vegetables					
2.	Organic cultivation practices					
3.	Yield					
4.	Outlets for organic vegetables					
5.	Availability of inputs					
6.	Availability of labour					
7.	Price					
8.	Technical assistance					
9.	Government/institutional support					
10.	Certification procedure					
11.	Services of INDOCERT					

HS-Highly satisfied, S-Satisfied, NO-No Opinion, DS- Dissatisfied, HDS-Highly Dissatisfied

VIII. Barriers and constraints in Adoption of Organic Farming

Indicate the constraints which you feel in adoption of organic farming

Reasons	Tick mark
Production Factors	
Weather-related production losses	
Pest-related production losses	
Disease-related production losses	
Weed-related production losses	
Fertility-related production losses	
Low yield	
High cost of production	

High input costs	
Availability of organic inputs (feed, fertilizer, etc.)	
Availability of organic processing facilities	
Lack of understanding regarding organic production methods	
Other (please specify)	
Economic Factors	
Organic cultivation needs huge capital	
Lack of availability of funds	
Lack of subsidies	
High labour cost	
Knowledge Factors	
Lack of knowledge of organic farming practices	
Lack of awareness regarding availability of organic inputs	
Lack of knowledge regarding organic certification procedure	
Technical Factors	
Lack of training regarding organic farming practices	
Lack of training regarding organic inputs	
Lack of awareness programme regarding organic certification	
Difficulties in getting organic certification	
Difficult to access information about organic agriculture	
Environmental Factors	
Frequent climate change	
Problems related to cultivation practices of neighbor farm	
Unsuitability of land	
Marketing Factors	
Difficulty obtaining organic price information	
Uncertainty in obtaining organic price premiums	
Instability in organic market and/or prices	
Distance to available organic markets	
Competition with "non-organic" products	
Lack of organic marketing networks	

ANNEXURE-III

Questionnaire- Consumer behavior towards organic vegetables

1. Name of the respondent :
2. Age of the respondent:
3. Sex :
4. Occupation :
   - Agriculturist ☐
   - Businessman ☐
   - Government employee ☐
   - Professional ☐
   - Others (specify) ☐
5. Educational qualification of respondent :
   - Illiterate ☐
   - Below high school ☐
   - UP to 12th standard ☐
   - Graduate ☐
   - P G ☐
6. Type of family: Joint ☐ Nuclear ☐
7. Family size :

		No.	Male	Female	Children	Adult	Total
1	No. of members						
2	Vegetarian						
3	Non-vegetarian						

8. Average family income per month (Rs):
9. Specify the periodicity of purchasing of vegetables for your family :
   - Daily ☐
   - Twice in a week ☐
   - Weekly ☐
   - Otherwise (specify) ☐

10. Average expenditure incurred for purchasing vegetables/month

Category of vegetables	Average expenditure
Organic vegetables	
Inorganic vegetables	
Total	

11. From where do you purchase vegetables :

- Own farm production ☐
- Direct from neighbor farmers ☐
- whole sale Market ☐
- Retail market ☐

12. While purchasing the vegetables, important attributes that you likely to look for:

Sl.No	Attributes	Mark
1.	Price	
2.	Freshness	
3.	Shelf life	
4.	Nutrient value	
5.	Hygiene	
6.	Taste	
7.	Chemical Pesticide free	
8.	Visual attractiveness	
9.	Origin	
10.	Organic nature	
11.	Colour	
12.	Quality Certification	
13.	Packaging	

13. Are you a consumer of

Inorganically grown vegetables ☐ ganically grown vegetablesBoth ☐ ☐

14. Are you aware about organic vegetables?

Yes ☐ No ☐

15. Consumer Awareness towards organic vegetables

Sl. No	Items	Aware	Partially Aware	Not Aware
1.	Organic vegetables are available In the market			
2.	Organic vegetables are of best quality			
3.	Organic vegetables are nutritious than others			
4.	Organic vegetables are healthy			
5.	Organic vegetables are costlier.			
6.	Retail outlets for organic vegetables			
7.	Standards fixed for organic vegetable producers			
8.	Certification of organic vegetables			
9.	Organic vegetables are labeled with accurate information or organic status of products			
10.	Organic vegetable production is environment friendly			

16. If so the source of awareness

Newspaper ☐ azines Rad ☐ Television ☐ ☐

Friends & Relatives K ☐ bhavan ☐

17. Do you prefer organic vegetables? Yes ☐ No ☐

18. If yes, indicate your motives to prefer the organic vegetables

Motives	Rank
Hygiene / health factor	
Eco-friendly	
Better taste	
Lower residues	
Nutrient value	

For diet	
Freshness	
Availability	
Influence from friends or relatives	
Better value for money	
Advises from doctors	

19. If No, state the reason for not preferring the organic vegetables

Sl.No	Reason	Rank
1.	Too costly	
2.	Lack of confidence in the authenticity of organic vegetables	
3.	Lack of information to indicate the source of organic production	
4.	Don't trust the label	
5.	No noticeable difference in quality with inorganic vegetables	
6.	Lack of continuous availability of organic vegetables	
7.	No difference in taste of organic and inorganic vegetables	

20. Attitude towards organic vegetables

Sl.No	Statements	SA	A	NO	DA	SDA
1.	Organic vegetables are less perishable than inorganic vegetables					
2.	Organic vegetables are more cheaper than inorganic vegetables					
3.	Organic vegetables are good quality vegetables					
4.	Organic vegetables are affordable for common men					
5.	Availability of organic vegetables are proper					
6.	Organic vegetables are more nutritious than conventionally produced vegetables					
7.	Organic farming conserves soil and less negative impact on environment					

8.	Organic vegetables contains less pesticide residue than inorganic vegetables					
9.	Source of information on organic vegetables are adequate					

21. Level of consumer satisfaction towards organic and inorganic vegetables

Sl.No	Statements	Organic vegetables					Inorganic vegetables				
		HS	S	NO	DS	HDS	HS	S	NO	DS	HDS
1.	Price										
2.	Taste										
3.	Nutrient value										
4.	Freshness										
5.	Shelf life										
6.	Availability of vegetables										
7.	Marketing channels										
8.	Eco-friendliness										
9.	Hygiene										
10.	Source of information										
11.	Authenticity of organic nature										
12.	It gives value for money										

HS-Highly Satisfied S-Satisfied NO-No Opinion DS-Dissatisfied HDS-Highly Dissatisfied

22. Determinants of consumer attitude towards organic vegetables

Sl.No	Determinants	Very Important	Important	Not Important
	Economic factors			
1.	Affordable price			
2.	Economic status			
3.	Value for money			
	Quality factors			
4.	High nutrient value			

5.	More calories			
6.	Chemical & pesticide free			
7.	Hygienic			
	Taste			
8.	Freshness			
	Environmental factors			
	Eco-friendly vegetables			
9.	Enviormental concern			
	Personal factors			
10.	Awareness on organic vegetables			
	Influence of family			
11.	Health concern			
	Availability factors			
12.	Availability of vegetables			
13.	Availability of information			
14.	Distance to the market			

ANNEXURE-IV

ANOVA TABLE

Source of variation	df	Mean square	F	Mean scores of districts	
				District	Mean
Farmer attitude towards organic vegetable farming					
Between districts	2	12.792 ^{NS}	0.542	Thrissur	64.17^{a}
Error	27	23.607		Palakkad	63.17^{a}
Total	29			Ernakulum	64.67^{a}
Consumer awareness about organic vegetables					
Between districts	2	93.333 ^{NS}	11.311	Thrissur	72^{a}
Error	27	48.519		Palakkad	67.5^{a}
Total	29			Ernakulum	68.5^{a}
Consumer attitude towards organic vegetables					
Between districts	2	142.934**	1.924	Thrissur	64.89^{a}
Error	27	12.636		Palakkad	71^{b}
Total	29			Ernakulum	70^{a}
Consumer satisfaction towards organic vegetables					
Between districts	2	258.489**	12.246	Thrissur	70.334^{a}
Error	57	21.109		Palakkad	69.33^{a}
Total	59			Ernakulum	63.87^{b}
Consumer satisfaction towards organic vegetables					
Between districts	2	508.119**	79.711	Thrissur	70.18^{a}
Error	27	6.374		Palakkad	70.55^{a}
Total	29			Ernakulum	62.00^{b}

**: P <0.01 significant at 95 percent

NS: Non-Significant