

**MARKET-LED EXTENSION INITIATIVES OF THE
DEPARTMENT OF AGRICULTURE DEVELOPMENT
AND FARMERS' WELFARE, KERALA: AN ANALYSIS**

By

PARVATHY SASIDHARAN

(2019-11-116)



DEPARTMENT OF AGRICULTURAL EXTENSION

COLLEGE OF AGRICULTURE

VELLANIKKARA, THRISSUR- 680 656

KERALA, INDIA

2021

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THESIS

*Submitted in partial fulfilment of the
requirement for the degree of*

Master of Science in Agriculture

Faculty of Agriculture

Kerala Agricultural University, Thrissur



DEPARTMENT OF AGRICULTURAL EXTENSION

COLLEGE OF AGRICULTURE

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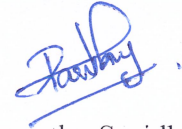
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DECLARATION

I, hereby declare that this thesis entitled “Market led extension initiatives of the Department of Agriculture Development and Farmers’ Welfare, Kerala: An analysis” is a bonafide record of research work done by me during the course of research and that it has not been previously formed the basis for the award to me of any degree, diploma, fellowship or other similar title, of other University or Society.

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Parvathy Sasidharan

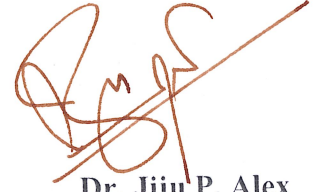
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CERTIFICATE

Certified that this thesis, entitled “Market led extension initiatives of the Department of Agriculture Development and Farmers’ Welfare, Kerala: An analysis” is a bonafide record of research work done independently by Ms. Parvathy Sasidharan (2019-11-116) under my guidance and supervision and that it has not previously formed the basis for the award of any degree, diploma, fellowship, or associateship to her.

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Introduction

Chapter 1

INTRODUCTION

Kerala is a state with uniquely diverse agro-climatic conditions, which enable cultivation of many types of crops. In addition to traditional crops like rice, coconut and spices, that contribute much to Kerala's economy, vegetable production has also gained significance recently. It is reported that production of vegetables has increased from 6.5 lakh tonnes in 2016 to 9.5 lakh tonnes in 2019 (The New Indian Express, 2019). Area under vegetable cultivation in the state has also increased from 52,830 hectares in 2016-17 to 82,166 hectares in 2018-19 (GOK, 2021). However, Kerala is known to be a consumer state even now. As reported by The Hindu (2010), more than 1500 crores worth of vegetables are imported to the state every year.

Since vegetables are perishable and seasonal, farmers face a number of uncertainties from the initial stages of production till marketing. The highly perishable nature of vegetables warrants an efficient marketing system among various other pre requisites, to help farmers sustain their production. It is estimated that almost 30 per cent of vegetables produced in the state are wasted every year. This is mostly due to lack of proper infrastructure facilities, higher marketing cost, unpredictable price behaviour *etc.* This has necessitated meticulously planned production schedules aligned with market opportunities. The producers also require logistic support and reliable information on market trends for exploring better selling options. Complying with quality standards to ensure acceptability among different types of consumers is another important factor that would help farmers acquire better marketing opportunities. This implies that farmers have to be made aware of different methods and techniques of market -oriented production. Moreover, they have to be provided with real time information on market trends as well. This could be done only by extension agencies, through concerted efforts to orient them to market-led production. Even though there are schemes that address problems related to marketing, lack of efficient advisory system and proper delivery of services makes farmers incompetent in the market. Extension systems need to respond to these challenges correspondingly.

Market-led extension is a concept which got evolved as an outcome of the adaptation of conventional extension to the requirements demanded by the market. This new approach would address the information and technology needs of farmers to help them respond to the markets and provide feedback from the grass-roots to development departments, research institutions and stakeholders (Nafees and Slathia, 2011). It would also enable farmers to transform themselves from mere producer seller to best realizers of their returns on investment, risk and efforts.

Academically, market-led extension is a blend of agricultural marketing, agricultural extension and agricultural economics. In practical terms, market-led extension would equip farmers with market information, which includes demand and supply forces in the market and knowledge on production technologies. This approach of extension demands the extension personnel to be trained to acquire new skills to impart training to farmers. As farmers require to be aware of quality, consumer preferences, market intelligence, processing, value addition *etc.* (Kumar *et al.*, 2012), the extension content also should include such subjects.

Even though the concept of market-led extension has gained prominence in the academic circles, this has not been mainstreamed in public extension system till recently. However, there has been lot several efforts for establishing new markets, opening up of new market channels, managing value chain *etc.* The role of extension personnel in this context would be analysis of the strength, weakness, opportunity and threats of various marketing options for agricultural produce and creating awareness on the back-end processes of marketing. On the other hand, at the operational level, extension agencies will have to focus on fostering Farmers' Interest Groups (FIGs) on commodity basis, enhancing the communication skills of farmers to interact with customers and other market forces (middlemen), establishing marketing and agro-processing linkages between farmers' groups, markets and private processors and finally encouraging the use of IT and other media for market intelligence and information dissemination (Roy, 2019).

There are different factors that affect the marketing efficiency of farmers. Marketing cost, marketing margin, transport cost, labour charges do affect the marketing efficiency of farmers. It is also influenced by open market prices, volume of produce

handled and net price received. Marketing efficiency would be more in direct marketing channels as there would be only few interceding points. It has been observed that government policies should promote direct marketing models for efficient marketing, for which extension interventions are essential. (Dastagiri *et al.*, 2013).

Kerala has been consistently trying to promote agricultural production with more focus on vegetable cultivation in recent years. As a result of this, vegetable production has increased substantially as per the reports of various agencies. It has been estimated that vegetable production would increase in coming years as well if this trend continues. This probable increase in production would necessitate establishment of efficient mechanisms of managing supply chain and value chain in different types of vegetables.

This study, therefore, is intended to address the issue of extension gaps in marketing of vegetables and the adequacy of various government programmes dealing with vegetables. The study also aims at examining different components of marketing integrated in such programmes and how farmers are provided with market-oriented extension services. The study has the following specific objectives:

Objectives of the study

- To identify market-led extension initiatives of the Department of Agriculture Development and Farmer's Welfare, Government of Kerala
- To characterize these initiatives in terms of selected parameters
- To examine the effectiveness of innovative market interventions piloted by the Department

Scope of the study

The present study is proposed to identify various marketing interventions adopted by the Department of Agriculture and evaluate their effectiveness. The study also analyses the content and components involved in these programmes so as to assess the implementation strategies and constraints, if any.

Thrissur district is purposively selected for the study owing to the fact that all the major market-oriented programmes have been implemented in this district. Also, an innovative programme on marketing which provides assistance for procurement of

produce namely 'Karshakamithra' has been piloted in this district. The three programmes selected for the study are Ecoshop, Karshakamithra and Weekly Markets.

Ecoshops were established under the Department of Agriculture Development and Farmers' Welfare, Kerala as a part of strengthening the marketing of organic produce and ensuring profitability for farmers. Karshakamithra is a component under the scheme 'Strengthening Market Development' which is intended to bridge the gap between department and farmers and to ensure market for surplus agricultural produces from the households of small-scale farmers. Grama panchayat level Weekly Market was also established as a part of strengthening market development schemes to provide farmers with opportunity for direct marketing.

The results of this study mainly focus on different components that are required to make farmers more competent in the market. The study would try to list out those factors which make these marketing interventions more effective. The role of efficient advisory services is very much important in all these interventions. As discussed earlier, extension personnel also need to be imparted with different skills for capacity building in the domain of marketing.

The study would attempt to identify the key concerns of beneficiary farmers with this regard to transparency and accountability of the related market led programmes. This would also help the government implement new marketing strategies with more efficiency and transparency. This may definitely help the farming community address the uncertainties in marketing their produce.

Limitations of the study

Even though the study was intended to bring out comprehensive, accurate and practically relevant recommendations, there had been certain limitations during the process of research, which are listed below:

- Due the Covid-19 pandemic, data collection became difficult and the sample size had to be reduced

- Covid-19 pandemic had also affected the functioning of these schemes in some of the panchayats which made it difficult for the researcher to collect primary data from intended sources
- The results of the study were based on perception of farmers which might be influenced by individual biases. This might limit the scope of generalisation of inferences drawn from the study

Organization of the thesis

The thesis has been organized under five chapters for easy handling. Chapter one deals with introduction and objectives of the study. Chapter two provides a review of relevant literature related to the objectives and points of observations of the study. The methodology used in the study has been presented in chapter three along with operationalization of variables and statistical tools used. Chapter four deals with the results and discussions based on data analysis. The final chapter includes summary and conclusion of the study. These are followed by bibliography, appendix and abstract.

Review of Literature

Chapter 2

REVIEW OF LITERATURE

Literature review is intended to summarize and synthesize the existing knowledge in a given field of study. It would help the researcher understand not only the previous findings, but also get directions for future research. A comprehensive review of literature is an essential part of any scientific research. Review of related works would provide the theoretical background of research. Review of literature related to this study is presented under the following subtitles:

- 2.1 Agricultural marketing: Major concepts
- 2.2 Marketing of vegetables
- 2.3 Concept of market-led extension
- 2.4 Content of market -led extension systems
- 2.5 Components of market-led extension programmes
- 2.6 Personal and psychological attributes of beneficiaries
- 2.7 Perception towards market-led extension programmes
- 2.8 Constraints faced by the beneficiaries of market-led extension programmes

2.1 Agricultural marketing: Major Concepts

Agricultural marketing is a process which would start with the production of a saleable farm commodity. This involves all the aspects of market structure or system, including financial, institutional, technical and economic considerations. This would also include pre- and post-harvest operations, assembling, grading, storage, transportation and distribution. Importance of agricultural marketing was emphasised by Acharya and Agarwal (1987) stating that it would help optimise resource use and output management, increase farm income, widen markets, develop agro-based industries, signal prices, adopt and spread new technologies, create employment, add to national income, ensure better living and create utility like form utility, place utility, time utility and possession utility.

In a similar description, Rehman *et al.* (2012) pointed out that agricultural marketing included all activities involved in moving agricultural produce from producers to consumers through time (storage), space (transport), form (processing) and transferring ownership at various levels of marketing channels.

Agricultural marketing as an academic discipline was defined by Srivastava (2012) as a subject which deals with marketing functions, agencies, channels, efficiency and costs, price spread and market integration, producer's surplus, government policy and research, training and statistics on agricultural marketing and imports/exports of agricultural commodities.

Vadivelu and Kiran (2013) defined agricultural marketing as the commercial function of moving products from producers to consumers. According to them, this would also include functions involved in supply of produce from rural to rural, rural to urban and rural to industrial consumers. They also pointed out that agricultural marketing involved a great deal of risk due to seasonality in production and perishability of the produce which were the major determinants of price.

These definitions substantiate the fact that agricultural marketing is a complex activity with diverse components and it requires expertise to manage various marketing functions.

2.2 Marketing of vegetables

Out of the common agricultural commodities marketed, vegetables assume greater importance due to the fact that they are required in large numbers for daily use and they are perishable. With regard to this, Sharan and Madhavan (1999) opined that marketing system of vegetables seemed to be different from marketing of other commodities particularly in providing time, space and utility. The spectrum of prices from producer to consumer, which was an outcome of demand and supply of transactions between various intermediaries at different levels in the marketing system, was also unique for vegetables. He further added that this peculiarity had made the vegetable marketing system quite risky and complex.

Comparing vegetable marketing with that of other crops, Singh (2005) observed that like any marketing system, vegetable marketing was a process which began with the decision to produce a saleable commodity and involved all aspects of market structure including functional, institutional, technical and economic considerations. It also included more complex pre- and post-harvest operations like assembling, grading, storage, transportation and distribution.

As regards perishability of vegetables and the risks involved thereof, Baba *et al.* (2010) in his study on marketed surplus and price spread of vegetables in Kashmir valley observed that no part of surplus vegetables could be hoarded in anticipation of rising price due to its perishable nature. He also observed that almost 92 per cent of total vegetable production in the farm contributed to marketed surplus.

The review showed that marketing of vegetables deserved special attention and treatment due to its importance and perishability, which would also necessitate focused interventions for vegetable marketing.

2.2.1 Factors affecting marketable surplus of vegetables

Several authors have defined marketable surplus and identified factors that affected marketable surplus. Acharya and Agarwal (1987) defined marketable surplus as the quantity of produce which could be made available to the nonfarm population, that is, the residual left with the producer/farmer after meeting his requirements for family consumption, seeds, feed for cattle, payment to labour in kind, payment to artisans, payment to landlord as rent and social and religious payments in kind.

In a study on regional variations in food grains, marketable and marketed surplus in Uttar Pradesh, Bajpai (1994) identified 'yield' and 'marketable surplus' as the most important factors that determined market arrivals.

Market decision by the farmers was found to be another crucial factor that determined marketable surplus. In this regard, Varadarajan and Bose (2005) had the opinion that marketing decision of farmer producer would always depend on their marketable surplus, which they defined as the difference between total production and total retention.

Singh (2005) in his study on the economics of production and marketing of vegetables in Madhya Pradesh found that increased production resulted in an increased percentage of marketable surplus, which would further lead to increase in demand accompanied by rapid improvements in the existing vegetable business system. He also emphasised the importance of an efficient and robust marketing mechanism which involves all aspects of marketing including functional and institutional related factors based on both technical and economic considerations. These reviews substantiate the importance of establishing a good system of marketing.

2.2.2 Marketing network

Efficient and responsive marketing networks are invariably the most important pre-requisite for better marketing of perishable commodities. Acharya and Agarwal (1987) described marketing channels as the routes through which agricultural products moved from producers to consumers.

Subrahmanyam (1999) in his study on risk reducing and efficient marketing strategies for perishables, fruits and vegetables found out that producer- commission agent- wholesaler- retailer- consumer as the most popular channel for marketing of tomato. The study also suggested linking of vegetable marketing with processing units established in the same production area in-order to reduce post-harvest losses.

According to Srivastava (2012), an agricultural marketing system included two major sub-systems viz. product marketing and factor marketing. The product marketing sub-system included farmers, village/primary traders, wholesalers, processors, importers, exporters, marketing cooperatives, regulated marketing committees and retailers. The input sub-system included input manufacturers, distributors, related associations, importers, exporters and others who made available, various farm production inputs to farmers.

Emphasising the importance of marketing channels as a means that would exploit the right of farmers and consumers, Sandika (2011) stated that though the middlemen exploited the right of farmers and consumers, they played a major role in collecting, grading, storage, distributing and selling in the vegetable marketing channels.

Dastagiri *et al.* (2013) in their study on the production trends, marketing efficiency and export competitiveness of Indian vegetables noticed that marketing channel of majority of the crops was *producer-wholesaler-retailor-consumer*. However, in some cases, ‘*middlemen*’ were found in the place of ‘*wholesaler*’ followed by *producer-retailer-consumer*. *Producer – consumer* was also found to be a commonly occurring channel.

It is to be noted that marketing channels and market actors varied widely for different crops and locations. Hassan (2013) in his study on improving marketing system performance for fruits and vegetables in Bangladesh, identified that marketing channels and market actors varied widely with types of produce and production locations. He also found out that majority of the marketing channels involved a large number of intermediaries including commission agents, wholesalers and retailers. According to him, only few of them consisted of a smaller number of intermediaries.

2.2.3 Price and business turnover

When market-oriented programmes are studied in detail, it is important to explore price trends and the reasons behind them. The three main functions of agricultural prices as mentioned by Mellor (1978) are: to serve as an allocator of resources, to signal both producers and consumers regarding the level of agricultural production and consumption, and act as a distributor of income and influence on capital formation.

Zivenge (2007) in his study on market access for smallholder tomato farmers in east province of Zimbabwe found out that a steep rise in the price of food grains might fulfil the goal of providing remunerative income to farmers, but it might surely affect standard of living of agricultural labourers, other wage earners and non-farm consumers who bought the food grains and therefore continuous watch on price behaviour was essential.

He also had the opinion that fluctuations in price served as the most important element which contributed to farm risk. This change could occur from year to year, month to month or even from day to day. As a result of this, farmer found it difficult to plan production in-order to cope with the price change.

Junagad and Hugar (2011) in their study on the market structure of Raichur vegetable market in Karnataka revealed that market infrastructure facilities including grading was the most important factor which influenced the turnover of the market.

2.2.4 Infrastructure

Many authors had emphasised the need to develop adequate infrastructure for developing markets. Chauhan (2004) in his study conducted in Himachal Pradesh on infrastructural development and constraints in vegetable market found out that around 96-98 per cent of vegetable farmers depended on hand grading and packaging in the absence of machine facilities for the same.

Gandhi and Namboothiri (2002) in their study that compared three markets in Ahmedabad concluded that degree of perishability, variety and quality, various market imperfections and market infrastructure were the main factors which influenced the marketing costs and price levels of vegetables. Producers' share in consumer rupees was found to be relatively high in areas where better infrastructure facilities including cold storage facilities for marketing were made available. Based on their experience, they also pointed out that cold storage would be an excellent addition to the infrastructure of vegetable markets.

Kumar (2012) while exploring problems of marketing vegetables in farmers' market conducted in Theni, Madhurai and Ramnad stated that marketing of vegetables required infrastructure facilities particularly for transportation, grading, labelling, packing *etc.* in-order to create a wider market for them.

2.3 Concept of market-led extension

Market-led extension assumed significance with the advent of neo liberal economic policies which had led to an increased emphasis on commercial production by farmers in view of market opportunities. The concept of market-led extension became more prominent in the context of existing gaps in the skill sets of farmers and extension personnel with regard to marketing. Orienting farmers to the dynamics of markets and techniques of marketing would necessitate extension programmes with elements of marketing. In this regard, the Expert Committee on Agricultural Marketing (2001)

pointed out that massive programme of marketing extension should be initiated at the field level and extension messages need to incorporate all dimensions of marketing.

Reddy and Chandrasekhara (2002) described market-led extension as one of the new dimensions of agricultural extension that envisaged farming as an enterprise with diversified options of technology packages to suit different farming situations.

Discussing the essential contents of market-led extension, Singh *et al.* (2004) opined that extension education needed to be focused on marketing aspect, particularly on the ways to produce more quantitative and qualitative products, for export-oriented standard from existing available resources to create new avenues of income generation.

Khaleel *et al.* (2007) visualised market-led extension as a perfect blend for reaching the farming community with appropriate technology. They also emphasised that market-led extension would mainly focus on its shift from content to function, stressing the need of agricultural extension to be more than just a delivery vehicle for agriculture technology.

Shitu *et al.* (2013) in their study on the prospects and challenges of market-led extension for agricultural sustainability in the 21st century concluded that market-led extension system helped minimize the production costs as well as improve the farmers' products through value addition. They also stated that extension functionaries should work more on the area of marketing through the use of extension strategies in order to disseminate not only production but also marketing related information for holistic sustainable agricultural development.

Emphasising on the key function of providing information on market-oriented approaches to farmers, Thakur (2017) defined market-led extension as a tool for effective delivery of adequate and quality information to farmers for effective decision on production and marketing issues so as to realize an optimum return for their investment without jeopardizing the need of the future generation. He further stated that market-led extension had a great potential in paving way for optimum production on a sustainable basis, considering the current trend of challenges in the process of food production globally.

Market-led extension, as a discipline is synthesised by content drawn from agriculture, economics and extension. In this regard, Krishna *et al.* (2019) observed that market-led extension in which agriculture and economics coupled with extension would be the perfect blend for reaching at the door steps of farming community with the help of technology.

Substantiating this, Roy (2019) opined that market-led extension considered farmers as agripreneurs, and enabled them to get high returns (money to money) out of the entire farming enterprise. The major objective of this concept is to build up and use effective extension methodologies for providing need-based support to farming community in marketing of their produce.

As evident from the review of literature on the concept of market-led extension given above, it could be observed that there are distinct differences between the conventional model of production led extension and market-led extension. More so, many authors had even urged a paradigm shift from production led extension to market-led extension to equip farmers to make use of the emerging challenges and opportunities. The most important aspects based on which production- led and market-led extension would differ from each other shall be summarised as given in Table 2.1

Table 2.1 Paradigm shift from production led to market-led extension

Aspects	Production-led extension	Market-led extension
Purpose	To transfer production technologies	Ensure farmers with optimum return
Expected end results	Delivery of package of practices	High returns
Farmers	Progressive	Entrepreneur
Focus	Production	Whole process as an enterprise
Technology	Fixed package for an agro-climatic zone, irrespective of different farming situations	Diverse package of practices
Extension personnel's role	Messages, training or motivation, Limited to delivery and feedback system	Joint analysis of the issues and different choices for consultancy, Establishment of marketing and agro-processing linkages among farmer groups, markets and processors
Linkages	Research-Extension-Farmer	Research-Extension-Farmer along with market linkages
Maintenance of Records	Not much important	Very important
Information technology support	Focus on production technologies	Market intelligence

(Nafees and Slathia, 2011; Kumar *et al.*, 2012; Thakur, 2017; Kokate *et al.*, 2016)

2.4 Content of market-led extension

As discussed above, market-led extension as a discipline and practice would consist of different distinct components as explained below by different authors.

Khan *et al.* (2012) identified the major aspects of market-led extension system as agriculture policy and acts, supply chain management, market information services, market intelligence, crop insurance, contract farming, developing market for organic products, processing and value addition, post-harvest management, commodity marketing & future trading, SWOT analysis of market, international trading and implications of WTO regime on agriculture *etc.*

Similarly, Kumar *et al.* (2012) in his study on the transition of production driven to market driven extension approach pointed out the basics of market-led extension as market-oriented production, updated knowledge of market, market intelligence, use of technology and other appropriate extension approaches.

As regards the principles of market-led extension, Gebremedhin *et al.* (2012) observed that market-oriented extension followed certain key principles which included resource-based approach, consistency with business principles, commodity development approach, value chain framework, and bottom-up and participatory approach.

With regard to the content of market-led extension as a practice, Shitu *et al.* (2013) in their study on prospects and challenges for agricultural sustainability in the 21st century stated that market - led extension mainly focused on taking decision on what to produce, how to produce, how much to produce, when to sell, where to sell, at what price to sell *etc.* They also stated that market-led extension laid due emphasis on post-harvest management, value addition, storage, transport, analysis of land holding suitability of enterprise or crop, investment decisions and income.

According to Sivaraj (2020), major thrust areas of agricultural marketing extension are post-harvest management, commodity marketing, storage, transportation and other extension strategies like market research, information networking *etc.* Of these, post-harvest management included techniques for reduction in post-harvest losses, value addition, agro processing and other research and development activities. Commodity marketing consisted of marketing strategies like assembling, storage and grading, packaging *etc.* Storage and transportation gave due emphasis on type, method and cost of storage, transportation cost *etc.*

2.5 Components of market-led extension programmes

Market-led extension programmes implemented by various development departments and development agencies consist of several discrete components. Any market-led extension programme would invariably require market infrastructure, finance, capacity building *etc.*

In this regard, Prasad and Krishna (1996) in their study on vegetable marketing system in Bihar found that there were several market development programmes implemented in different states as a part of state agricultural board. The major components or activities of these programme were establishment of open auction platform, market yards, market information network, dissemination, storage structures and other infrastructural facilities.

Kumar *et al.* (2012) observed that transparent market led organizations enhanced farmers' access to market, agricultural technologies and helped foster their productivity. It was also observed that government through these schemes had invested in market infrastructure, capacity building, access to finance and thereby established better governance and an accountable system.

2.6 Personal and psychological attributes of the beneficiaries

It has been observed that personal and psychological attributes would influence the attitude and orientation of people towards development significantly. The personal and psychological attributes of the respondents of the study were analysed to find out the relationship between these variables with various dependent variables selected for the study.

2.6.1 Age

Many authors have found age to be an important factor that influence attitude and orientation of an individual. Rajpraveen (2000) while assessing the training needs of the members of farmers' market reported that majority (50%) of vegetable growers belonged to middle aged category and 36.6 per cent were young.

Similarly, Jahagirdar and Sundarasamy (2002) reported that majority of vegetable growers that they had interviewed were in old age category.

Kamalakannan (2003) in a study conducted in Palakkad to explore the research and extension gaps in commercial vegetable farming pointed out that almost 75 per cent of vegetable farmers belonged to middle-aged category and the rest belonged to low age group and high age group in the order of their frequency.

Roopa (2018) reported that 40 per cent of the cabbage farmers were in young category, 40 per cent in middle aged category and the remaining 20 per cent were old aged. In the case of cucumber farmers, 40 per cent belonged to young category followed by 30 per cent both in middle aged and old aged categories. Almost similarly, in the case of tomato growers, 50 per cent belonged to middle aged group, 30 per cent in young category and 20 per cent in old category.

2.6.2 Gender

Gender difference was observed to be an important aspect of observation while studying market-led extension programmes. This was because of the fact that women were mostly involved in agricultural operations including marketing and it was important to ensure gender equity. Thakur (2019) in his study on farmers attitude towards adoption of market led production in Himachal Pradesh observed that 61.6 per cent of his respondents were male and 38.3 per cent of them were female.

2.6.3 Family type

Since family labour is an important factor that determines the sustainability of vegetable cultivation, it was decided to find out the type of families of the respondents and how it influenced their orientation on market led programmes. In this regard, Ratha (1985) had observed that 45 per cent of vegetable growers deriving benefits from marketing programmes had family members between 4-6 and 42 per cent had 7–12-member family size.

Similarly, Ramesh *et al.*, (2005) also observed that majority of organic vegetable farmers in Perdukottai district in Tamil Nadu belonged to nuclear family with more than five members. However, Desai and Solanki (2013) found that size of family of cabbage growers had no significant relation with adoption of market-oriented farming.

Manjunath (2015) in his study on analysis on MG-6 and Mulbagal APMCs in Karnataka, reported that majority of farmers involved in vegetable marketing in Kolar district in Karnataka belonged to nuclear families.

2.6.4 Level of education

Since marketing is a knowledge intensive activity which require better understanding of the market and its tendencies, it was found appropriate to examine the level of education of the respondents and their orientation to market-led extension programmes. In this regard Pochiah *et al.*, (1993) pointed out that majority of vegetable farmers had primary level of education followed by high school, illiterate, middle school and collegiate.

Alagirisamy (1997) in his study on knowledge and adoption behaviour of vegetable growers reported that 52.5 per cent of vegetable growers had middle school education followed by secondary school (29.16%) and primary school education (18.34%). There were no illiterate farmers among the respondents of his study.

Atibudhi (1998) in his study on the role of market committee in regulating malpractices in Orissa observed that education had a positive and significant relationship with marketing behaviour of farmers.

Kamalakannan (2003) observed that majority of vegetable farmers (70%) in Palakkad district had medium level of education. As much as 5 per cent had high level of education and 25 per cent had low level of education.

2.6.5 Farming experience

As reported by many authors, farming experience would influence marketing strategies of farmers to a great extent. Sharma *et al.* (1995) in their study on marketing of vegetables in Himachal Pradesh noted that farming experience had a positive and significant influence on marketing behaviour of farmers.

However, Agarwal and Saini (1995) in their study on vegetable marketing-in Jaipur reported that farming experience of vegetable farmers had no significant relationship with their marketing behaviour.

Reiterating the significance of experience in vegetable farming, Alagirisamy (1997) observed that almost 90 per cent of farmers involved in vegetable farming had more than ten years of farming experience.

Kamalakannan (2003) observed that majority of vegetable farmers (68.75%) had medium level of farming experience, 21.25 per cent had high level of farming experience and 10 per cent had low level of farming experience.

Thakur (2019) in his study on farmers' attitude towards adoption of market led production in Himachal Pradesh found out that majority of his farmer respondents (33.3%) had farming experience of 3-5 years followed by 30 per cent with more than 8 years, 20 per cent with 5-8 years and 16.7 per cent with less than 3 years.

2.6.6 Area under cultivation

Area under vegetable cultivation is a factor that would affect marketable surplus and the scales and modes of marketing. Usually, small and marginal farmers find it difficult to market agricultural produce in places that do not have efficient marketing mechanisms. Sharma *et al.* (1995) in their study on marketing of vegetables in Himachal Pradesh noted that land holding of farmers had significant influence on their marketing behaviour.

Manjunath (2015) in his study on analysis of two markets in Karnataka district, viz. MG-6 and Mulbagal APMC, observed that majority of farmers involved in vegetable marketing in Kolar district in Karnataka were small farmers (up to 5 acres) followed by medium farmers (5-10 acres) and large farmers (>10 acres). However, farmers' preference on both the markets varied significantly. In the case of MG-6 market, farmers' preference mainly depended on remunerative price followed by infrastructure facilities, reasonable market charges, proximity, immediate payment and competitive environment, where as in the case of Mulbagal APMC, preference of farmer producer depended on remunerative price followed by acceptance of small quantities, immediate payment, reasonable market charge, proximity and competitive environment.

Roopa (2018) in her study on awareness and satisfaction level of vegetable growers towards marketing facilities at Chikkaballapura APMC categorized her respondents into three groups, viz. marginal farmers (below 2.5 acre), small farmers (2.5-5 acres) and big farmers (above 5 acres). She observed that 36.67 per cent of the cabbage growers were marginal farmers. Big farmers constituted around 33.33 per cent and 30 per cent was small farmers. In the case of cucumber farmers 40 per cent were marginal

farmers, 33.33 per cent were big and 26.67 per cent were small farmers. However, 36.67 per cent of tomato farmers belonged to small farmers' category, 33.33 per cent were in marginal farmers' category and 30 per cent belonged to big farmer category. However, the size of land holding of the farmer respondents had no significant influence on developing favourable attitude towards the market.

2.6.7 Annual income

Annual income serves as an important determinant of farmers' way of handling and marketing their produce, since it would directly affect the living condition of the farmer producer. Holikatti (1991) revealed in his study conducted in Karnataka that annual income of chilly farmers had a positive and significant influence on marketing behaviour of farmers.

However, Ramesh *et al.* (2005) reported that majority of organic vegetable farmers in Perdukottai district in Tamil Nadu had a low annual income.

Noobiya (2006) concluded in her study conducted in Thiruvananthapuram district that 44.44 per cent of the bitter gourd farmers had an annual income of more than 2 lakh followed by 38.89 per cent with annual income between 1 lakh and 2 lakh and 16.637 per cent with less than 1 lakh.

Thakur (2019) in his study conducted in Himachal Pradesh observed that 33.33 per cent of farmer respondents were having an income between Rs 10000-25000, 28.3 per cent of them had income between Rs 25000-45000, 21.7 per cent had income less than Rs 10000 and 16.67 per cent had income above Rs 45000.

2.6.8 Extension contact

Extension contact plays an important role in the marketing behaviour of farmers since it aids and facilitate the gap in transformation from a production led system to a market led system in several ways. Lack of extension contact among farmers is found to reduce the market value of their produce. Jahagirdar and Sundarasamy (2002) in their study on adoption of recommended practices of tomato cultivation found out that majority of tomato growers (70%) had low extension contact and 30 per cent of them had high extension contact.

Similarly, Ramesh *et al.* (2005) reported that majority of organic vegetable farmers in Perdukottai district in Tamil Nadu had a medium level of extension contact. However, Namitha (2017) in her study conducted in Thiruvananthapuram district pointed out that majority of the respondents had regular contact with agricultural officers, agricultural assistants and officials of Vegetable and Fruit Promotion Council, Keralam.

Roopa (2018) in her study on awareness and satisfaction level of vegetable growers towards marketing facilities at Chikkaballapura APMC observed that majority of the vegetable growers, mainly involved in cabbage, cucumber and tomato cultivation had medium level of extension contact followed by low and high level of contact.

2.6.9 Knowledge on marketing strategies

Farmers have to be made aware of different methods and techniques of market - oriented production. This would influence their market behaviour and thereby increase the market value of their produce. Hence, knowledge on marketing strategies is very important. In this regard, Naghabhushana (2001) in his study on marketing practices and problems of vegetable growers conducted at Kolar district in Karnataka observed that majority of vegetable growers had low level of marketing knowledge.

However, Shukla and Jharkharia (2013) in their review on Agri-fresh produce supply chain management, observed that less knowledge on technology, market demand and financial incentives had led to lack of proper planning and management practices in vegetable supply chain.

Islam *et al.* (2019) in his study on farmers' constraints on vegetable marketing in Bangladesh observed that knowledge on vegetable marketing and availability of marketing information had a significant, but negative influence on marketing constraints faced by the farmers selected for the study.

2.6.10 Market orientation

Proper orientation of farmers towards market and related aspects will enable them to sell their produces at reasonable prices and get better income. Jaganathan (2004) in his study on organic farming practices in Thiruvananthapuram district reported that majority (55%) of his respondents had medium level of market orientation. He also

observed that farmers' awareness and attitude towards organic farming practices had direct and significant influence on market orientation.

However, Patel *et al.* (2013) while studying the adoption of eco-friendly management practices by vegetable growers in Indore block of Indore district (M. P), identified that market orientation had no significant effect on adoption of eco-friendly management practices among vegetable growers.

Noobiya (2016) in her study on technology utilization of bitter gourd in Thiruvananthapuram district observed that market orientation of bitter gourd farmers in the district was high irrespective of different panchayats in the district. There had also been different observations, as Namitha (2017) reported in her study conducted on commercial vegetable growers of Thiruvananthapuram district that, more than half of the respondents (55%) had a medium level of market orientation.

2.6.11 Attitude of farmers towards marketing initiatives

Effective and efficient working of an agriculture development programme depends on farmers' attitude towards the same. Developing favourable attitude of farmers towards the development initiatives is at most important. Mani and Knight (1981) in their study on Factors associated with participants' and non-participants' attitude towards regulated market, pointed out that almost 75 per cent of the farmers had a favourable attitude towards regulated markets. 13.33 per cent of them had most favourable attitude and 11.67 per cent of them least favourable attitude.

Similarly, Nijagonda (2000) in his study on attitude, communication and marketing pattern of red gram growers in Bidar district observed that almost 66.67 per cent of farmers had favourable attitude towards regulated markets followed by 12.5 per cent with more favourable and 20.83 per cent with least favourable attitude.

However, Srinivas (2003) reported in his study on farmer's attitude towards regulated markets and marketing practices of tomato growers in Kolar district that, there existed a significant association between attitude of farmers towards regulated markets and their education, cosmopolitaness, mass media participation and extension contact.

Roopa (2018) in her study on awareness and satisfaction level of vegetable growers towards marketing facilities at Chikkaballapura Agricultural Produce Market Committee concluded that 35.5 per cent of vegetable growers had a favourable attitude towards APMC, while 34.4 per cent of them had less favourable attitude and 30 per cent of them had most favourable attitude. She also pointed out that education, management orientation, achievement motivation, decision making ability, economic motivation, innovativeness, mass media participation, extension agency contact and participation had positive significant influence on attitude towards the market.

2.7 Perception on market-led extension

Even though the concept of market-led extension has been a major theme of research, awareness on practical utility and knowledge of these techniques among the farmers vary. Their perception on market led production had always depended on the market value of their produce or returns they obtain. Jong (1992) while exploring the role of agricultural cooperatives in strengthening of marketing extension service for small-scale farmers stated that in-order to attain agricultural development, marketing system had to be improved because producers would increase their output only till marketing system allow them to sell it in the market. So, the emphasis needed to change from a production-led system to a market-led system and to obtain higher returns.

Similarly, Brorsen and Anderson (2001) suggested in their study on implications of behavioural finance for farmer marketing strategy recommendation that all the farming decisions should be framed after taking into consider about their effect on the whole farm operations and in terms of profits over years. Extension programmes should focus on the psychology of marketing, which could further cause certain psychological biases among farmers that might help them in understanding marketing.

However, Pennings *et al.* (2001) in their study namely, Modelling Farmers' Use of Market Advisory Services, found that, there existed an unobserved heterogeneity among the farmers in their relationship with market advisory services. They made a conceptual framework model to identify this heterogeneity. From the model it was clear that, not only the outcome of services like increased price and risk reduction, but also the way in which market advisory services delivered their services influenced farmers.

They concluded that the marketing philosophy between farmers and market advisory services should match with each other.

While exploring the possibilities of improving the access of small farmers in Eastern and Southern Africa to global pigeon pea markets, Jones *et al.* (2002) observed that access to well organized marketing, distribution and post-harvest system along with effective market information and technologies allowed farmers to be more competitive in price and quality.

Reddy and Chandrashekara (2002) stated that the concept of market-led extension helped farmers minimize their production cost and improve product value and marketability, thereby realizing high returns for their produce. They further observed that Indian farmers shift their focus from a supply driven system to a market driven system in-order to attain self-sufficiency. Also, they had to orient farming towards marketing and in-order to obtain high returns.

2.8 Constraints faced by beneficiaries in marketing

Even though there are a number of marketing initiatives to provide market opportunities for farmers, marketing of agricultural produces especially perishable commodities still remains as a tedious process. Farmer's producer faces many problems in marketing their produce. Inefficient market channels and poor market infrastructure seem to be the root cause of high and fluctuating consumer prices in the case of Indian farmers. (Kaul, 1997; Ashturker and Deole, 1985). It has observed that the presence of middlemen in fruit and vegetable marketing causes a frequent mismatch between the demand and supply of the produce both over space and time. The presence of middle men was also found to reduces the market value of the produce.

More specifically, Thakur (1994) reported that major constraints faced by vegetable farmers in Himachal Pradesh included lack of availability of good quality inputs, absence of reasonable and remunerative prices and insufficient crop loans at less interest rate.

However, Bonny and Prasad (1996) in their study on constraints in commercial production of vegetables conducted in Thrissur district concluded that inadequate

market facility was the most important constraint faced by farmers in vegetable marketing.

Similarly, Gupta and Rathore (1998) while studying marketing of vegetables in Raipur district of Chhattisgarh state observed that lack of storage and grading facilities, cooperative and regulated market system, logistic facilities including transportation, processing units and an adequate extension system to deliver market information were the major constraints in vegetable marketing.

According to Mahaliyanaachchi (2003) who studied the market information systems for the upcountry vegetable farmers and marketers in Srilanka observed that market information sources for majority of the vegetable farmers were wholesalers, local collectors and other vegetable farmers. Their source of information was mainly interpersonal informal sources like other wholesalers, retailers, brokers, market place owners *etc.* He also found that there existed a positive relationship between farm gate price and wholesale price, information received on quantity and quality of the produce, and existing market. Therefore, a proper extension system is required to act as a credible source of market information.

Joshi (2011) in his study on marketed surplus and price spread of brinjal in Western Uttar Pradesh observed that vegetables required speedy and efficient marketing due to its perishable nature and seasonality in production. The major problems faced by vegetable farmers as identified by him included low marketed surplus, high marketing cost, quantitative and qualitative losses at different stages, market imperfections, unpredictable behaviour of prices and poor infrastructure facilities.

This review has covered all the possible dimensions and variables envisaged in the study and set theoretical background of the study.

Research Methodology

Chapter 3

RESEARCH METHODOLOGY

According to Kothari and Garg (2014), research methodology is a way to systematically solve the research problem. This chapter explains the methodology adopted by the researcher to conceptualise the design and framework of the study and operationally define the variables. The statistical measures adopted for analysing results are also presented in detail.

The chapter has been organized under the following sub-headings:

- Research design
- Locale of the study
- Selection of respondents
- Variables and their measurement
- Operationalization of variables
- Methods used in data collection
- Statistical tools used in the study

3.1 Research design

Research design is the blueprint of the research undertaken by the researcher in order to accomplish the objectives of the study. The study used ex-post facto research design as it had examined the event and variables of the study after they had happened. As explained by Kerlinger (1964), ex-post facto design is a systematic empirical investigation in which the independent variables are not directly controlled because they had already happened or because they were inherently not manageable.

3.2 Locale of the study

State of Kerala is the locale of study. Out of the 14 districts in the state, Thrissur district was purposively selected for the study due to the presence of all the three schemes designed exclusively for market interventions by the Department of Agriculture and particularly, being the only district in which the programme viz. Karshakamithra, had been piloted.

3.3 Selection of respondents

Organic farming was a flagship programme of the State Government, being implemented since 2012-13, with the ultimate aim of transforming the State to completely organic. The programme was initiated in Kasargod district, which was declared as Organic district in 2012. Ecoshops were established for the sale of organic produce as a part of this programme. The programme was started in Thrissur district during 2015-16. During the same year, Weekly Markets were also established in the district. Karshakamithra programme was piloted in Thrissur district during 2017-18. Therefore, the three market led programmes namely *Ecoshop*, *Karshakamithra* and *Weekly Market* implemented after 2015 were selected for the study.

In order to select the respondents, four blocks were randomly selected from among the block panchayats in the district. Subsequently, 10 grama panchayats were selected from among the list of grama panchayats in the four blocks through random sampling. From the list of beneficiaries of each of these three programmes, forty beneficiaries were randomly selected from each programme to make a sample of 120 respondents.

The sample also constituted 24 extension personnel involved in the implementation of these programmes, constituting an overall sample size of 144.

See Table 3.1 for the list of blocks and panchayats selected for the study

Table 3.1 List of blocks and panchayats

Programme	Name of block	Name of panchayat
Ecoshop	Anthikad	Anthikad Manalur Chazhur
	Chalakudy	Melur
	Chowanoor	Choondal Kadavallur
	Kodakara	Alagappanagar Matathur
Karshakamithra	Anthikad	Anthikad Manalur Chazhur
	Chalakudy	Melur Koratty
	Chowanoor	Choondal Kattakambal
	Kodakara	Alagappanagar
Weeklymarket	Anthikad	Anthikad Manalur Chazhur
	Chalakudy	Melur Koratty
	Chowanoor	Kadavallur Kattakambal
	Kodakara	Matathur

3.4 Variables and their measurement

Variables of the study were selected based on exhaustive review of literature, which helped the researcher identify the probable factors that affect the effectiveness of various market-oriented development programmes for farmers. The variables were then operationalized according to the requirement and theoretical propositions. Independent variables selected for the study along with their measurement are given below in Table 3.2.

Table 3.2 Variables and their measurement

SI No.	Variables	Measurement
Independent variables		
1	Age	Government of India census report 2011
2	Gender	Arbitrary scores
3	Family type	Scale used by Sinha (2016)
4	Educational level	Scale used by Chandargi (1994)
5	Farming experience	Scale used by Jayasree (2004) with modifications
6	Total area under cultivation	Scale used by Shinogi (2007)
7	Area under vegetable cultivation	Scale used by Shinogi (2007)
8	Annual income	Scale used by Rubeena (2015)
9	Volume of production	Arbitrary scores
10	Marketable surplus	Arbitrary scores
11	Extension contact	Scale used by Mohammad (2006) with modifications
12	Knowledge level	Scale developed by Bonny (1991) with modifications
13	Market orientation	Scale developed by Sajeevchandran (1989) with modifications
14	Attitude towards market-led extension programmes	Scale developed by Sharma (1993) with modifications
Dependent variable		
1	Perceived effectiveness	Mean score

3.5 Operational definition of variables

The variables selected for the study were operationally defined to explain the concept and the method by which they are measured. While some of the variables had already been operationalised in previous works, other variables were operationalised for the purpose of study, in consultation with experts. The details of operational definitions of the variables selected are given below:

3.5.1 Age

Age is operationally defined as the number of years completed by the beneficiaries at the time of survey. The beneficiaries of the market-led extension programmes were

categorized into three different groups, young (<35 years), middle aged (35-55 years) and old aged (>55 years), as per the classification system followed in census report, Govt. of India, 2011. Later, scores were given to each group as given in Table 3.3. Frequency and percentage analysis were also used to classify the beneficiaries.

Table 3.3 Scoring procedure to measure age

SI No	Age category	Score
1	Young (<35 years)	1
2	Middle aged (35-55 years)	2
3	Old aged (>55 years)	3

3.5.2 Gender

Gender refers to the relations between men and women, both perceptual and material (FAO, 1997). It was operationalized as being male or female by birth and recorded as told by the respondent during the time of data collection. Each respondent was classified into two groups, male and female, and scores were given to them in order to find out their relationship with the dependent variable. Frequency and percentage analysis were done to classify the beneficiaries as given in Table 3.4.

Table 3.4 Scoring procedure to measure gender

SI No	Gender	Score
1	Male	1
2	Female	2

3.5.3 Family type

Family type was measured using the procedure followed by Sinha (2016). The families that had common cooking arrangement and pooled income were considered as joint family and those with no common cooking arrangement and pooled income were considered to be nuclear family. Scoring pattern followed is given in Table 3.5.

Table 3.5 Scoring procedure to quantify family type

SI No	Family type	Score
1	Nuclear	1
2	Joint	2

3.5.4 Educational status

Educational status was operationalized as the educational attainment or level of education of individuals. Educational status was categorized into five groups, viz. illiterate, primary, middle, high-school and college. The procedure followed by Chandargi (1994) was used for classification. Scores were given to each group to scale the variable and find out their relationship with the dependent variable as given in Table 3.6. Frequency and percentage analysis were done to classify the beneficiaries.

Table 3.6 Scoring procedure to scale educational status

SI No	Education level	Score
1	Illiterate	1
2	Primary	2
3	Middle school	3
4	High school	4
5	College	5

3.5.5 Farming experience

Farming experience was operationally defined as the respondent's involvement in farming and related activities. It was recorded as the number of years of experience at the time of data collection. Based on the number of years of farming experience, beneficiaries were classified into three categories, low (<5 years), medium (5-10 years) and high (>10 years), adopting the scoring procedure followed by Jayasree (2004) as given below. See Table 3.7 to find the scores given to each group so as to find out their relationship with the dependent variable.

Table 3.7 Scoring procedure to measure farming experience

SI No	Farming experience	Score
1	Low (<5 years)	1
2	Medium (5-10 years)	2
3	High (>10 years)	3

3.5.6 Total area under cultivation

Total area under cultivation was measured as the total area of land under cultivation owned by the respondents in acre. Procedure followed by Shinogi (2007) was used for classification. Scores were given to each group to find out their relationship with dependent variable. Beneficiaries were classified based on frequency and percentage. Scoring pattern used was as follows (See Table 3.8)

Table 3.8 Scoring procedure to measure area under cultivation

SI No	Area	Score
1	<.5 acre	1
2	.5-1 acre	2
3	>1 acre	3

3.5.7 Area under vegetable cultivation

Area under vegetable cultivation was measured as the total owned area of the respondents under vegetable cultivation in acres. Procedure followed by Shinogi (2007) was used for classification. Each category was assigned with scores as given below. Frequency and percentage analysis were carried out to classify the beneficiaries. Scoring pattern used was as follows (See Table 3.9).

Table 3.9 Scoring procedure to measure area under vegetable cultivation

SI No	Area	Score
1	<.1 acre	1
2	.1-.5 acre	2
3	>.5 acre	3

3.5.8 Annual income

Annual income was operationally defined as the total amount (in rupees) earned by the beneficiaries and their family members from agriculture on a yearly basis. Scoring procedure followed by Rubeena (2015) with slight modification was used for the study as given below. Frequency and percentage analysis were carried out to classify the beneficiaries (See Table 3.10).

Table 3.10 Scoring procedure to measure annual income

SI No	Annual income	Score
1	<50000 rupees	1
2	50000-100000 rupees	2
3	>100000 rupees	3

3.5.9 Volume of production

Volume of production was operationally defined in this study as the average production of vegetables per week in kilo grams. An arbitrary scoring procedure was adopted to quantify this variable, as given in Table 3.11. Frequency estimation and percentage analysis were done to classify the beneficiaries.

Table 3.11 Scoring procedure to measure volume of production

SI No	Volume of production	Score
1	<20 Kg	1
2	20-50 Kg	2
3	>50 Kg	3

3.5.10 Marketable surplus

Marketable surplus has been defined as the residual left with the producer farmer after meeting his requirements for family consumption, farm needs for seeds and feed for cattle, payment to labour in kind, payment to landlord as rent and social and religious payment in kind (Acharya and Agarwal, 1987). It has been documented as the number of kilogrammes of vegetables left with the farmer for marketing out of the total production in a week. An arbitrary scoring procedure was followed to quantify the variable. Frequency and percentage analysis were carried out to classify the beneficiaries based on marketable surplus (See Table 3.12).

Table 3.12 Scoring procedure to measure marketable surplus

SI No	Marketable surplus	Score
1	<20 Kg	1
2	20-50 Kg	2
3	>50 Kg	3

3.5.11 Extension contact

Extension contact was operationally defined as the frequency of contact of respondents with the extension personnel of different ranks. Scale developed by Mohammad (2006) with slight modifications was used to measure the variable. In this study, extension personnel included Agricultural Officers, Agricultural Assistants and Karshakamithras. The frequency of meeting of the respondents with the officials were given scores, 5,4,3,2 and 1 for weekly, fortnightly, monthly, half yearly and yearly respectively as given in Table 3.13 below.

Table 3.13 Frequency wise distribution of extension personnel

SI No	Extension personnel	Weekly (5)	Fortnightly (4)	Monthly (3)	Half yearly (2)	Yearly (1)
1	Agricultural officer					
2	Agricultural assistant					
3	Karshakamithra					

Total score for each respondent was calculated by summing up the score obtained for each category of official. The score of an individual ranged from 3 to 15. Based on the distribution of scores on quartile range, they were categorized into three groups as given in Table 3.14.

Table 3.14 Scoring procedure to scale extension contact

SI No	Extension contact	Range of scores
1	Low	< Q1
2	Medium	Q1-Q3
3	High	>Q3

Q1, Q2, Q3: Quartiles

3.5.12 Knowledge of marketing strategies

Knowledge of marketing strategies was operationally defined as the farmer's knowledge of various strategies to effectively market their produce. Cronbach (1994) defined knowledge test as one in which procedures, apparatus and scoring were so fixed that precisely the same test could be given at different time and places.

In the present study, standardized knowledge test developed by Bonny (1991) was used with slight modifications to operationalise the variable. The scale comprised of 13 objective statements or items with dichotomous response, viz. true or false. Correct and incorrect responses were given scores 0 and 1 respectively. Total score for each respondent was calculated by summing up the scores obtained for the statements. Maximum score obtained would be 13 for all correct answers and minimum will be 0

for all wrong answers. The summated score will represent the respondents' knowledge of marketing strategies. Knowledge index of each respondent was calculated using the formula

$$\text{Knowledge index} = \frac{\text{Total score obtained by a respondent} \times 100}{\text{Maximum possible score}}$$

Based on the distribution of index on quartile range, the respondents were categorized into three groups as given in Table 3.15 below.

Table 3.15 Scoring procedure to scale knowledge on marketing strategies

SI No	Knowledge level	Range of scores
1	Low	< Q1
2	Medium	Q1-Q3
3	High	>Q3

Q1, Q2, Q3: Quartiles

3.5.13 Market orientation

Market orientation has been described as the degree to which farmers are oriented towards scientific farm management practices including activities like planning, production and marketing of farm enterprises (Samantha, 1977).

In the present study, method followed by Sajeevchandran (1989) with slight modifications was used to measure market orientation. The scale consisted of 8 statements in a five-point continuum. Each statement was given score ranging from 5 to 1 for '*strongly agree*', '*agree*', '*undecided*', '*disagree*' and '*strongly disagree*' respectively. Total score for each respondent was calculated by summing up the scores obtained for all the statements. The score could range from 8 to 40. Based on the distribution of scores on quartile range, the respondents were categorized into three groups as shown in Table 3.16.

Table 3.16 Scoring procedure to scale market orientation

SI No	Market orientation	Range of scores
1	High	< Q1
2	Medium	Q1-Q3
3	Low	>Q3

Q1, Q2, Q3: Quartiles

3.5.14 Attitude towards market-led extension programmes

Attitude is operationally defined as the respondent's favourable or unfavourable inclination towards market-led extension programmes. It can be both positive or negative. Scale developed by Sharma (1993) with slight modifications was used for the present study to measure attitude. The scale comprised of 14 statements/items, of which seven were positive and seven were negative. The responses were recorded on a five-point continuum, viz. 'strongly agree', 'agree', 'undecided', 'disagree' and 'strongly disagree', with scores 4,3,2,1 and 0 respectively for positive statements and reverse score for negative statements. Total score for each respondent was calculated by summing up the scores obtained for all the statements. Here, the scores ranged from 0 to 56. Attitude score expressed in percentage was calculated for each respondent using the formula

$$\text{Attitude score (\%)} = \frac{\text{Total score obtained}}{\text{Maximum possible score}} \times 100$$

Based on the quartile range distribution of scores, respondents were categorised into three groups as shown below (Table 3.17).

Table 3.17 Scoring procedure to scale attitude

SI No	Attitude level	Range of scores
1	Least favourable	< Q1
2	Favourable	Q1-Q3
3	Most favourable	>Q3

Q1, Q2, Q3: Quartiles

3.5.15 Measurement of dependent variable

The dependent variable of the study was effectiveness of market-led extension programmes as perceived by beneficiaries and extension personnel.

3.5.16 Perceived effectiveness of market-led extension programme

Effectiveness can be described as the degree to which something is successful in producing a desired result. In the present study, effectiveness was operationalized as the degree to which market-led extension programmes were successful, from the perception of both beneficiaries and extension personnel.

Perceived effectiveness of market-led extension programmes was conceptualized on the basis of probable dimensions, identified from the scale developed by Sivaraman (2018) with modification.

The dimensions identified were:

- Service
- Advisory
- Market intelligence
- Facilitation
- Organization

Each dimension was represented by different statements and each of these statements was measured across a five-point continuum which expressed different levels of perception of the respondent, viz. '*highly effective*', '*very effective*', '*effective*', '*not effective*' and '*least effective*' with scores 5, 4, 3, 2 and 1 respectively.

The total score on perceived effectiveness obtained on each statement was calculated by summing up the scores of all the respondents. These scores were then expressed in percentage as shown below.

$$\text{Perceived effectiveness score (\%)} = \frac{\text{Total score obtained} \times 100}{\text{Maximum possible score}}$$

Later mean perceived effectiveness score was found out for each dimension expressed in percentage. The total score on perceived effectiveness obtained by each respondent was again calculated by summing up the scores of all the statements in the scale. Overall mean perceived effectiveness score was then calculated using the same formula.

This method was followed in all the three programmes selected for the study. Later Kruskal Wallis test was done to test whether there existed significant difference among beneficiaries with regard to their perception on the effectiveness of the three programmes.

3.5.17 Constraints faced by beneficiaries in marketing

Constraint was operationally defined as the difficulties faced by beneficiaries in marketing their produce.

Major constraints faced by the beneficiaries of market-led extension programmes were identified from review of literature, local enquiries and observations during the pilot study. These constraints were categorized as follows:

- General constraints
- Production related constraints
- Market infrastructure related constraints
- Financial constraints
- Information and communication related constraints

The degree of severity of the constraints as perceived by the respondents under each of the above categories was measured on a five-point continuum, viz. '*most severe*', '*severe*', '*medium*', '*less severe*' and '*least severe*' with scores 5, 4, 3, 2 and 1 respectively. Mean scores of the respondents for each category were calculated. Later constraints were ranked and the coefficient of concordance was measured to check whether there existed agreement among the respondents to rank the constraints according to their severity.

3.5.18 Constraints faced by implementing personnel

Constraints faced by the personnel of the Department of Agriculture and Karshakamithra volunteers in the implementation of market-led extension programmes

were identified from review of literature, enquiries during pilot study and expert opinion. Each constraint was measured in a five-point continuum, viz. '*most severe*', '*severe*', '*medium*', '*less severe*' and '*least severe*' with scores 5, 4, 3, 2 and 1 respectively. Using the actual scores given by the respondents, coefficient of concordance was calculated to check whether there existed an agreement among the respondents in ranking the constraints.

3.6 Methods used for data collection

A structured interview schedule was developed based on the major objectives of the study, after reviewing previous researches in the area and through consultation with experts in the field of agricultural extension and agricultural economics. A pilot study was conducted as part of pre testing of the interview schedule in-order to check out its validity. Pilot study was conducted among almost 25 per cent of non-respondents. After this, required modifications were made in the schedule. The final interview schedule used for primary data collection is given in Appendix 1. Primary data were collected by means of personal interview with the respondents and the implementing personnel. Secondary data were collected through review of reports, scheme papers, documents and registrars in the office, farm records and other materials from different websites.

3.7 Statistical tools used in the study

The data collected from the respondents were carefully scrutinized and processed appropriately in accordance with the objectives of the study. Data were tabulated and assigned with suitable scores for analysis using different statistical measures.

Statistical tools used for the study include:

3.7.1 Frequency and percentage analysis

Frequency in descriptive statistics deals with the number of occurrences of a particular event. Percentage analysis is used to find out the distribution of respondents according to different variables and thereby having comparison between them. Percentage is appropriate when it is important to know how many of the respondents come under a particular category.

3.7.2 Quartiles

Quartiles are the measures of dispersion based on upper quartile Q3 and lower quartile Q1. For a given distribution, 25 per cent of the observations lies below Q1 and 25 per cent above Q3, remaining 50 per cent of the observation lies between Q1 and Q3. Quartile scores can be used for categorizing a particular set of data into different groups when the mean and median of the same distribution did not coincide and if the normality assumption could not be followed. Based on the quartile range, respondents were grouped into low (<Q1), medium (Q1-Q3) and high (>Q3) category. Frequency of respondents belonging to each category were also determined from the score values.

3.7.3 Kruskal – Wallis one way analysis of variance by ranks

Kruskal – Wallis one way analysis of variance by ranks is a non parametric test used to check whether k samples are from different population. In the present study it was used to determine whether there existed any statistically significant difference between the perceived effectiveness on three different market-led extension programmes, viz. Karshakamitra, Ecoshop and Weekly Market expressed by beneficiaries and extension personnel.

Test statistic value, H is given by:

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

k = number of samples

n_j = number of cases in the *j*th sample

N = $\sum n_j$, the number of cases in all samples combined

R = sum of ranks in the *j*th sample

$\sum_{j=1}^k$ = directs to sum over *k* samples

3.7.4 Mann – Whitney U test

Mann – Whitney U test is a non- parametric test used to test whether two samples came from the different population. In the present study it was used to compare the

effectiveness of market-led extension programmes as perceived by the beneficiaries and the extension personnel.

$$U = \frac{n_1 n_2 + (n_1(n_1+1)) - R_1}{2}$$

U = test statistic value

n₁ and n₂ = sample size

R₁ = sum of ranks assigned to values of the sample

(Usually, smallest value is taken as test criterion)

3.7.5 Kendall coefficient of concordance (W)

Kendall coefficient of concordance is used to determine the association among k set of rankings. Here the test was used to find the concordance among the constraints faced by beneficiaries in marketing and implementing personnel in the implementation of the programmes. It assesses the agreement between different respondents in ranking the constraints.

To calculate 'W' the sum of ranks (R_j) in each column of a K/N table is found out. The formula used is:

$$W = \frac{12S}{K^2(N^3-N)}$$

S = Sum of squares of the observed deviations from the mean of R_j

$$S = \sum \left(R_j - \frac{\sum R_j}{N} \right)^2$$

K = Number of rankings

N = Number of objects or entities ranked

Kendall's W ranges from 0 to 1. Zero shows no agreement between the respondents and one shows perfect agreement. Usually, Kendall's coefficient of .9 or higher are considered to be very good.

3.7.6 Binary logistic regression

Logistic regression is an extension of simple linear regression where the dependent variable is dichotomous or binary in nature. It is used to predict the relationship between the predictor variables (independent) and the binary predicted variable (dependent). In the logistic regression model, log of odds of the dependent variable is modelled as a linear combination of the independent variables

In the present study, logistic regression was used to determine the individual factors which influenced the perceived effectiveness of market-led extension programmes. The dependent variable, viz. perceived effectiveness was made to a binary response variable by giving scores 0 and 1 to the 'below average score' category and 'above average score' category respectively, i.e., each respondent had a probability of being in the group with high or low perceived effectiveness.

The logistic function fitted:

$$\ln \left(\frac{P_i}{1-P_i} \right) = b_0 + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + b_7X_7 + b_8X_8 + b_9X_9 + b_{10}X_{10} + b_{11}X_{11} + b_{12}X_{12} + b_{13}X_{13}$$

Where,

P_i = Probability of having high or low perceived effectiveness (1= high, 0 = low)

b_0 = Intercept

x_1 = Age (years)

x_2 = Gender (male=1, female=2)

x_3 = Education (illiterate=1, primary=2, middle=3, high-school=4 and college=5)

x_4 = Family type (nuclear=1, joint=2)

x_5 = Farming experience (years)

x_6 = Area under cultivation (acres)

x_7 = Area under vegetable cultivation (acres)

x_8 = Annual income (rupees)

x_9 = Volume of production (Kg)

x_{10} = Marketable surplus (Kg)

x_{11} = Extension contact (scores)

x_{12} = Knowledge (scores)

x_{13} = Attitude (scores)

$b_1, b_2, b_3, \dots, b_{13}$ = Regression coefficients

3.7.7 Factor analysis

Kothari and Garg (2014) defined factor analysis as a technique for observing variables for something fundamental or latent which creates commonality. The purpose of this technique is to reduce the large number of variables to a smaller set of underlying variables by creating factors (Kim and Mueller, 1978). Factors are the linear combination of variables which represent the underlying dimensions that summarise the original set of variables. There are several methods to conduct factor analysis like centroid method, principal component method, *etc.*

In this study factor analysis was performed by the method of Principle Component Analysis. Kaiser-Mayer-Olking (KMO) test was used to assess the sampling adequacy. KMO measure $>.9$ is marvelous, $>.8$ is meritorious, $>.7$ is middling, $>.6$ is mediocre, $>.5$ is miserable and $<.5$ is unacceptable. Bartlett's test of sphericity checks to see whether there was certain redundancy between the variables that we could summarize with a few numbers of factors. Null hypothesis in this case states that variables under study are orthogonal. A significance value of $<.05$ indicates that null hypothesis is rejected and therefore appropriate for factor analysis.

In the present study all the quantitative independent variables were administered to factor analysis in-order to reduce the number of variables and thereby to obtain common

factors. Factors are extracted in a rotated component matrix in-order to adjust the factor scores to have a simple and meaningful factor solution and thereby enhancing the interpretability of the factors.

3.7.8 Linear regression analysis

Linear regression attempts to model the relationship between variables by fitting a linear equation to the observed data. It provides estimates of value of the dependent variable from values of the independent variable by using a regression line.

A linear regression line has an equation of the form $Y = a + bX$, where X is the independent variable and Y is the dependent variable. B is the slope of the line and a is the intercept.

R^2 statistics is very much important in linear regression model fit. It is the measure of variability explained by the model. Adjusted R^2 is the modification of R^2 , which take care of the number of independent variables in the equation. Maximum value of adjusted R^2 value indicates that the model fits perfectly.

In the study, a linear regression model has been fitted, with the factors extracted through factor analysis as predictor variables and perceived effectiveness as the predicted variable. R^2 value was noted in-order to check how much variability is explained by the model. A significance value of $<.05$ indicated the best predictor factor.

Model fitted:

$$Y = b_0 + b_1F_1 + b_2F_2 + b_3F_3 + b_4F_4 + b_5F_5$$

Where,

Y = Perceived effectiveness (scores)

b_0 = Intercept

b_1, b_2, \dots, b_5 = Regression coefficients

F_1, F_2, \dots, F_5 = Factors extracted

After finding out the most significant factor, the variables under the same factor were administered with Kruskal Wallis test in-order to find out the market-led extension programme in which these variables are more pronounced.

3.7.9 Box Plot

Box plots is a graphical technique of displaying data based on five number summary, minimum, first quartile (Q1), median, third quartile (Q3) and maximum. It gives information on the variability or dispersion of the data. Spread of the data is represented on a boxplot by the distance between the smallest value and the largest value, including any outliers.

Statistical Package for Social Science (IBM SPSS Statistics 22) and Microsoft Excel were used for the data analysis.

Results and Discussion

Chapter 4

RESULTS AND DISCUSSION

This chapter deals with the key findings of the study based on the objectives described earlier. The results are interpreted and discussed so as to draw specific conclusions.

The results and conclusion obtained from the study are presented under the following sub-titles

- 4.1 Content and components of market-led extension programmes
- 4.2 Financial outlay of the programmes
- 4.3 Infrastructure and common assets created
- 4.4 Prices and business turnover
- 4.5 Marketing network
- 4.6 Personal and psychological attributes of the beneficiaries
- 4.7 Effectiveness of market-led extension programmes as perceived by the beneficiaries and extension personnel
- 4.8 Effect of individual factors of the beneficiaries on their perception on effectiveness of the programmes
- 4.9 Significant factors that contribute to perceived effectiveness of beneficiaries
- 4.10 Constraints faced by beneficiaries in marketing
- 4.11 Constraints faced by implementing personnel in implementing the market-led extension programmes

4.1 Content and components of market-led extension programmes

This portion explains the various components of the market-oriented programmes implemented by the Department of Agriculture and the content of the market-led extension envisaged as part of each programme.

4.1.1 Ecoshops

Ecoshops were established under the Department of Agriculture Development and Farmers' Welfare, Kerala as a part of strengthening the marketing of organic produce and ensuring profitability for farmers. These outlets provide customers with locally

grown organic produce with GAP certification. All these are sold at premium prices so that producers and consumers would be equally benefited. Along with agricultural produces, Ecoshops also involved the sales of some of the organic inputs, biofertilizers, seedlings and planting materials *etc.* The programme was initiated in the year 2012-13 in Kasargod district. Later, in 2015-16, it was started in Thrissur district.

Ecoshops are mainly established in places like government office complexes, bus stands, residential areas *etc.* on a franchise mode by the farmers organizations so as to extend the benefits to farmer producers. Assistant Directors of Agriculture at the block level should identify suitable building for the Ecoshops. All the produce reaching the Ecoshop will be sold only after proper grading, packing and labelled as 'Kerala Brand'.

The programme for each Ecoshop will be approved by Principal Agricultural Officer. There will be a committee consisting of head of the local body, Agricultural Officer, cluster members, Deputy Director of Agriculture, Assistant Director of Agriculture (marketing), Assistant Directors at the block level, for organizing the programme. They appoint a facilitator from the cluster members for each Ecoshop with a remuneration fixed by the same committee. All the activities are monitored by Principal Agricultural Officer so as to ensure the sale of quality products and a stable income for the farmers.

The major infrastructural facilities provided for Ecoshop includes the marketing outlet with power supply and electrical fitting, modern weighing machine, provision for grading, packing and labelling. The financial outlay for the programme also constituted transportation cost of the produce along with procurement expenses.

4.1.2 Karshakamithra

Karshakamithra is one of the components under the scheme viz. Strengthening Market Development, which also includes training and portal-based services. The major purpose of this scheme is to bridge the gap between department and farmers and to ensure market for surplus agricultural produces from the households especially for small scale farmers. It is a novel mechanism of engaging 'Karshakamithras' for the efficient marketing of agricultural produce which mainly includes reporting of production, facilitating procurement and marketing of the produce. This also ensures

quality produce for the consumers. This programme was piloted in the year 2017-18 in Thrissur district.

The establishment of the scheme had improved the marketing network of farmers and also motivated them towards household production. A registered farmer (registered under *Karshaka* registration) or a farmer's kin who has interest in this field are selected as Karshakamithra from each panchayat.

Criteria for selection of Karshakamithra include:

- The person selected as Karshakamithra should belong to a farm family
- They must have enough computer knowledge recognized by an approved institution
- Those who have experience in marketing field will be given more preference
- Working of Karshakamithra should be on the basis of self-employment
- They should help in selling the products of at least 100 farmers per month
- Information regarding market prices should be collected and informed to the farmers daily
- Area of operation will be one panchayath but sales can be extended to anywhere in the district
- They are guided by a committee constituted on panchayat level
- A bank guarantee of one lakh rupees should be given by Karshakamithra and submit the relevant documents of the same to the panchayat committee. This deposited money should be maintained throughout the period of service
- They must ensure getting price to the farmers on the day of sale itself
- The remuneration amount of Rs.5000/month to Karshakamithra will be an incentive for their self-employment. Performance excellence will be verified by the committee and incentives should be given by Krishi bhavan based on that
- Assistance should be given to the farmers for making profit through the practice of organic cultivation, GAP, PGS *etc.*
- He/She should inform the Krishi bhavan about the technical issues faced by farmers and help solving those

- Panchayat committee can put forward recommendations regarding the service of Karshakamithra to Krishi Bhavan. If the working is not satisfactory, he/she will be dismissed. A person selected as Krishi Mithra should work only for a period of two years and are not eligible for service leave and other benefits unlike government services. The decisions regarding the management of the same is taken care by the panchayat committee.
- Structure of the committee:
 - Panchayat President-Chairman
 - Vice President
 - Chairman, Development Standing Committee
 - A representative from Paddy farmers group
 - A representative from vegetable farmers group
 - A farmer recommended by Agricultural Officer
 - Agricultural Officer-Convenor
- The training required for Karshakamithra should be given at panchayat level (maximum 2 weeks)
- Appointments should be done by advertising in the newspapers
- There should be a district monitoring system

The main job of Karshakamithras is to facilitate the sales of produce, especially marketable surplus, after bringing them to the collection centre from the farmer's field/homesteads. The process is done on a daily basis and procurement price is fixed by Vegetable and Fruit Promotion Council Keralam (VFPCK)/Kerala State Horticultural Products Development Corporation (HORTICORP). The details of those produce collected will be submitted to the Krishi Bhavan on a monthly basis. Karshakamithras also assist in identifying the problems faced by farmers in the field including pest and disease infection and forward them to officials to have a solution. Registers containing details of procurement and sales are maintained by Karshakamithras. One Agricultural Assistant from each Krishi Bhavan will monitor the activities of Karshakamithras along with verification of these registers. Remuneration will be provided for them on a monthly basis. They are also provided with vehicle hiring charges and other infrastructure facilities attached to Krishi Bhavan.

4.1.3 Weekly Market

Grama panchayat level Weekly Markets were established as a part of strengthening market development scheme to provide farmers with opportunity for direct sale in the market. This programme is mainly meant for efficient marketing of perishable and ethnic produce near their production centres and thereby help reduce transaction loss. The programme works under Department of Agriculture and in association with Kudumbasree under the local self-governments and was established in the year 2017-18.

The major components of this programme include

- *Planning:* Farmer clusters, grama panchayat members and Kudumbasree CDS conduct meeting to identify the production potential of the panchayat along with existing infrastructure facilities. Based on this a detailed plan for procurement and supply of products in the market with improved infrastructure will be made
- *Management:* Management committee consisting of Panchayat President, representation from Kudumbasree by the CDS chairperson, JLG convener and two farmer representatives with Agricultural Officer as convener. These committee evaluate all the activities of Weekly Market including monitoring of the quality of produce
- *Implementation:* Implementation committee consisted of four members, two from Kudumbasree and other two from farming clusters preferably women. Their major activities include planning and executing the procurement of produce from the farmers, data management of the markets, supply chain management and their linkage with institutional buyers. This committee procure the agricultural produce from the producer and sell them with a margin of 10 per cent with the market price. This margin is provided as remuneration for the implementation committee and remaining amount is used for development of the market
- *Display and uniformity of the markets:* Uniform display and conduct of market information is followed. Price list for each commodity has to be displayed in the board sales of each produce needed to be ensured through billing machine

- *Monitoring:* Attendance has to be taken for the implementation committee during the market days since remuneration is given for their work. Daily procurement and sales also have to be submitted to the agricultural officer in charge.

4.2 Financial outlay of market-led extension programmes

The financial outlay of market-led extension programmes showed that funds were earmarked mainly for components like infrastructure facilities, working capital, transportation costs, procurement, training, support mechanisms *etc.* The details of year wise allocation of funds for various components of the three selected programmes during the reference period is given in Tables 4.1, 4.2 and 4.3.

4.2.1 Ecoshop

The financial outlay for Ecoshops was mainly meant for creation of infrastructure facilities. This included working capital, transportation cost, procurement expense, cleaning, grading, labelling *etc.* The details on allocation of fund for Ecoshop during the year 2017-18 to 2020-21 is given below in Table 4.1.

Table 4.1 Details of fund allocation for Ecoshops

Particulars	2017-18	2018-19	2019-20	2020-21
Creation of infrastructure facilities, working capital, transportation cost, procurement expense, cleaning, grading, labelling <i>etc.</i> for new eco shops (Lakhs)	217	33	30	14
Revolving fund (Lakhs)	217	33	-	14
Maintenance of existing Ecoshops including purchase of equipment and other essential materials, payment of rent, hiring of vehicle for transportation of products (Lakhs)	-	149	3	14.07
Total amount (Lakhs)	434	215	33	42.07

From the table, it could be inferred that, amount allotted for all sub components including creation of infrastructure, revolving fund and maintenance of existing Ecoshop showed a decreasing trend from 2017-18 to 2020-21. There has been substantial decline in the total funds from 2017-18 to 2019-20, with a sharp decline from 215 lakhs to 33 lakhs during 2019-20. In the initial years, the funds were mostly used for building infrastructure and buying equipment. However, in later years, funds were spent mostly for recurring expenditure. Fund allocation for eco shops seemed to have slightly increased during 2020-21. The overall decline in funds is also attributed to the effect of Covid -19 which had impacted investments by the government due to other priorities during the pandemic and disruption of supply chains in the agricultural sector.

4.2.2 Karshakamithra

This programme was first piloted in Thrissur district in Kerala in the year 2017-18 and later in 2019 it was started in Alappuzha district also.

The details of fund allocation for Karshakamithra showed that major share of the funds was meant for remuneration of Karshakamithras, transportation allowances and creation of infrastructure. A substantial amount was found to be earmarked for revolving fund, based on which activities of Karshakamithra would be initiated.

Table 4.2 Details of fund allocation for Karshakamithra

Particulars	2017-18	2018-19	2019-20	2020-21
No. of Karshakamithra	105	105	105+25 New	72
Training to Karshakamithra (Lakhs)	2.1	6	0.5	
Remuneration for Karshakamithra (Lakhs)	63	63	8.75	21.6
Transportation allowances (Lakhs)	63	63	55.55	-
Tablets and communication devices (Lakhs)	14.7	-	-	-
Revolving fund (Lakhs)	84	24	20	-
Creation of infrastructure (Lakhs)	46.2	-	11	-
Operational expense (Lakhs)	-	21.5	0.35	-
Total (Lakhs)	273	177.5	96.15	21.6

Details of the fund allocation is given in Table 4.2.

Though funds were allocated for training of Karshakamithras during 2017-18, 2018-19 and 2019-20, but as understood from the survey, training was given during the first year only. Remuneration was given to Karshakamithras at the rate of Rs. 5000/- per month. Infrastructure facilities included purchase of stationary materials including tray baskets *etc.* for Karshakamithras.

4.2.3 Weekly Market

The Weekly Market project was provided with funds for creation of infrastructure and for creating revolving fund during the initial year. 400 Lakhs rupees were sanctioned

during 2017-18 for the establishment of 400 markets. However, there was reduction in fund allocation for the markets in 2018-19 and 2019-20. But again in 2020-21, 600 such markets were established with a total of 400 lakh rupees sanctioned under Rashtriya Krishi Vikas Yojana (RKVY) project (See Table 4.3 for details).

Table 4.3 Details of fund allocation for Weekly Markets

Particulars	2017-18	2018-19	2019-20*	2020-21
No of Weekly Markets	400	-	-	1000 (600 new)
Necessary infrastructure including temporary shed, crates, weighing balance, billing machine <i>etc.</i> (Lakhs)	300	-	-	240
Revolving fund (Lakhs)	100	-	-	-
Maintenance of existing markets including purchase of billing machine, purchase of suitable software (Tally), equipment for grading, sorting, cleaning, packing, value addition <i>etc.</i> (Lakhs)	-	50	-	160
Total amount (Lakhs)	400	50	-	400

(*) Due to the devastating floods during 2018-19, no such markets were established

The trend showed that more amount was sanctioned for Ecoshops compared to Karshakamithra and Weekly Market during the implementing year (2017-18). However, fund allocation for all the three programmes was reduced during 2018-19 and 2019-20 compared to 2017-18. During 2020-21, Weekly Markets were provided with more funds for establishment of new markets. The impact of flood during 2018-19 and pandemic Covid 19 during 2019-20 and 2020-21 had severely affected the working of all the three programmes. The general trend of financial outlay for the three programmes is shown in Figure 1.

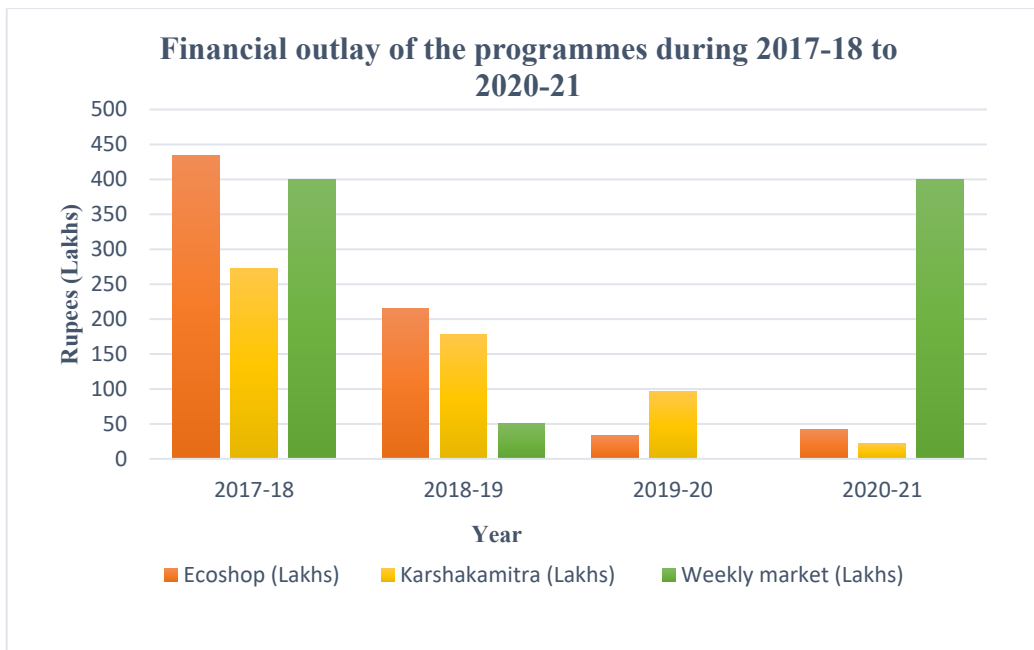


Figure 1 Financial outlay of market-led extension programmes during 2017-18 to 2020- 21

4.3 Infrastructure and common assets created

Even though the financial outlay of all the programmes included separate funds for infrastructure creation, it was not done in a centralized manner for all panchayats since production pattern and marketing strategies for each panchayat were different for different programmes. Major infrastructural facilities provided are listed below in Table 4.4, 4.5 and 4.6 with frequency and percentage for the three programmes

4.3.1 Ecoshops

The details of facilities available in Ecoshops were collected during the survey to find out how equipped was this system to handle market related operations. The major infrastructural facilities provided for Ecoshops included building, power supply, weighing machine and billing machine, water supply, cool storage, facilities for grading and labelling *etc.* The details are provided in Table 4.4.

Table 4.4 Details of infrastructural facilities of Ecoshop

SI No.	Infrastructure facilities	Frequency (n=8)	Percentage (%)
1	Building (own)	7	87.5
2	Building (rent)	1	12.5
3	Power supply	8	100
4	Weighing machine	8	100
5	Billing machine	3	37.5
6	Water supply	5	62.5
7	Cutting area	8	100
8	Cold storage	2	25
9	Facilities for grading and labelling	0	0
10	Waste disposal area	5	62.5

n= number of panchayats

From the table shown above it could be inferred that all the eight panchayats were provided with power supply, weighing machine and cutting area in the building. While buildings were owned by all seven panchayats, the space was rented by one. Only three panchayats were provided with billing machine for Ecoshop. It could be noticed that that no Ecoshops were provided with facilities for grading and labelling, even though it was a major component of the programme. Also, cold storage facilities which was required for perishable commodities were available in only two Ecoshops.

4.3.2 Karshakamithra

Karshakamithras of each panchayat were provided with certain infrastructure facilities required for the procurement and sale of agricultural commodities. Major infrastructure facilities provided were weighing machine, billing machine, stationary items, tray baskets, table and chair *etc.* The details are shown in Table 4.5.

Table 4.5 Details of infrastructural facilities provided to Karshakamithra programme

SI No.	Infrastructure facilities	Frequency (n=8)	Percentage (%)
1	Weighing machine	8	100
2	Billing machine	8	100
3	Tray, baskets	8	100
4	Stationary items including calculator	8	100
5	Table, Chair	8	100
6	Computer/Laptop	2	25

n= number of panchayats

As regards infrastructure facilities, Karshakamithras of all the panchayats under study were provided with all facilities except Laptops/ Computers. Only two Karshakamithras were provided with computer facilities

4.3.3 Weekly Markets

Weekly Markets were provided with infrastructural facilities like building or temporary shed, power supply, weighing machine, billing machine, cutting area, cold storage, facilities for grading and labelling *etc.* The details are shown in Table 4.6.

Table 4.6 Details of infrastructural facilities of Weekly Market

Sl No.	Infrastructure facilities	Frequency (n=8)	Percentage (%)
1	Building (own)	3	37.5
2	Temporary shed	5	62.5
3	Power supply	3	37.5
4	Weighing machine	3	37.5
5	Billing machine	2	25
6	Cutting area	8	100
7	Cold storage	2	25
8	Facilities for grading and labelling	0	0
9	Waste disposal area	5	62.5

n= number of panchayats

As far as Weekly Markets are concerned, all the eight panchayats were provided with service area for cutting vegetables. The other facilities were not found to be provided to these markets. Temporary shed was provided in five panchayats whereas own buildings were available for the Weekly Market only in three panchayats. Weighing machine and billing machine were not provided in majority of Weekly Markets. Those markets were using weighing machine either from neighbouring shops. In some areas marketing officials purchased the machines by themselves. Another important thing that could be noticed was the lack of facilities for grading and labelling in all the panchayats, even though it was a major component of the scheme.

Major differences could be noticed with respect to infrastructure facilities created for the three programmes. Karshakamithras were provided with all facilities in all the eight panchayats, which obviously turned out to be one of the reasons for their highest turnover compared to other markets led programmes under study. In the case of

Ecoshop and Weekly Market, many of the infrastructure facilities, especially, provision for grading and labelling were lacking. Though cold storage facility is very important for storing perishables, it was not provided for any market. This was reported as a major reason for wastage and thereby substantial losses.

4.4 Prices and Business turnover

Average procurement price and average selling price per kilogram of major vegetables in the study area for the three interventions were collected and compared with VFPCCK market price as given in Table 4.7 and 4.8 respectively.

Table 4.7 Monthly average procurement price of vegetables availed by beneficiaries of different market led programmes along with VFPCCK prices during January 2021-March 2021

Major vegetables	Monthly average procurement price (per Kg)			
	Ecoshop	Karshakamithra	Weekly market	VFPCCK
Bitter gourd	40	40	35	33
Cow pea	40	40	25	32
Chilly	60	55	50	33
Brinjal	25	20	20	22
Amaranthus	40	30	30	26
Coccinia	30	20	20	20
Pumpkin	20	15	10	8
Colocasia	35	40	35	30
Tomato	40	35	38	20
Lady's finger	40	35	30	25
Cucumber	35	25	15	16

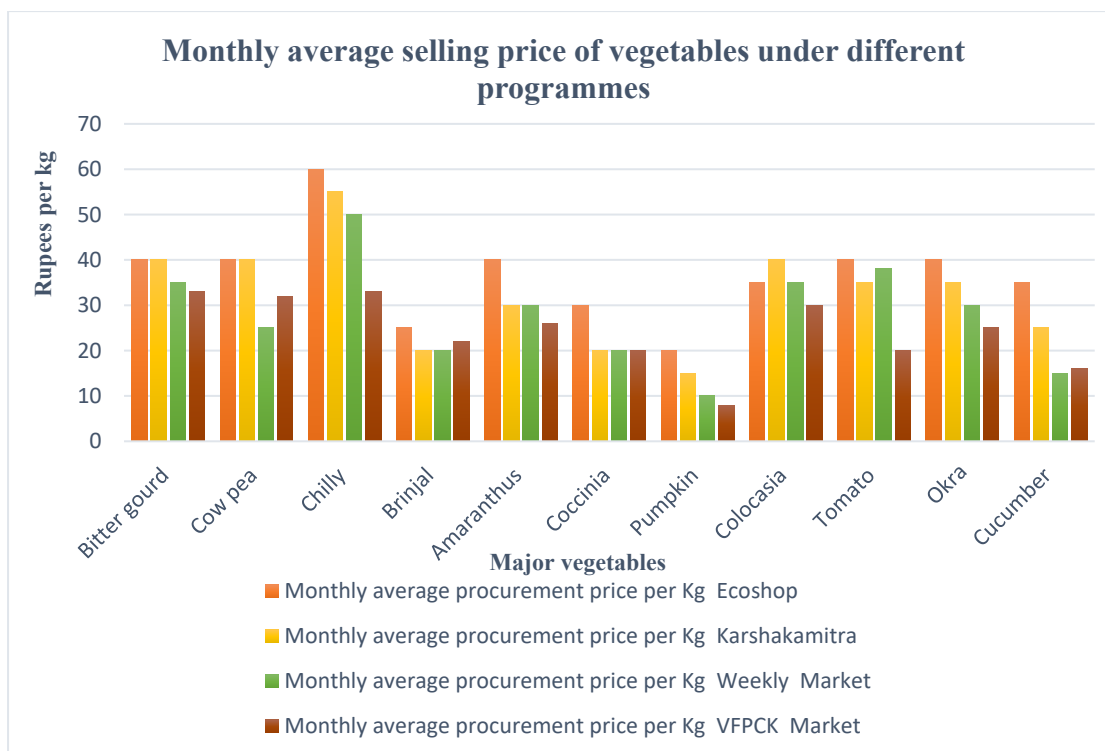


Figure 2 Monthly average procurement price of vegetables availed by beneficiaries of different market led programmes along compared to VFPC prices during January 2021-March 2021

The trend depicted in Figure 2 shows that Ecoshop provided the producers with highest procurement price compared to the others. This could be attributed to the fact that, Ecoshops involved procurement and sales of organic produce. Karshakamithra also provided farmers with prices more than that was available in Weekly Markets and VFPC prices even though they procured the produce from the household itself. This seemed to be a better option for farmers which reduced their logistic cost. VFPC provided less procurement price compared to the other three except in the case of cowpea for which Weekly Market provided lesser procurement price during the period. This was found to be because of the fact that VFPC used to procure almost the entire quantity of the produce from the farmers at a pre fixed price, whereas this could not happen in the case of other programmes since they were involved in retail marketing. Hence farmers with higher volumes of production would invariably choose VFPC even though procurement price was less.

Table 4.8 Monthly average selling price of vegetables obtained by beneficiaries of different market led programmes along with VFPCCK prices during January 2021-March 2021

Major vegetables	Monthly average selling price (per Kg)			
	Ecoshop	Karshakamithra	Weekly market	VFPCCK
Bitter gourd	60	50	50	42
Cow pea	60	40	50	42
Chilly	70	60	60	45
Brinjal	40	25	30	30
Amaranthus	50	40	40	35
Coccinia	50	30	35	30
Pumpkin	25	20	25	15
Colocasia	50	50	45	40
Tomato	50	40	50	30
Lady's finger	60	45	40	35
Cucumber	45	30	25	26

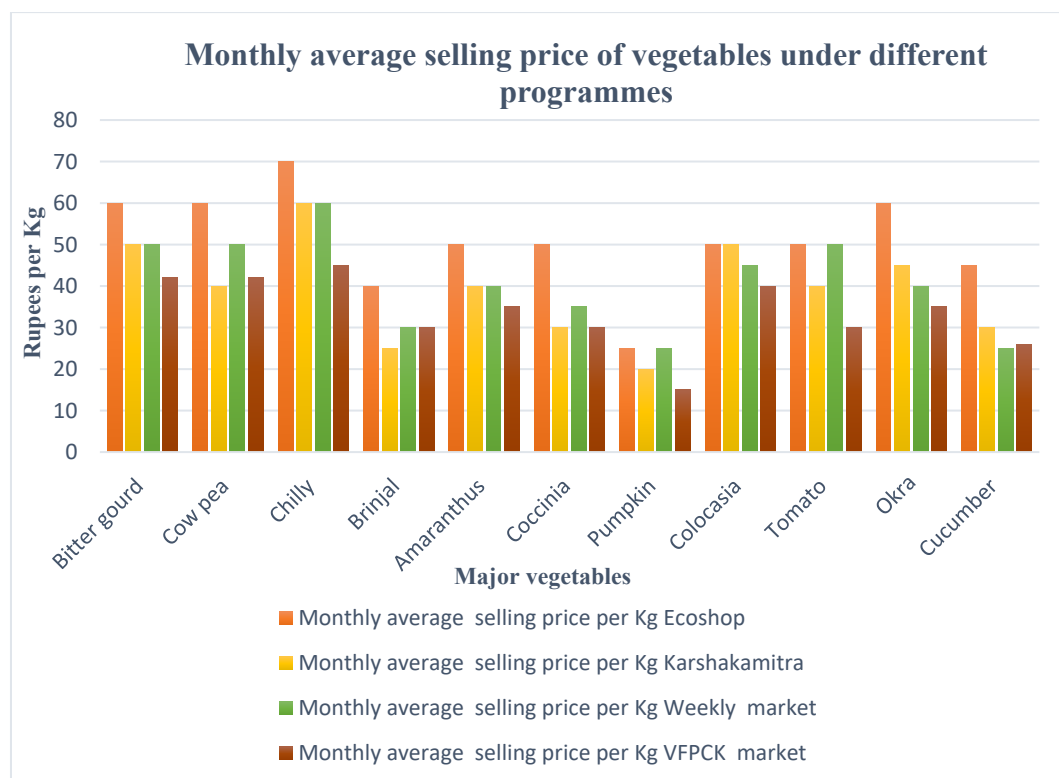


Figure 3 Monthly average selling price of vegetables obtained by beneficiaries of different market led programmes along with VFPCCK prices during January 2021-March 2021

The trend of average monthly selling price of major vegetables during Jan 2021- Mar 2021 showed that Ecoshop used to sell the produce at premium prices, since demand for organic produce increases day by day. This is followed by Karshakamithra, Weekly Markets and VFPCCK respectively in the order of the prices offered for various vegetables. Even though Weekly Market provided less procurement price for farmers, they used to sell their produce at much higher price compared to their procurement price. VFPCCK sells their produce at much lower rates than that of the other three programmes. This is because VFPCCK used to sell their produce mainly to wholesalers. Later they either sell vegetables to retailers or auction. Other three programmes mainly involve retail consumers.

Business turnover is the total sales made by a business during a certain period. It is usually estimated quarterly, half yearly or yearly. Total quantity of vegetables procured and sold through the three interventions along with their business turnover for the month January 2021-March 2021 in each panchayat were found out (See Table 4.9.)

Table 4.9 Details of procurement, sales and business turnover under the three programmes for the period January 2021-March 2021

Name of panchayat	Quantity procured	Expenditure	Quantity sold	Turnover
Ecoshop				
Anthikad	65	2261	65	3161
Manalur	1554	53058	1554	77754
Chazhur	690	27600	690	34500
Melur	534.9	19236	534	14490
Kadavallur	132	6375	132	8064
Choondal *				
Alagappanagar	1326	53000	1326	68601
Matathur	123	4950	123	6819
Karshakamithra				
Anthikad	3183	114474	3183	131118
Manalur	1152	33825	1152	39960
Chazhur	1680	64947	1680	76599
Melur	1581	59640	1581	65604
Koratty	2502	89100	2502	97215
Kadavallur *				
Kattakambal	1308	45780	1308	54936
Matathur	1506	52710	1506	63252
Weekly Markets				
Anthikad	324	9600	324	11508
Manalur	1422	54054	1422	66210
Chazhur	830	30000	830	33600
Melur	480	15660	480	17352
Koratty	1059	38049	1059	46929
Choondal*				
Kattakambal	888	26640	888	31968
Alagappanagar	939	34650	939	43050

Those panchayats marked with star (*) were not functioning during this period due to containment zone restrictions in connection with Covid=19 pandemic.

Average turnover of Ecoshop, Karshakamithra and Weekly Market were calculated for the months January 2021- March 2021 as given in Table 4.10.

Table 4.10 Average business turnover for the three programmes in January 2021 to March 2021

Programme	Average turnover (Jan-Mar 2021)
Ecoshop	30484.14
Karshakamithra	75526.28
Weekly Market	35802.42

The major problem identified from the study area was lack of trained marketing officials especially in the case of Ecoshops and Weekly Markets. They had not even kept the records of procurement and sales details of initial years. The details during the period from January 2021-March 2021 were obtained in common, in order to calculate business turnover.

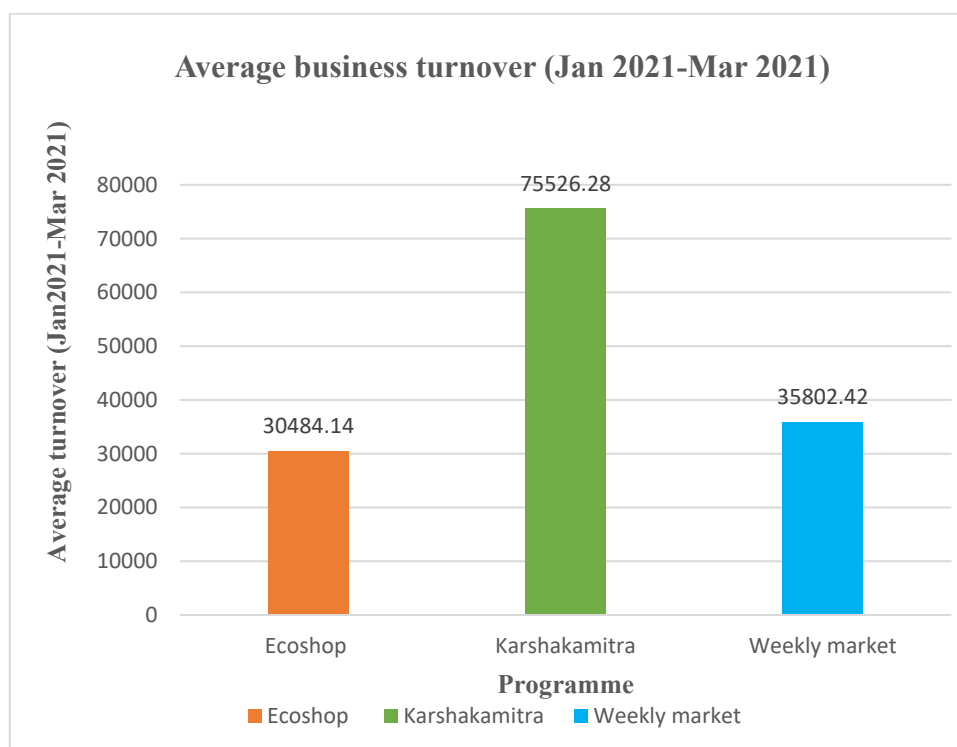


Figure 4 Average business turnover (Jan 2021-Mar 2021)

Figure 4 shows that Karshakamithra had the highest turnover during the period Jan 2021-Mar 2021. This may be attributed to the fact that Karshakamithra used to collect produce from the farmers' households which made it easier for farmers to market their produce. Ecoshops were found to have less turn over compared to Weekly Markets

since they used to sell their produce at premium prices, which would be unlikely to materialise every time. This also might be due to the deleterious impact of Covid 19 on the economic and financial status of people which made them reluctant to purchase organic produce with higher prices.

4.5 Marketing network

Marketing networks envisaged under each of the programmes selected for the study were analysed to find out the points of contact for marketing various vegetables and how they moved in the networks.

Marketing channels are the routes through which agricultural products move from producers to consumers (Acharya and Agarwal, 1987).

Marketing channels of vegetables identified in the given study area are shown below in Figure 5

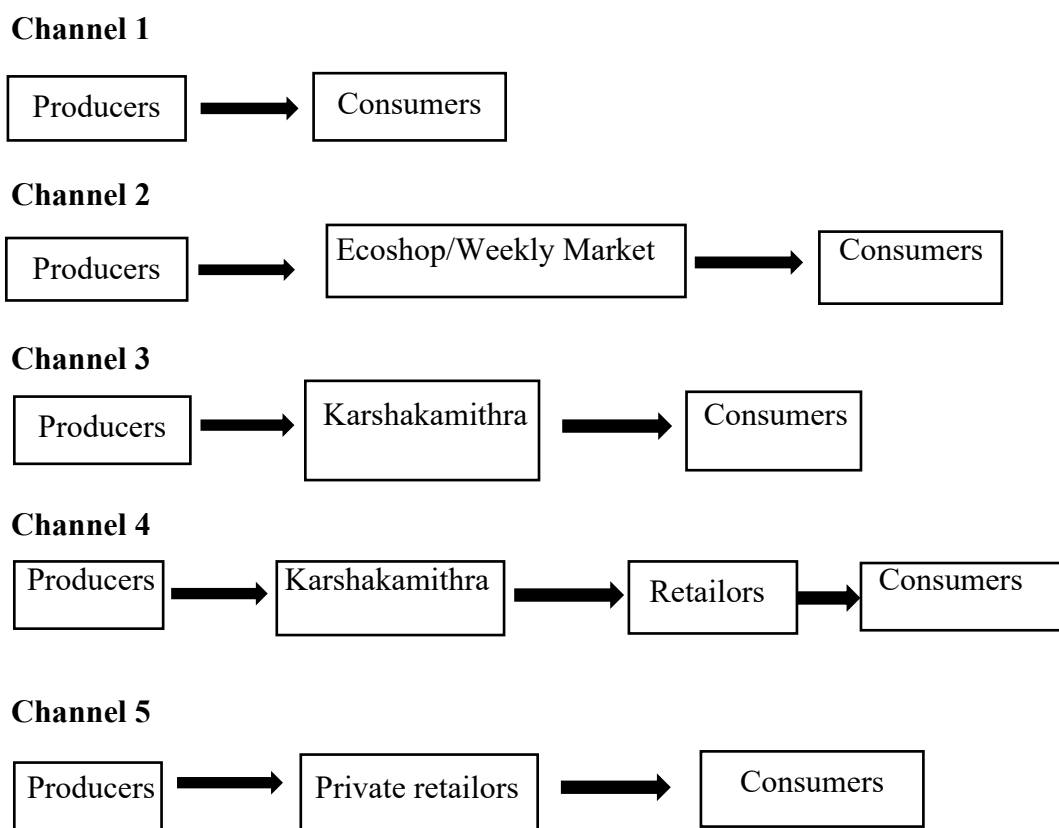


Figure 5. Marketing channels identified

From the study area, it was observed that out of total volume of production, almost 83 per cent was marketable surplus and this varied among each individual farmers according to their requirements. The vegetables sold in Ecoshops mainly went through three distinct channels mentioned in figure 5 (channel 1, channel 2 and channel 5). Similarly, the transactions in Weekly Markets were mainly through three channels (channel 1, channel 2 and channel 5). However, the business transactions of Karshakamithra involved four channels (channel 1, channel 3, channel 4 and channel 5). Majority of the respondents' surplus production from the household were collected by Karshakamithra and used to sell either directly to consumers or through retail channels.

Almost 30 per cent of the respondents were found to have involved in all the five channels during the reference period. This depended on their total volume of production and marketable surplus.

4.6 Personal and psychological attributes of the beneficiaries

Since it is important to understand the profile of the respondents to correlate their personal attributes to the dependent variable and to analyse their relationships, the consolidated results of analysis of personal and psychological attributes of the beneficiaries are given below in Table 4.11

Table 4.11 Distribution of beneficiaries based on personal and psychological attributes

Variable	Category	Frequency	Percentage (%)
Age	Young	2	1.70
	Middle	51	42.50
	Old	67	55.80
Gender	Male	99	82.5
	Female	21	17.5
Family type	Nuclear	78	65
	Joint	42	35
Educational level	Illiterate	0	0
	Primary school	10	8.3
	Middle	27	22.5
	High school	57	47.52
	College	26	21.7
Farming experience	Low	8	6.67
	Medium	57	22.5
	High	85	70.83
Total area under cultivation	<0.5 acre	35	29.17
	0.5-1 acre	28	23.33
	>1 acre	57	47.5
Area under vegetable cultivation	<0.1 acre	9	7.5
	0.1-0.5 acre	59	49.17
	>0.5 acre	52	43.33
Annual income	<50,000	9	13.33
	50,000-1,00,000	59	27.5
	>1,00,000	52	59.17
Volume of production	<20 kg	61	50.83
	20-50 kg	50	41.67
	>50 kg	9	7.5
Marketable surplus	<20 kg	82	68.33
	20-50 kg	36	30
	>50 kg	2	1.67
Extension contact	Low	27	22.5
	Medium	64	53.33
	High	29	24.17
Knowledge level	Low	14	11.67
	Medium	77	64.17
	High	29	24.17
Market orientation	Low	9	7.5
	Medium	100	83.33
	High	11	9.17
Attitude	Least favourable	17	14.17
	Favourable	72	60
	Most favourable	31	25.83

4.6.1 Distribution of respondents based on their age

Beneficiaries of the market-led extension programmes were categorized into three groups, viz. young (<35 years), middle aged (35-55 years) and old aged (>55 years) on the basis of their age. The age wise distribution revealed that majority of the respondents (55.8%) came under old age category. While 42.5 per cent belonged to middle age group, only 1.7 per cent constituted the younger category. Frequency of different groups and respective percentages are given below in Table 4.12.

Table 4.12 Distribution of respondents based on their age

Sl No	Age category	Frequency (N=120)	Percentage (%)
1	Young (<35 years)	2	1.7
2	Middle aged (35-55 years)	51	42.5
3	Old aged (>55 years)	67	55.8

The average age of the beneficiaries was found to be 54.5. From the results, we could find that old aged people (55.8 per cent), (42.5 per cent) and middle-aged people were more involved in vegetable farming and their marketing. (See Fig 6).

It is not surprising that only 1.7 per cent of the respondent farmers belong to the younger category. This is indicative of the overall reluctance of the youth to take up agriculture as a means of livelihood. The results were in line with the findings of Jahagirdar and Sundarasamy (2002) in their study on adoption of recommended practices of tomato cultivation. Majority of vegetable farmers included in their study also belonged to old aged category.

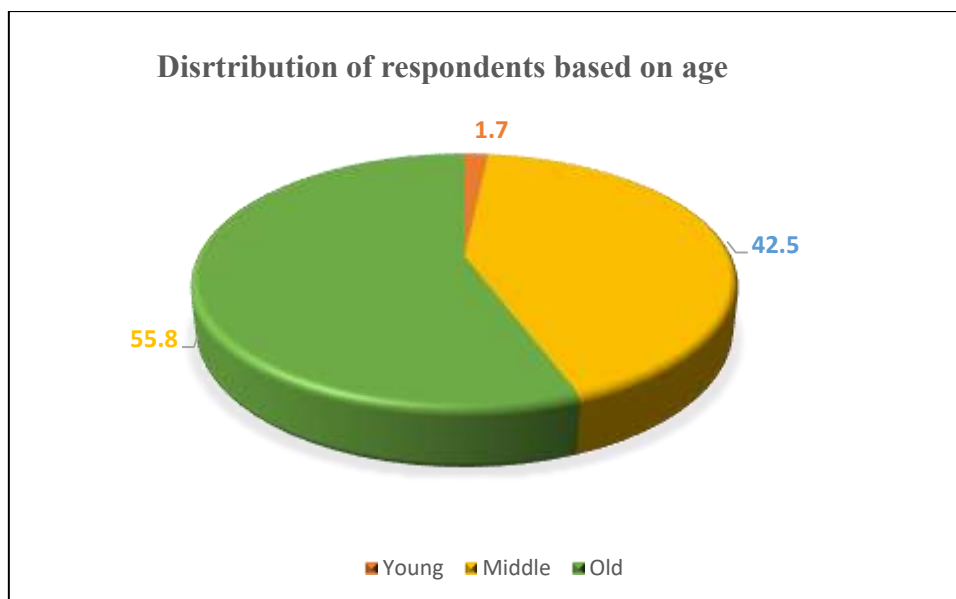


Figure 6 Distribution of respondents based on their age

There are many factors which make agriculture unattractive to youth and educated workforce. They include scarcity of agriculture land area, its prolonged duration required to yield results, seasonal and climatic fluctuations which are increasingly unpredictable, unstable remunerations, less profits *etc.* These factors pull them towards more promising opportunities and higher income provided by the non-agriculture sector.

4.6.2 Distribution of respondents based on their gender

The distribution of respondents based on their gender revealed that 82.5 per cent of the beneficiaries of market-led extension programmes were male and only 17.5 per cent of them were female. Frequency and respective percentages are given below in Table 4.13

Table 4.13 Distribution of respondents based on their gender

SI No	Gender	Frequency (N=120)	Percentage (%)
1	Male	99	82.5
2	Female	21	17.5

From the results, it is clear that only 17.5 per cent of women were involved in vegetable farming and their marketing as given (Figure 7)

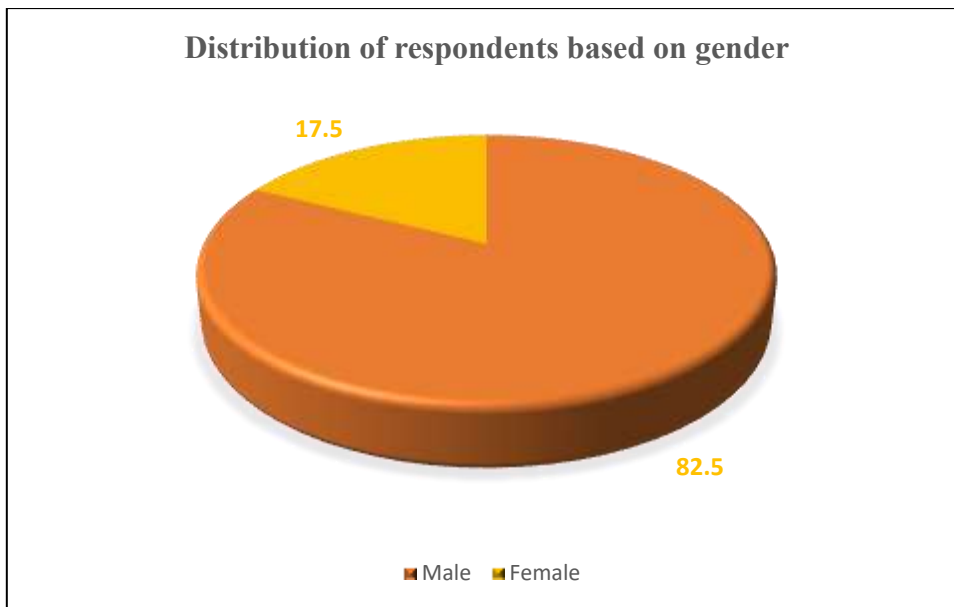


Figure 7 Distribution of respondents based on their gender

Though women form a major portion of the work force in agriculture, the proportion of women involved in market led extension programmes was found to be less. This result also indicated that farming of vegetables on a commercial scale was mostly done by men. It could also be inferred that woman required more encouragement and promotion to get linked with market led programmes of the Department of Agriculture and Farmers' Welfare.

4.6.3 Distribution of respondents based on their family type

The distribution of respondents based on their family type revealed that majority (65%) of the respondents belong to nuclear family and remaining 35 per cent belong to joint family. The distribution of beneficiaries based on their family type is given below in Table 4.14 and Figure 8.

Table 4.14 Distribution of respondents based on their family type

SI No	Family type	Frequency (N=120)	Percentage (%)
1	Nuclear	78	65
2	Joint	42	35

The higher proportion of nuclear family type represented the predominance of nuclear family in the state. This may have an impact on operations in the field as the scope of employing family labour is very limited, which would also reflect on the cost of labour involved in production. Small scale agriculture would be more profitable if the cost of labour is reduced, particularly by involving family labour, as much as possible. Distribution of respondents based on family type is represented in Fig 8.

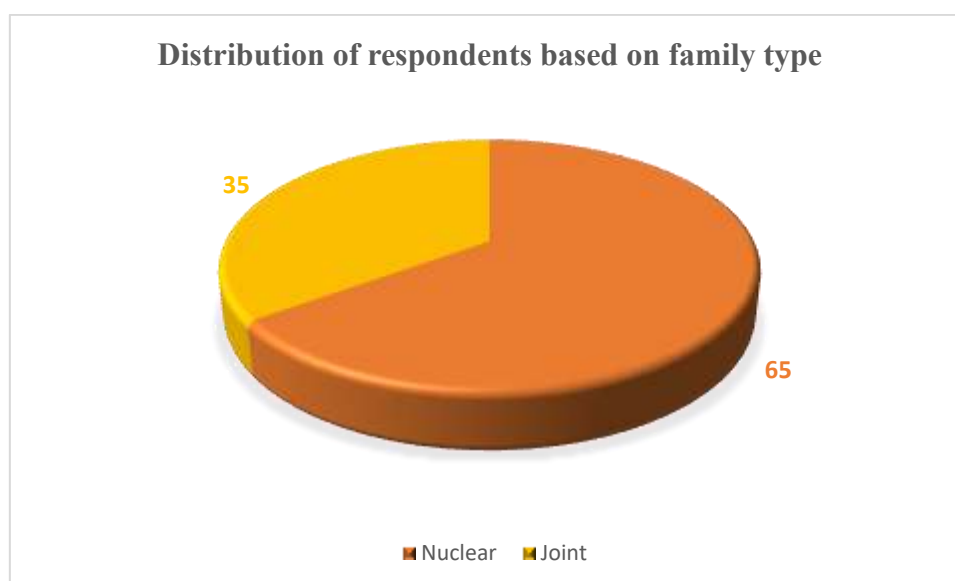


Figure 8 Distribution of respondents based on their family type

4.6.4 Distribution of respondents based on their educational status

Beneficiaries of the market-led extension programmes were classified into five groups based on their education level viz. illiterate, primary, middle, high school and college. Majority of the respondents (47.5%) were found to have undergone high school level of education followed by middle (22.5%) and college level (21.7%). About 8.3 per cent of them possessed only primary education. Also, there were no illiterates among the

respondents. The distribution of beneficiaries based on their educational status is given below in Table 4.15

Table 4.15 Distribution of respondents based on their educational status

SI No	Level of education	Frequency(N=120)	Percentage (%)
1	Illiterate	0	0
2	Primary	10	8.3
3	Middle	27	22.5
4	High school	57	47.52
5	College	26	21.7

The results shown above are in full agreement with the higher literacy rate of the state. It could also be inferred that commercial production of vegetables is attempted mostly by educated farmers. Almost 47.52 per cent of beneficiaries of the market-led extension programmes have undergone high school level education. It was a welcome trend that as much as 21.7 per cent farmers had collegiate education. (See Figure 9 for graphical representation of the data). Educated and uneducated group were generally found to differ in their understanding on different schemes, policies and programmes. The presence of educated youth among the farmers can improve the situation to a large extent.

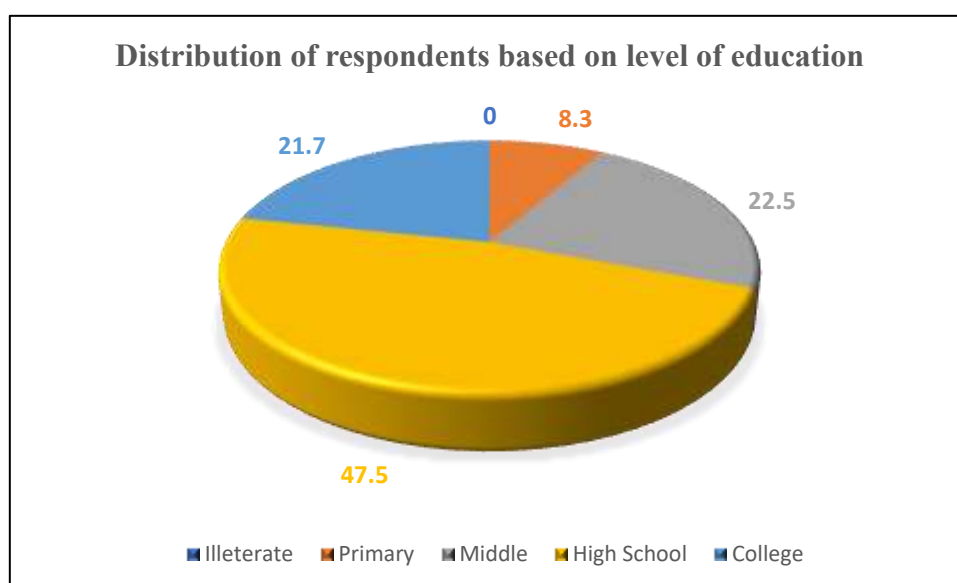


Figure 9 Distribution of respondents based on their level of education

The presence of educated youth leaves enough scope for modernising vegetable production by adopting new knowledge intensive technologies.

4.6.5 Distribution of respondents based on their farming experience

Beneficiaries of the market-led extension programmes were classified into three groups based on their farming experience, viz. low (<5 years), medium (5-10 years) and high (>10 years). The results revealed that majority of the respondents (70.83%) had been in farming for more than 10 years. As much as 22.5 per cent of the respondents had farming experience of 5-10 years and only 6.67 per cent of them had farming experience less than five years. The distribution of beneficiaries based on their farming experience is given below in Table 4.16

Table 4.16 Distribution of respondents based on their farming experience

Sl No	Farming experience	Frequency (N=120)	Percentage (%)
1	Low (<5 years)	8	6.67
2	Medium (5-10 years)	57	22.5
3	High (>10 years)	85	70.83

The results showed that majority of beneficiaries of market-led extension programmes were highly experienced farmers as shown in Figure 10. Experience in the field may increase their knowledge on various marketing strategies and thereby orient them towards proper marketing ideas. This would also change their attitude towards various market-led extension programmes, provided the significance of each programme is made clear to them. The result was in line with the findings of Alagirisamy (1997) who studied on knowledge and adoption behaviour of vegetable growers in Tamil Nadu. Majority of his respondents also had high farming experience.

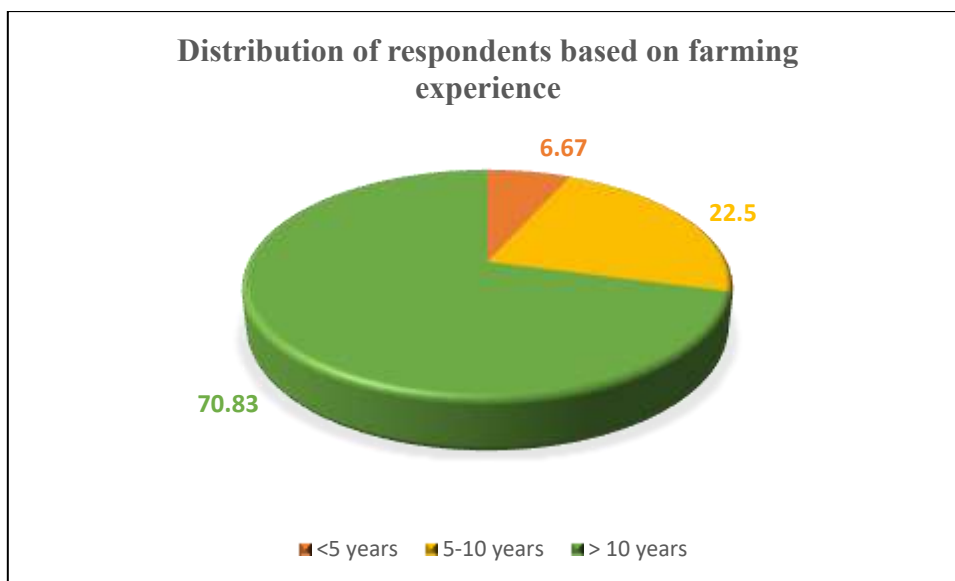


Figure 10 Distribution of respondents based on their farming experience

4.6.6 Distribution of respondents based on their total area under cultivation

Beneficiaries of market-led extension programmes were categorized into three groups based on their area under cultivation. Majority of the respondents (47.5%) owned more than 1 acre land. 29.17 per cent of the respondents owned less than 0.5 acres of land and 23.33 per cent owned land area between 0.5 and 1 acre. The distribution of beneficiaries based on their land area is given below in Table 4.17.

Table 4.17 Distribution of respondents based on their total area under cultivation

Sl No	Land area	Frequency (N=120)	Percentage (%)
1	<0.5 acre	35	29.17
2	0.5-1 acre	28	23.33
3	>1 acre	57	47.5

4.6.7 Distribution of respondents based on the area under vegetable cultivation

The distribution of respondents based on area under vegetable cultivation revealed that majority of the beneficiaries (49.17%) of market-led extension programme owned vegetable land area between 0.1 to 0.5 acre. While 43.33 per cent of them owned more than 0.5 acre, only 7.5 per cent of the respondents had area less than 0.1 acre. The

distribution of beneficiaries based on their land area under vegetable cultivation is given below in Table 4.18.

Table 4.18 Distribution of respondents based on the area under vegetable cultivation

SI No	Area under vegetable cultivation	Frequency (N=120)	Percentage (%)
1	<0.1 acre	9	7.5
2	0.1-0.5 acre	59	49.17
3	>0.5 acre	52	43.33

The frequency distribution of beneficiaries across different categories of land ownership as described above are depicted in Figure 11 and Figure 12.

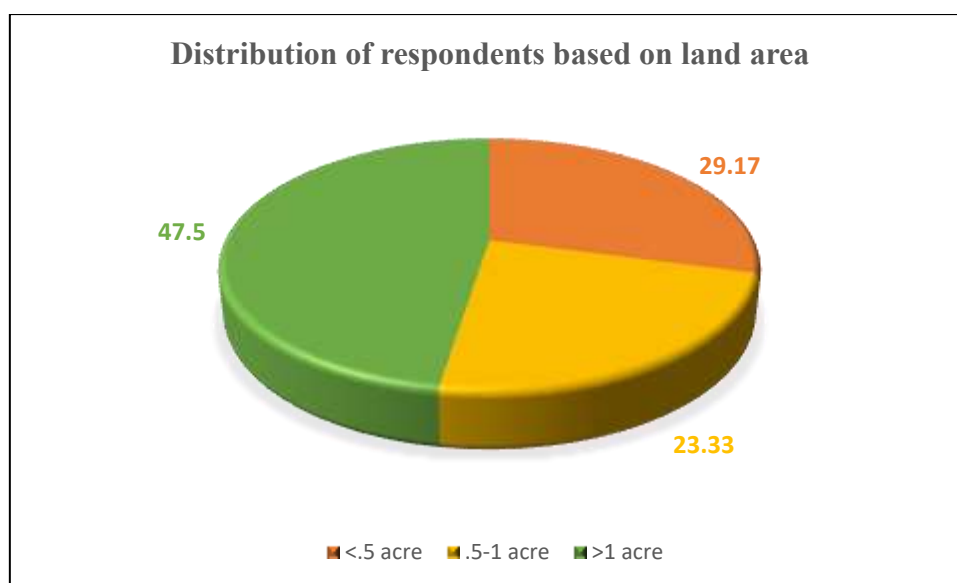


Figure 11 Distribution of respondents based on their land area

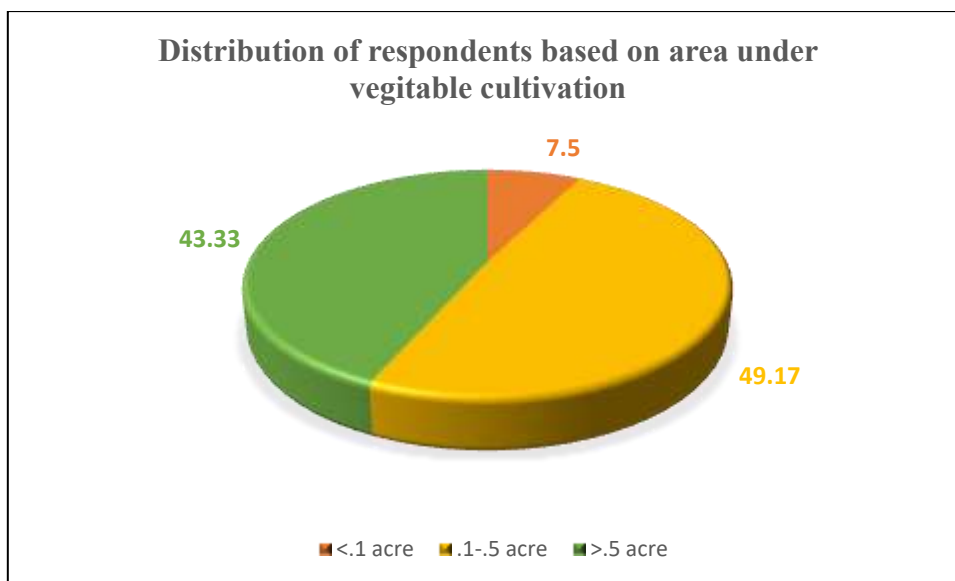


Figure 12 Distribution of respondents based on the area under vegetable cultivation

As seen in the tables and figures above, it was observed that, even though majority of farmers owned more than one acre of land, only 43 per cent of them had vegetable cultivation in an area more than 50 cents. This could be due to the perishable nature and seasonality of vegetables. During the interaction with farmers, majority of them had opined that vegetable cultivation is not widely opted due to lack of adequate marketing opportunities. They also complained that they were not getting profitable price for their produce. It was also explained that even though a number of schemes had been implemented to facilitate farmers in marketing, the provisions of majority of those schemes were not clear to them. This warrant intensive extension interventions to make the schemes accessible to the farming community and to ensure that deserving and enterprising farmers do avail such opportunities.

4.6.8 Distribution of respondents based on their annual income

Respondents were categorized into three groups based on their annual income from agriculture. The distribution of respondents based on their annual income showed that majority of the respondents (59.17%) had an income more than 1 lakh rupees followed by 27.5 per cent with annual income between 50,000 and 1 lakh rupees and 13.33 per cent with less than 50,000 rupees as shown in Table 4.19. The distribution of beneficiaries based on their annual income is also depicted in Figure 4.19

Table 4.19 Distribution of respondents based on their annual income

Sl No	Annual income (Rs)	Frequency (N=120)	Percentage (%)
1	<50,000	9	13.33
2	50,000-1,00,000 rupees	59	27.5
3	>1,00,000 rupees	52	59.17

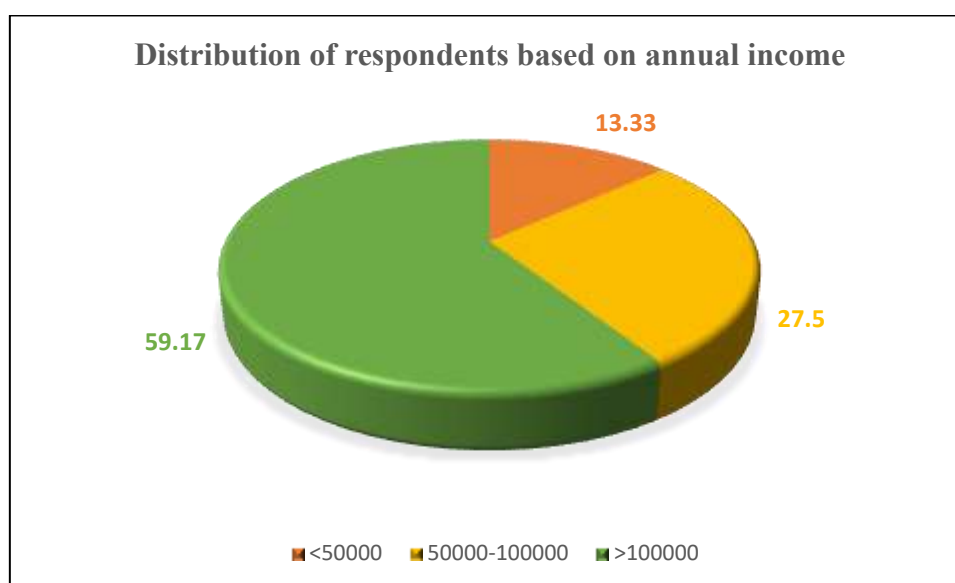


Figure 13 Distribution of respondents based on their annual income

The average annual income of the farmer respondents was Rs. 1,245,00 and almost 40 per cent of them had income less than 1,00,000. The results clearly showed the difficulty faced by the farmer in sustaining agriculture as a means of livelihood. Majority of the farmers opined that they were not getting a remunerative income from vegetable cultivation. According to them, the main reasons for this are, climatic contingencies leading to crop loss, perishable nature of the produce, lack of infrastructural facilities, inadequate market opportunities, less remunerative prices *etc.* Income from agriculture is only a part of the total income of most of the households in Kerala. These results support the observation that small scale vegetable production face several constraints as revealed above.

4.6.9 Distribution of respondents based on the volume of production

Majority of the beneficiaries (50.83%) of the market-led extension programmes under study had an average production of vegetables less than 20 Kg per week. While 41.67 per cent of them had yields ranging from 20-50 Kg vegetables, only 7.5 per cent of them had a production more than 50 Kg as shown in Figure 14. The distribution of beneficiaries based on their volume of production is given below in Table 4.20 and represented as graph in Figure 14.

Table 4.20 Distribution of respondents based on volume of production

SI No	Volume of production	Frequency (N=120)	Percentage (%)
1	<20 Kg	61	50.83
2	20-50 Kg	50	41.67
3	>50 Kg	9	7.5

Results given in the table showed that the volume of transaction which is determined primarily by the area, production and productivity of vegetables was also low. The volume of transaction of majority of the farmers is very low and this showed the subsistence nature of production by the beneficiary farmers of the programmes under study. This in fact points towards the need to provide substantial market support to the small and marginal farmers to enable them to get maximum profit.

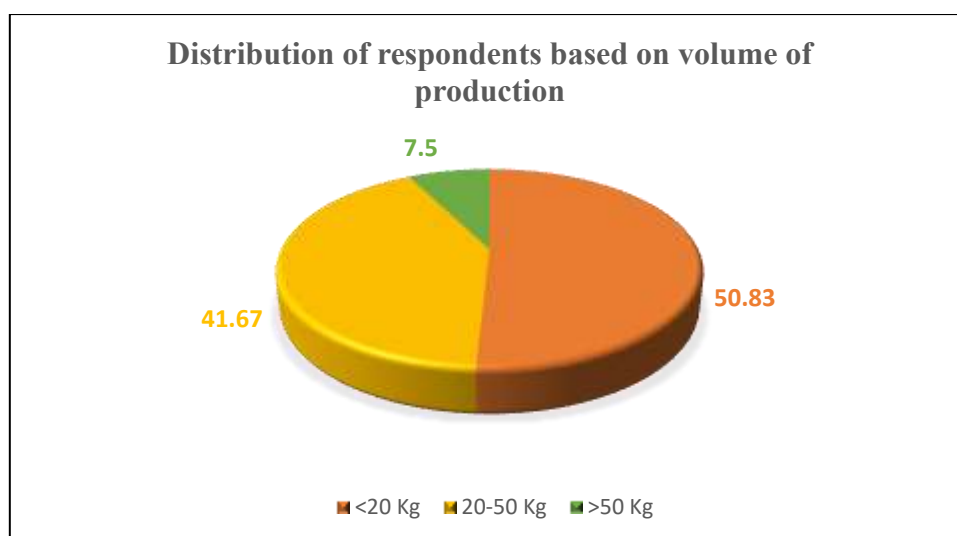


Figure 14 Distribution of respondents based on the volume of production

4.6.10 Distribution of respondents based on marketable surplus

Among the beneficiaries of the market-led extension programmes, 68.33 per cent had marketable surplus less than 20 Kg followed by 30 per cent with 20-50 Kg and 1.67 per cent with more than 50 Kg as given in Figure 15. The distribution of beneficiaries based on marketable surplus is given below in Table 4.21 and represented graphically in Figure 15.

Table 4.21 Distribution of respondents based on marketable surplus

Sl No	Volume of production	Frequency(N=120)	Percentage (%)
1	<20 Kg	82	68.33
2	20-50 Kg	36	30
3	>50 Kg	2	1.67

As seen in the case of volume of transaction, marketable surplus also showed similar trends. While the small and marginal farmers, which formed the majority had only less marketable surplus, only 1.67 per cent had more than 50 kgs as marketable surplus during the reference period.

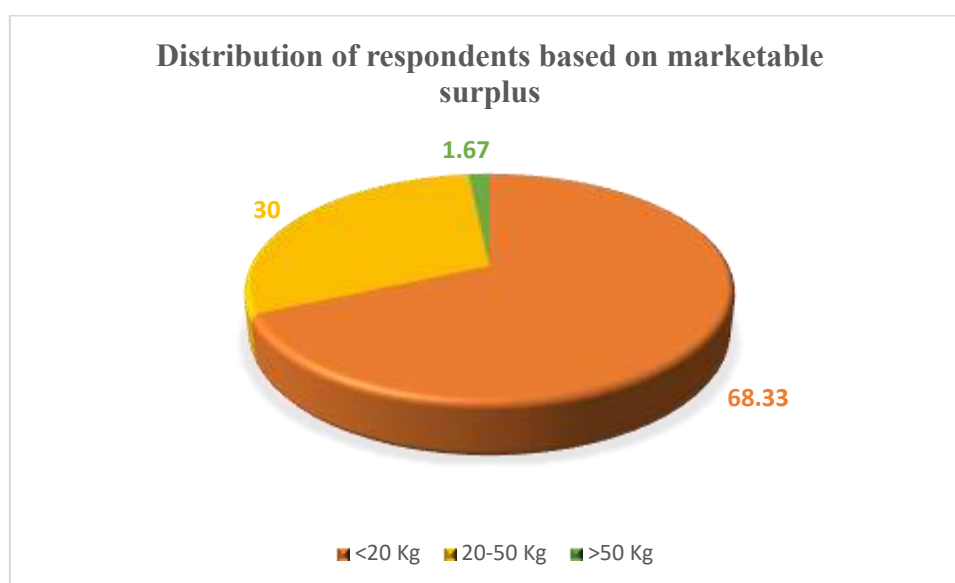


Figure 15 Distribution of respondents based on marketable surplus

It was also found that out of the total volume of production, as much as 82.32 per cent of the production could be estimated as marketable surplus and remaining 17.6 per cent were used by farmer producers for their own requirements. The requirement for each farmer would vary accordingly.

4.6.11 Distribution of respondents based on extension contact

Extension plays a major role in the transformation from a production led system to a market led system. Since the distribution of respondents based on their extension contact didn't follow the assumption of normality and also mean and median didn't coincide, they were categorized on the basis of their quartile range. Among the beneficiaries of the market-led extension programmes, majority of them (53.33%) had quartile scores between 66.67 and 80, i.e., medium level of extension contact. As much as 24.17 per cent had high extension contact, but 22.5 per cent of them had only less extension contact with scores below Q1. This showed that predominantly there was low level of extension contact by the beneficiaries, which would definitely influence the effectiveness of the market-led extension system. The findings were in line with the results of Roopa in 2018, who stated in her study on awareness and satisfaction level of vegetable growers towards marketing facilities at Chikkaballapura Agricultural Produce Market Committee that, majority of the vegetable farmers involved in such marketing initiatives had only medium level of extension contact.

The distribution of respondents based on their extension contact is given below in Table 4.22

Table 4.22 Distribution of respondents based on extension contact

SI No	Extension contact	Frequency (N=120)	Percentage (%)
1	Low (<Q1)	27	22.5
2	Medium (Q1-Q3)	64	53.33
3	High (>Q3)	29	24.17
Q1 = 66.67, Q3 = 80, Interquartile range = 13.33			

It could be distinctly identified that among the three programmes, beneficiaries of Karshakamithra had high extension contact due to the presence of Karshakamithra volunteers who facilitated farmers with marketing. Even though Ecoshops and Weekly Markets promoted direct selling of the produce, lack of extension components in the schemes had left many farmers unaware of the content of the scheme.

4.6.12 Distribution of respondents based on their knowledge on marketing strategies

As seen previously, the distribution of respondents based on their knowledge level on different marketing strategies didn't follow normal distribution and hence quartile scores were used to categorize them. The distribution revealed that majority of the respondents (64.17%) had medium level of knowledge about different marketing strategies. Out of this, while 24.17 per cent of them had high knowledge level, 11.67 per cent of them belonged to lower knowledge level category. The distribution of respondents based on knowledge level is shown below in Table 4.23

Table 4.23 Distribution of respondents based on knowledge on marketing strategies

SI No	Knowledge level	Frequency (N=120)	Percentage (%)
1	Low (<Q1)	14	11.67
2	Medium (Q1-Q3)	77	64.17
3	High (>Q3)	29	24.17
Q1 = 69.23, Q3 = 76.92, Interquartile range = 7.69			

As stated earlier while discussing farming experience, majority of the beneficiaries of market-led extension programmes were well experienced farmers. This might have given adequate exposure to different strategies on marketing. However, the farming community should devise a comprehensive training cum advisory service mechanism to impart knowledge and skills in agricultural marketing. In-order to make farming community more competent in the market, both content and method of delivery of advisory and services need to be market oriented rather than production oriented.

4.6.13 Distribution of respondents based on their market orientation

The distribution of respondents based on their market orientation showed that majority of the respondents (83.33%) had medium level of market orientation with quartile score between 50 and 57.5. It was observed that 9.17 per cent of them had high level of market orientation and 7.5 per cent belonged to low category. The distribution is as shown below in Table 4.24

Table 4.24 Distribution of respondents based on market orientation

Sl No	Market orientation	Frequency (N=120)	Percentage (%)
1	Low (<Q1)	9	7.5
2	Medium (Q1-Q3)	100	83.33
3	High (>Q3)	11	9.17
Q1 = 50, Q3 = 57.5, Interquartile range = 7.5			

As cited by several authors earlier, the incidence of higher or medium level of market orientation could be attributed to their experience and knowledge in farming and the extent of extension contact (Jaganathan, 2004; Patel *et al.*, 2013; Noobiya, 2016).

4.6.14 Distribution of respondents based on their attitude towards market-led extension programme

Majority of the respondents (60%) had a favourable attitude towards market-led extension programmes. About one fourth (25.83%) of the respondents had most favourable attitude and remaining percentage had least favourable attitude towards the programme. The distribution of respondents based on their attitude is given below in Table 4.25

Table 4.25 Distribution of respondents based on their attitude towards market-led extension programme

Sl. No.	Attitude level	Frequency (N=120)	Percentage (%)
1	Least favourable (<Q1)	17	14.17
2	Favourable (Q1-Q3)	72	60
3	Most favourable (>Q3)	31	25.83
Q1 = 55.36, Q3 = 58.93, Interquartile range = 4			

The favourable attitude of respondents towards the programmes would be an indication of the farmers' interest in involving in new initiatives and experiencing new strategies. The only condition is they should have good market value for their produce and a stable income. So, government schemes implemented as a part of farmers' welfare should meet the requirements of farmers and should address those components.

4.7 Effectiveness of market-led extension programmes as perceived by beneficiaries and extension personnel

Perceived effectiveness of market-led extension programmes of the programmes was calculated as per the methodology described in Chapter 3

Perceived effectiveness score of each programme was measured on the basis of five dimensions:

- **Service**

This dimension deals with the services provided as part of market-led extension programmes to the farmers in marketing of their produce. Support provided by extension personnel during critical decision-making period/situation is very important. This makes extension more important in marketing. Other services included timely distribution of inputs with good quality and quantity. Provision for proper grading, packaging and storage of the produce also come under service dimension.

- Advisory

This dimension deals with the consultancy support provided as a part of these schemes. Advisory services mainly include assistance on improved production practices, training to attain various skills on marketing, information on potential varieties *etc.* Delivery of proper advisory services enables capability building of the beneficiaries.

- Market intelligence

Market intelligence enables farmers to take informed decisions on what to grow, when to harvest, when and where to sell *etc.* This dimension deals with the information on consumer-based data, current rates in market, regarding consumer preference, price records *etc.* The major component of market intelligence is price intelligence. Extension plays a major role in collection, evaluation and dissemination of market information.

- Facilitation

This dimension deals with facilitating farmers with govt policies and schemes regarding agriculture and agriculture marketing. Farmers should also have awareness on various credit support and subsidies available for them as a part of marketing of their produce.

- Organization

This dimension deals with the formation of farmer organizations, self-help groups, cooperatives, consumer organizations *etc.* as a part of market-led extension schemes. Mean effectiveness score of the three programmes as perceived by beneficiaries and extension personnel were calculated as given in Table 4.26. Later perceived effectiveness score of beneficiaries and extension personnel for each dimension and overall perception score were plotted as shown in Figure 16, 17, 18, 19, 20 and 21 respectively.

Table 4.26 Mean effectiveness score of market-led extension programmes as perceived by beneficiaries and extension personnel

Dimension	Mean perceived effectiveness score					
	Ecoshop		Karshakamithra		Weekly Market	
	Beneficiaries	Extension personnel	Beneficiaries	Extension personnel	Beneficiaries	Extension personnel
Service	57.85	64.48	55.28	61.72	55.64	52.44
Advisory	44.64	75.71	44.42	68.18	38.50	62.04
Market intelligence	84.75	74.04	82.33	66.97	83.33	48.33
Facilitation	47.85	64.49	45.64	61.81	44.50	55.71
Organization	41.50	60.35	45.62	60.68	39.75	55
Overall perception score	55.70	68.34	54.74	63.75	52.56	53.64

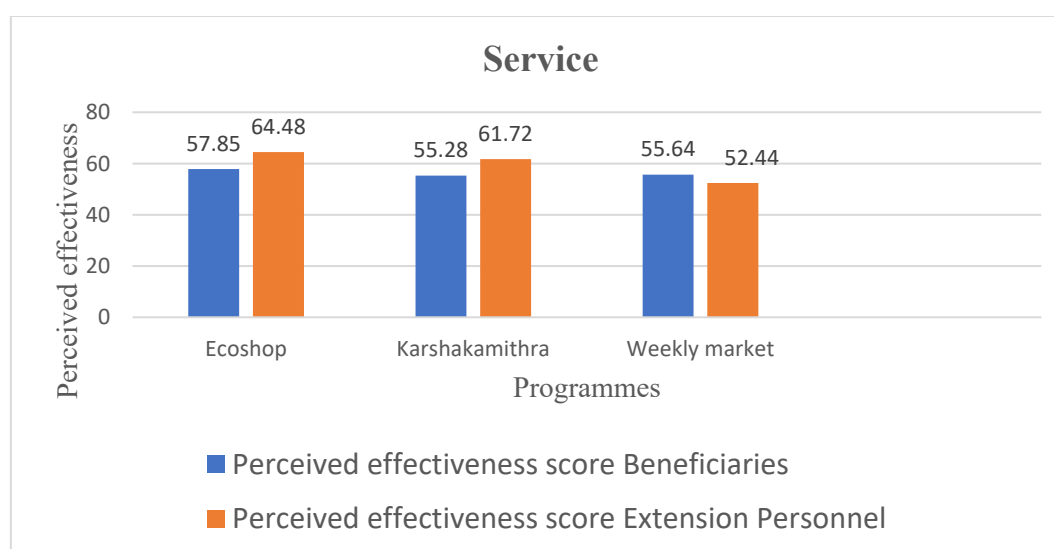


Figure 16 Distribution of programmes based on scores on service dimension of effectiveness perceived by beneficiaries and extension personnel

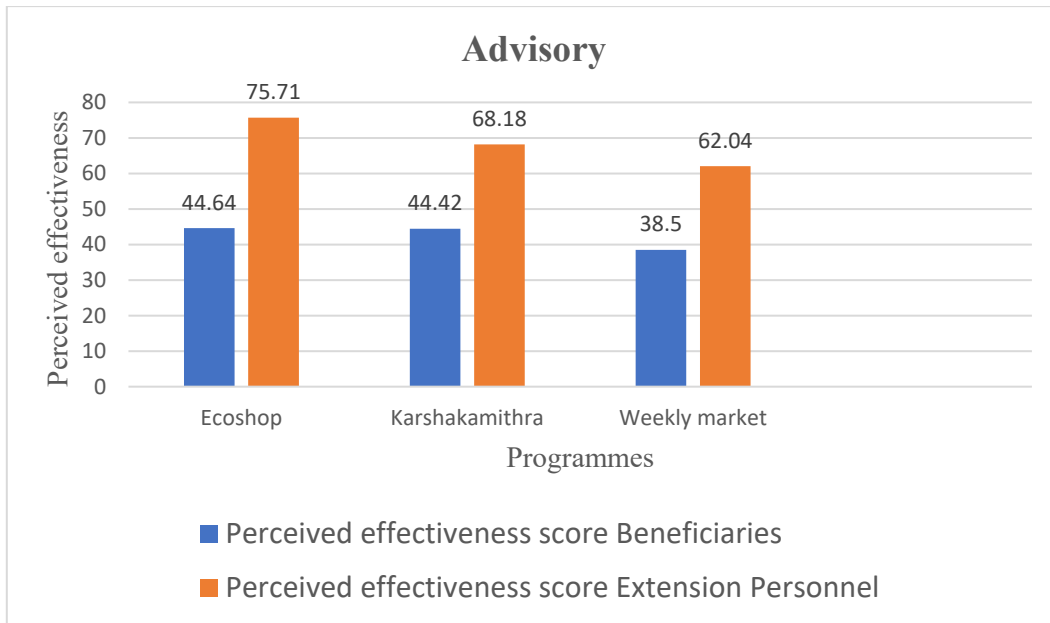


Figure 17 Distribution of programmes based on scores on advisory dimension of effectiveness perceived by beneficiaries and extension personnel

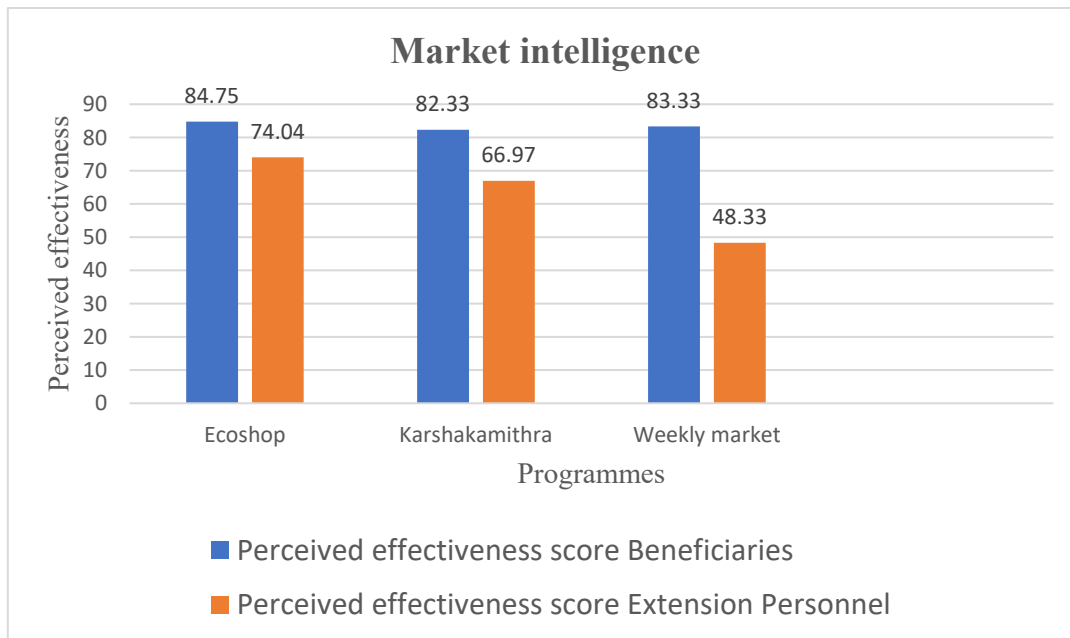


Figure 18 Distribution of programmes based on scores on market intelligence dimension of effectiveness perceived by beneficiaries and extension personnel

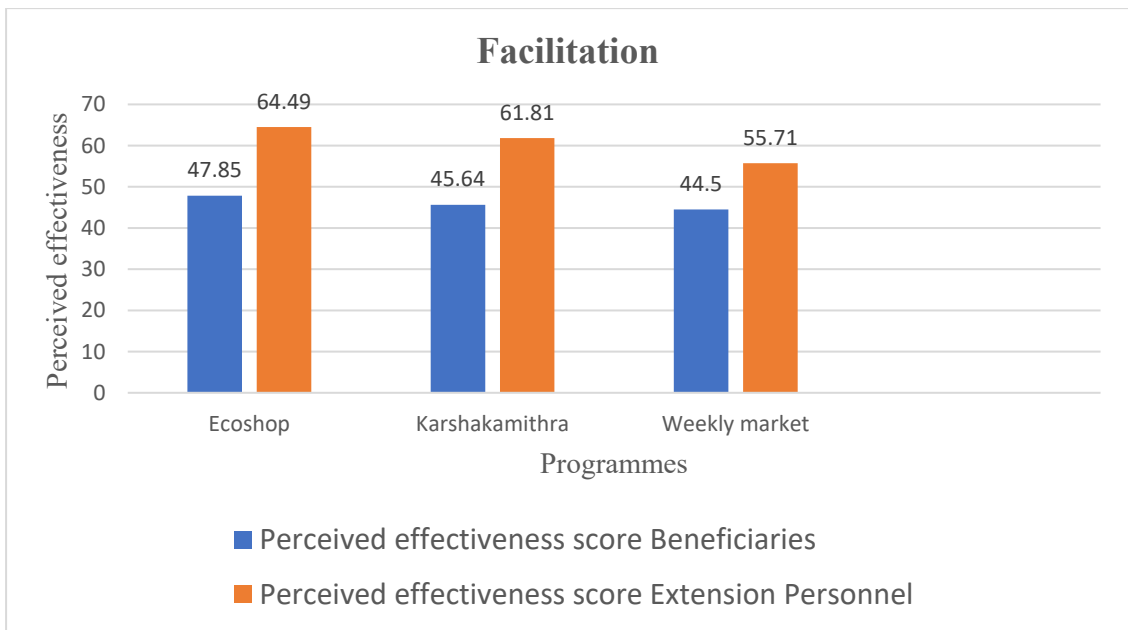


Figure 19 Distribution of programmes based on scores on facilitation dimension of effectiveness perceived by beneficiaries and extension personnel

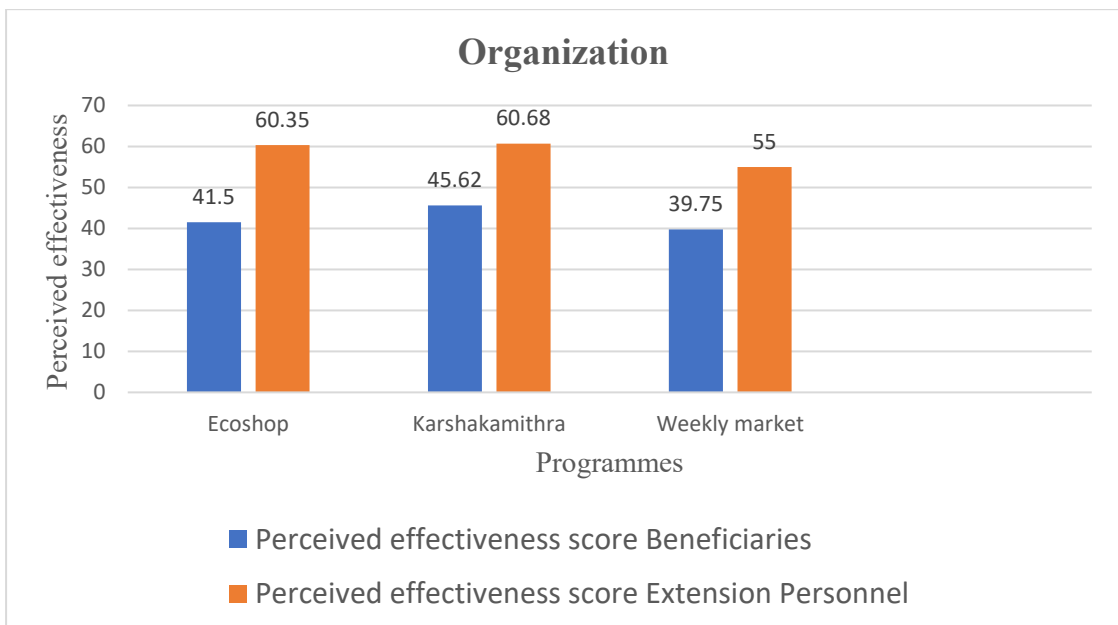


Figure 20 Distribution of programmes based on scores on organization dimension of effectiveness perceived by beneficiaries and extension personnel

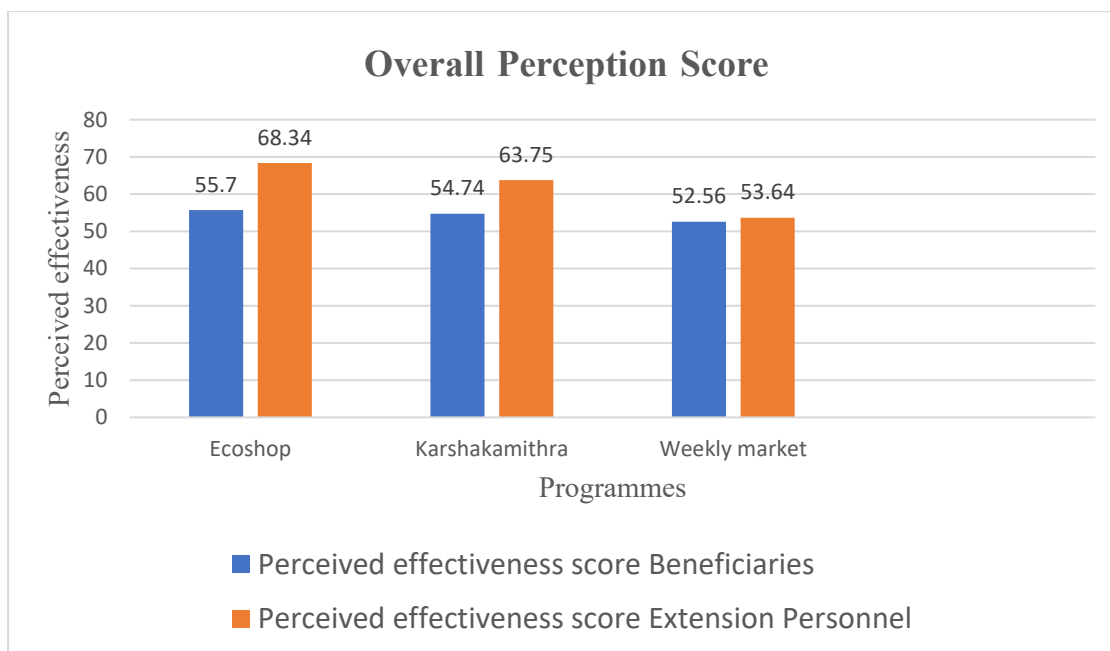


Figure 21 Distribution of programmes based on overall scores on effectiveness perceived by beneficiaries and extension personnel

Comparing the perceived effectiveness dimensions for beneficiaries and extension personnel, it could be inferred that except market intelligence all other components were perceived to be more efficient by for the extension personnel compared to beneficiaries. Farmer producer will always try to get market information, since it directly affects their income status. They may not give due importance to other dimensions. It may also be due to the fact that farmers were not directly involved with all other components envisaged by the programmes. Hence, they might not have had awareness on various other dimensions of the programmes including service, advisory, organization and facilitation. Since extension personnel were involved in all activities of the programmes from the initial stage of implementation, they might know more about the structure and components of the programmes. This showed the lack of extension interventions in the scheme to make the beneficiaries aware of marketing, which is the key component of the project

4.7.1 Comparison of perceived effectiveness scores of beneficiaries

In order to find out whether the beneficiaries of the three programmes differed significantly with respect to their perceived effectiveness, Kruskal Wallis test was

performed to rank the perception scores. The calculated p value was less than level of significance ($p=.05$) as shown in Table 4.27, which implied that perception of beneficiaries on the three programmes differed significantly.

Table 4.27 Different market-led extension programmes in terms of perceived effectiveness (Kruskal Wallis test)

Total N	120
Test statistic	10.64
Degrees of freedom	2
Sig	.005

The result coincided with the results obtained by Pennings *et al.* in 2001. They also concluded in their study that there existed a heterogeneity among the beneficiaries in their perception on market advisory services.

Table 4.28 Mean ranks of perceived effectiveness assigned by beneficiaries (Kruskal Wallis test)

Programme	Mean rank
Ecoshop (n=40)	72.15 (1)
Karshakamithra (n=40)	62.31 (2)
Weekly Market (n=40)	47.04 (3)

() Ranks are given in parenthesis

From Table 4.28, we could find that beneficiaries of Ecoshops had highest mean perception score among the three programmes and beneficiaries of Weekly Markets had the lowest mean scores. Boxplot given below (Figure 22) compare the perception of beneficiaries on effectiveness of these programmes.

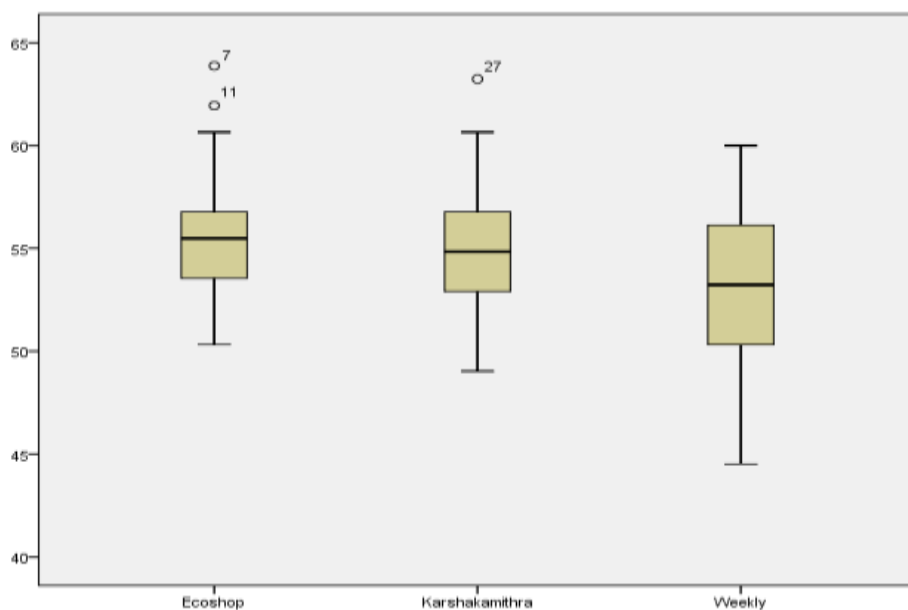


Figure 22 Boxplot comparing effectiveness of the programmes as perceived by beneficiaries

The highest perception score obtained by the beneficiaries of Ecoshops could be attributed to the fact that farmers expect and avail premium prices for their produce in the Ecoshops, since most of the products procured and sold through these outlets are organic in nature. Even though the yield would be less for organic products compared to non- organic products, Ecoshop promises fairly higher prices for the produce throughout the year, irrespective of fluctuating prices in other markets. This could also be due to the increased demand of organic vegetables among the consumer as cited by Alizadeh *et al.* (2008). In his study, it was found that most of the consumers preferred to purchase organic vegetables labelled as certified. He also found that almost half of the respondents in his study had high level of knowledge on organic produce, so that they would have a tendency to consume organic produce.

The higher scores could also be due to the fact that Ecoshops involved farmer organizations. Direct participation of farmers might enhance their interest in selling their produce through Ecoshops rather than through Karshakamithras.

The scheme also promoted direct sale of the produce through their outlet. Here, agricultural products are procured directly from the farmers avoiding middle men or commission agents which would enhance the get profit of producer farmers.

Beneficiaries of Karshakamithra had obtained the second highest mean perception score. The major advantage of this programme is that Karshakamithra volunteers collect surplus production from the farmer's household thereby reducing the logistic problems including transportation. Karshakamithras also provided farmers with support on different problems they face in the field during production period. The produce collected by Karshakamithra were usually sold through different outlets including Eco-shop or Weekly Markets under Krishi bhavan or private outlets. Even though the programme was piloted in the district, Karshakamithras in many panchayats had stopped functioning. This was mainly due to the fact that they could not gather much produce from the farmers as the latter were involved in many other schemes by the Department of Agriculture or VFPCK.

Beneficiaries of Weekly Market had less mean perception score among the three groups. These programmes were conducted once in a week in majority of the panchayats and farmers who had production on a daily basis refused to market their produce through these markets. During the survey, it was understood that in majority of the panchayats, even though the scheme was implemented, it was not functioning properly. The major problem faced was lack of means to motivate the farmers to supply produce in weekly markets. The objectives of the scheme were not explained properly. Lack of training programmes for the marketing officials was also cited to be another problem that determined the perception of farmers. Even though the scheme promoted direct selling of the produce, it could not ensure stable income for farmers. The profitability was also less compared to others.

4.7.2 Comparison of various dimensions that contribute to effectiveness

The difference among the three groups of beneficiaries with regard to their perception on various dimensions of effectiveness was examined by employing Kruskal Wallis test. The results are shown below in Table 4.29

Table 4.29 Difference among the beneficiaries of market-led extension programmes in terms of perception on various dimensions of effectiveness

Dimensions	Kruskal Wallis test (n=40 each)			
	Ecoshop	Karshakamithra	Weekly Market	H value
Service	65.24 (1)	54.95 (3)	61.31 (2)	1.807
Advisory	72.55 (1)	70.18 (2)	38.78 (3)	23.93*
Market intelligence	65.21 (1)	56.28 (2)	60.01 (3)	1.388
Facilitation	71.40 (1)	58.93 (2)	51.18 (3)	7.039*
Organization	58.00 (2)	73.90 (1)	49.60 (3)	10.502*

() Ranks are given in parenthesis

* significant at 5 per cent

The analysis revealed that perception of beneficiaries on dimensions namely e advisory, facilitation and organization of the three programmes differed significantly. In the case of services offered and market intelligence, the perception scores did not differ significantly. This might be due to the fact that, farmer producers would always be in need of market information and services, which are important for their livelihood and they always try to collect such information from different sources. Hence they might not have distinguished between these programmes in terms of such parameters.

The results further showed that beneficiaries of Ecoshops had high perception scores on advisory and facilitation dimensions, followed by the beneficiaries of Karshakamithra and Weekly Market programmes. In the case of organization dimension, Karshakamithra beneficiaries had more perception score compared to others.

In majority of panchayats, Ecoshops were run by a committee, which had a president, secretary and other members. This system of participatory administration might be the main reason for higher scores on advisory and facilitation dimensions obtained by farmers. The democratic nature in their administration might increase the interpersonal communication among extension personnel and farmers leading them to elicit more information from extension personnel.

Karshakamithra seemed to be a more organized programme compared to other programmes as it had a functional mechanism to link farmers with the Department of Agriculture for a vital function like marketing.

The low scores on all dimensions of effectiveness by beneficiaries of Weekly Markets might be due to its inefficient performance in majority of the panchayats. The programme was found to be less organized in most of the places. Beneficiaries were also not provided with any support in Weekly Markets Income levels of the farmers who had participated in Weekly markets were also low. Even though the scheme components included planning, monitoring, management *etc.* they were not found to be actually implemented.

4.7.3 Comparison of perceived effectiveness scores of extension personnel

The difference in the perception scores of extension personnel on the effectiveness of the three market-led extension programmes was analysed by employing Kruskal Wallis test. From the test statistics, it was clear that perception of extension personnel on effectiveness of the three programmes also differed significantly (See Table 4.30).

Table 4.30 Perceived effectiveness of extension personnel (Kruskal Wallis test)

Total N	50
Test statistic	13.34
Degrees of freedom	2
Sig	.001

Extension personnel had perceived Ecoshop to be more effective followed by Karshakamithra and Weekly Market. The results are shown below in Table 4.31

Table 4.31 Mean ranks of perceived effectiveness scores assigned by extension personnel (Kruskal Wallis test)

Programme	Mean rank
Ecoshop (n=14)	33.71 (1)
Karshakamithra (n=22)	27.45 (2)
Weekly Market (n=14)	14.21 (3)

() Ranks are given in parenthesis

Boxplot given below (Figure 23) compare the perception of extension personnel on effectiveness of these programmes.

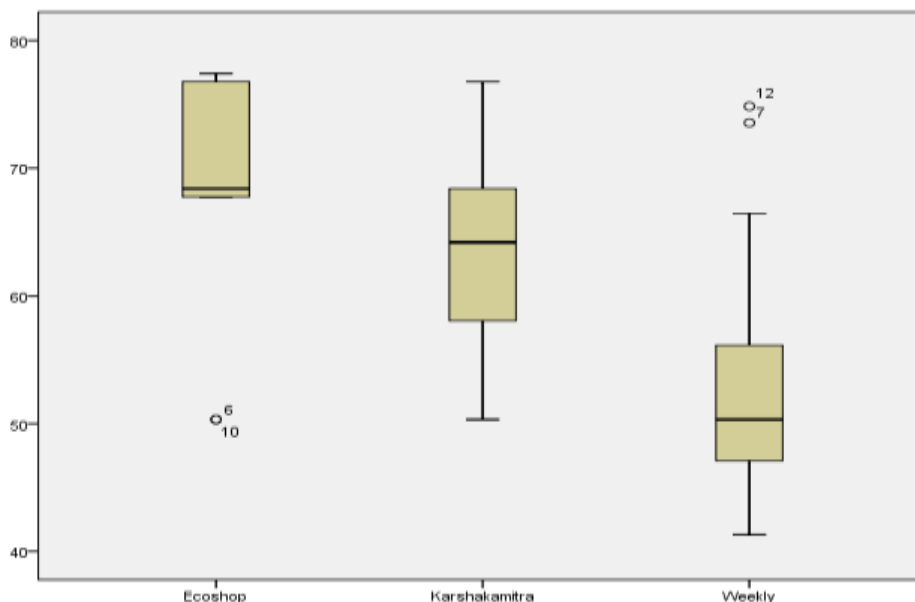


Figure 23 Boxplot comparing effectiveness of the programmes as perceived by extension personnel

4.7.4 Perception of beneficiaries and extension personnel on the effectiveness of market-led extension programmes: a comparison

Difference between extension personnel and the beneficiaries of market led programmes with respect to their scores on effectiveness was estimated by Mann-Whitney U test . The results are shown below in Table 4.32

Table 4.32 Test statistics of Mann Whitney U test for comparing the three programmes based on perception scores

	Ecoshop	Karshakamithra	Weekly Market
Mean score of beneficiaries	22.48	23.93	28.49
Mean score of extension personnel	41.86	45.27	24.68
Mann-Whitney U	79.000	137.000	240.500
Wilcoxon W	899.000	957.000	345.500
Z	-3.975	-4.466	-.781
Asymp.Sig (p value)	.000	.000	.435

In the case of Ecoshops and Karshakamithra, computed p value was less than the level of significance ($p=.05$), implying that perception of beneficiaries and extension personnel on the effectiveness of the two programmes differed significantly. In the case of Weekly Market, computed p value was greater than the level of significance ($p=.05$) which meant that perception of beneficiaries and extension personnel on the effectiveness of Weekly Market almost remained same.

The significant difference between beneficiaries and extension personnel with regard to their perception on effectiveness on Ecoshop and Karshakamithra, reiterate the fact that there should be adequate focus on enhancing the efficiency of the programmes with low scores by strengthening various components of the scheme.

4.8 Effect of personal and psychological attributes of the beneficiaries on their perception on the effectiveness of market-led extension programmes

Binary logistic regression was fitted to find out the effect of personal and psychological attributes of beneficiaries on their perception on the effectiveness of market-led extension programmes. Out of the thirteen variables selected, three of them, viz. knowledge on marketing strategies, volume of production and farming experience were found to have significant influence on the probability of the beneficiaries to perceive a programme to be more effective. These attributes helped the researcher to categorise the respondents under different groups of perception scores. The model was satisfactory with a significant chi square value and the likelihood ratio test at 145.175.

It was observed that Cox and Snell R^2 value and Nagelkerke R^2 value were 0.162 and 0.216 respectively which were satisfactory.

Estimates of the binary logistic regression for effectiveness are given below in Table 4.33

Table 4.33 Estimates of logistic model of the factors affecting perception on effectiveness

Sl No	Variable	B	Standard error	Wald statistic	Sig.	Exp (B)	Probability
1	Constant	-6.102	3.003	4.130	.042	.002	0.001996
2	Age	-.158	.450	.124	.725	.854	0.460626
3	Gender	-.602	.614	.959	.327	.548	0.354005
4	Education	.237	.254	.873	.350	1.268	0.559083
5	Family type	.728	1.112	.428	.513	2.070	0.674267
6	Farming experience	.914	.484	3.560	.059*	2.494	0.713795
7	Land area	.017	.027	.414	.520	1.017	0.504214
8	Vegetable land area	.165	.272	369	.544	1.180	0.541284
9	Annual income	.350	.546	412	.521	1.419	0.586606
10	Volume of production	.000	.000	8.017	.005*	1.000	0.5
11	Marketable surplus	-.079	.079	.998	.318	.924	0.480249
12	Extension contacts	.135	.093	2.104	.147	1.144	0.533582
13	Knowledge	.049	.021	5.556	.018*	1.050	0.512195
14	Attitude	.017	.020	.748	.387	1.017	0.504214

4.9 Factor analysis

The most important factors that affected the perception of the respondents on the effectiveness of the three programmes were found out by employing factor analysis. This helped the researcher reduce the number of independent variables and thereby identify the common factors. Factors were extracted using principal component method.

Before proceeding to principal component method, appropriateness of variables to be used in the analysis was tested using Kaiser-Meyer-Olkin (KMO) test and Bartlett's test of Sphericity. The results are presented in Table 4.34

Table 4.34 Confirmatory tests used to check the appropriateness of PCA

Kaiser-Mayer-Olkin measure of sampling adequacy		0.664
Approx. chi square		827.217
Bartlett's test of sphericity	Df	55
	Sig.	0.00

Kaiser-Mayer-Olkin test assessed the sampling adequacy of the variables. KMO measure greater than 0.6 is the suggested criterion for principal component analysis. A significance value in Bartlett's test, less than 0.05 indicates that, the data can be administered with PCA. These are the two confirmatory tests for principal component analysis.

The results of factor analysis of independent variables are given below in Table 4.35. Five factors were extracted through the method of PCA with eigen value greater than one and they resulted in a cumulative variance of 79 per cent. However, variance explained by each of the factors were 33.47 per cent, 13.55 per cent, 11.89 per cent, 10.90 per cent and 9.48 per cent respectively. These five factors which represented the whole variables were used for fitting regression of perceived effectiveness.

Table 4.35 Components of perceived effectiveness based on PCA

Component	Eigen value	Variance (%)	Cumulative variance (%)
1	3.682	33.472	33.472
2	1.491	13.555	47.027
3	1.308	11.892	58.920
4	1.200	10.907	69.827
5	1.044	9.489	79.316
6	.858	7.797	87.113
7	.646	5.875	92.988
8	.386	3.511	96.499
9	.245	2.227	98.725
10	.128	1.165	99.890
11	.012	.110	100.000

The components extracted were plotted against their eigen value as given in Scree plot given below (Figure 24).



Figure 24 Scree plot

From the rotated component matrix depicted in Table 4.36 below, it could be identified that the first factor which explained maximum variance (33.47%) consisted of variables like volume of production, marketable surplus, annual income, total land area and vegetable land area. This factor was named as *farmer's endowment factor*. Second factor explained a variance of 13.55 per cent and it included 'age' and 'farming experience' of respondents. These factors together could be called as *personal attributes of farmers*.

Table 4.36 Rotated component matrix

Variables	Components				
	1	2	3	4	5
Volume of production	0.914				
Marketable surplus	0.912				
Annual income	0.869				
Vegetable land area	0.719				
Total land area	0.665				
Age		0.903			
Farming experience		0.848			
Market orientation			0.863		
Extension contact			0.567		
Attitude				0.833	
Knowledge					0.862

Third factor explained a variance of 11.89 per cent consisted of ‘market orientation’ and ‘extension contact’, which was termed as *orientation factor*. Fourth one, named *attitude factor* had the variable ‘attitude of beneficiaries towards the programmes’ which explained a variance of 10.90 per cent. Fifth factor was *knowledge factor* which explained a variance of 9.48 per cent.

4.9.1 Effect of extracted factors on the dependent variable

The results of factor analysis revealed that 79 per cent of variation in the original data could be explained by the 5 factors extracted. These 5 factors were used as independent variables to fit a regression of perceived effectiveness on these factors.

In linear regression analysis R^2 is used to measure the variance explained by the model. An R^2 value of 58.3 per cent was obtained leading to an adjusted R^2 value of 56.5 per cent which indicated that the model could explain almost 57 per cent of variation in perceived effectiveness through the factors namely farmer’s endowment factor, personal attributes, orientation factor, knowledge and attitude. Model summary is given below in Table 4.37

Table 4.37 Model summary of linear regression model for perceived effectiveness

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.763 ^a	.583	.565	2.447

Of the five factors, the third factor was found to be the most significant factor to predict the dependent variable. Model estimates are given below in Table 4.38

Table 4.38 Estimates of linear regression model for perceived effectiveness

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	54.338	.223		243.266	.000
Factor 1	.178	.224	.048	.791	.430
Factor 2	-.042	.224	-.011	-.188	.851
Factor 3	2.807	.224	.757	12.513	.000**
Factor 4	-.213	.224	-.058	-.952	.343
Factor 5	.240	.224	.065	1.071	.287

* **Significant at 1 per cent

The regression equation fitted was,

$$Y = 54.33 + 0.17F_1 - 0.04F_2 + 2.80F_3^{**} - 0.21F_4 + 0.24F_5$$

- F_1 = Farmer's endowment factor
- F_2 = Personal attributes
- F_3 = Orientation factor
- F_4 = Knowledge level
- F_5 = Attitude
- Y = Perceived effectiveness of the market-led extension programmes (Dependent variable)

The rotated component matrix in factor analysis showed that market orientation and extension contact had highest factor loadings under the third factor (F_3). Therefore, it could be assumed that these variables among all other variables would significantly

predict the perception of beneficiaries on the effectiveness of market-led extension programmes. The results coincided with the results obtained by Sumit and Shukla (2011) and Ismail *et al.* (2013).

These variables (market orientation and extension contact) were later administered with non-parametric Kruskal Wallis test to rank the three programmes based on the beneficiary's perception on the same.

4.9.1.1 Market orientation

After performing Kruskal Wallis test, it could be inferred that perception of beneficiaries on market orientation significantly differed across the three programmes since calculated p value was less than level of significance ($p=.05$). Beneficiaries of Ecoshop had highest perception score followed by Karshakamithra and Weekly Market. The results are shown below in Table 4.39

Table 4.39 Mean ranks of market orientation of beneficiaries as per Kruskal Wallis test

Programme	Mean rank
Ecoshop (n=40)	68.66 (1)
Karshakamithra (n=40)	62.86 (2)
Weekly Market (n=40)	49.98 (3)

() Ranks are given in parenthesis

Box plot showing the perception of beneficiaries on market orientation for the three programmes are shown below in Figure 25. Beneficiaries of Ecoshop had highest perception score compared to Karshakamithra and Weekly Market.

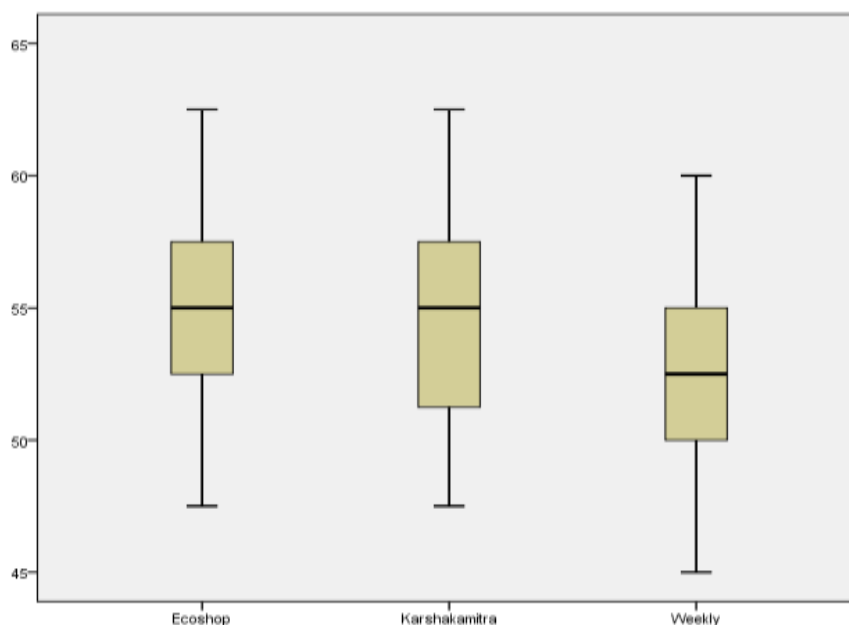


Figure 25 Boxplot comparing market orientation of the beneficiaries of the three programmes

4.9.1.2 Extension contact

In the case of extension contact also, calculated p value was found to be less than level of significance ($p=.05$), which indicated that perception of beneficiaries significantly differed with regard to all the three programmes. Beneficiaries of Karshakamithra was found to have highest perception score followed by Ecoshops and Weekly Markets.

The results are shown below in Table 4.40

Table 4.40 Mean ranks of extension contact of beneficiaries as per Kruskal Wallis test

Programme	Mean rank
Ecoshop (n=40)	50.98 (1)
Karshakamithra (n=40)	95.72 (2)
Weekly Market (n=40)	34.80 (3)

() Ranks are given in parenthesis

Box plot showing the perception of beneficiaries on extension contact for the three programmes are shown below in Figure 26. Beneficiaries of Karshakamithra had highest score on perceived effectiveness compared to Ecoshop and Weekly Market.

This could be probably attributed to the presence of Karshakamithra volunteers in the scheme who directly help the farmers as discussed earlier.

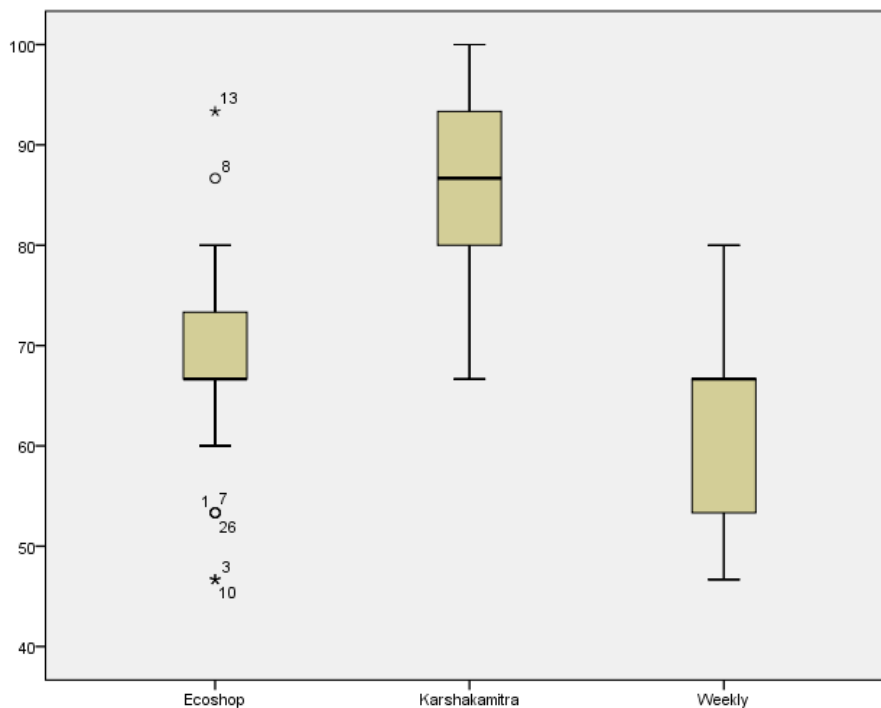


Figure 26 Boxplot comparing extension contact of the beneficiaries of the three programmes

4.10 Constraints faced by beneficiaries in marketing of their produce

Major constraints faced by beneficiaries in marketing of vegetables were identified from literature and through local enquiries during the pilot study. These constraints were grouped under five categories for further analysis.

- **General constraints**
This category deals with the common constraints faced by farmers in marketing of their produce. Even though many schemes and programmes have been implemented to provide farmers with different opportunities to market their produce, majority of the farmers were not aware of the provisions of the schemes.
- **Production related constraints**
These are the constraints faced by farmers during production process. The major one is the perishable nature of vegetables. Scarcity of good quality seeds and

other inputs also affect the yield of farmers. Unpredictable seasonal and climatic variations cause heavy and intolerable crop losses. Lack of essential components that address the issue of knowledge support and financial assistance in many of the schemes turn out to be major constraints.

- Market infrastructure related constraints

These are the major constraints faced by vegetable farmers in marketing of their produce. The most important one is lack of storage facilities. Proper storage structures including deep freeze storage facility are essential for vegetables due to its perishable nature. Lack of provision for improved method of grading and standardization also reduces the market value of the produce.

- Financial constraints

Non availability of fund serves to be a major constraint for famers from the initial stage of production till marketing. This also leads to several logistic constraints in marketing their produce. High labour cost and input cost also come under this category. Delay in receiving of their payments has also been reported by beneficiaries. Lack of assistance during all these stages will definitely affect farmers.

- Information and communication related constraint

Market intelligence and information are very important factors which contribute to profitability. Inadequate information on demand and supply, market forces, prices *etc.* are the important constraints faced by farmers in marketing. Farmers should be provided with sufficient and credible information on all aspects of production and marketing.

After identifying the constraints, mean score for each category was found out. They were ranked in descending order of their mean score for each respondent and Kendall's coefficient of concordance was found to check whether there existed an agreement among the respondents to rank these constraints.

Table 4.41 Test statistics for Kendall's coefficient of concordance of the constraints faced by beneficiaries in marketing

N	120
Kendall's W	.888
Chi-Square	426.173
Df	4
Asymp. sig.	.000

Kendall's W usually ranges from 0 to 1. Zero shows no agreement between the respondents and one shows perfect agreement. From the test statistics given in Table 4.41, Kendall's W seem to be .88, which was significant at 1 per cent level of significance. This showed that there existed strong agreement among the respondents in ranking the constraints according to the severity perceived by beneficiaries as given in Table 4.42

Table 4.42 Mean rank of the constraints faced by beneficiaries in marketing

SI No.	Constraint dimension	Mean rank	Rank
1	Information and communication related constraints	5	1
2	General constraints	4	2
3	Financial constraints	2.38	3
4	Production related constraints	2.25	4
5	Market infrastructure related constraints	1.38	5

Out of the different constraints, information and communication related constraints, general constraints, financial constraints, production related constraints and market infrastructure related constraints were ranked in the order of severity.

Information and communication related constraints reportedly included specific constraints as given below:

- Lack of timely information on demand and supply
- Delayed information on market prices
- Lack of communication skills
- Lack of credibility of information received

The findings substantiated the inference that all these market-oriented programmes lacked elements of training and awareness creation on market related functions. These findings also reiterated the observations by Mahaliyanaachchi (2003).

4.11 Constraints faced in implementing the programmes

Constraints faced in the implementation of all these programmes were listed out after discussion with experts and officials involved in the implementation of these programmes. They were ranked and subjected to Kendall’s coefficient of concordance to check whether there is agreement among the respondents to rank these constraints.

Table 4.43 Test statistics for Kendall’s coefficient of concordance of the constraints faced by implementing personnel

N	16
Kendall's W ^a	.618
Chi-Square	128.531
Df	13
Asymp. sig.	.000

From the test statistics shown in Table 4.43, Kendall’s W seems to be .61, which shows that there is good agreement among the respondents to rank the constraints.

Severity of constraints follows the order as shown below (See Table 4.44).

Table 4.44 Mean rank assigned for constraints faced by implementing personnel

Sl No.	Constraints	Mean rank	Rank
1	High perishability of produce	13.09	1
2	Lack of training programmes	11.28	2
3	High labour cost	10.47	3
4	Seasonal variations affecting crop production	9.41	4
5	Inadequate extension activities	9.16	5
6	Inadequate budget allocation	8.47	6
7	Lack of coordination among the functionaries	7.09	7
8	Less number of experienced staff	6.56	8
9	Lack of funds	6.38	9
10	Lack of coordination among line departments	6.22	10
11	Lack of feedback and information delivery system	5.97	11
12	Poor technical and technological literacy among beneficiaries	5.94	12
13	Proper guidelines regarding the programme were not provided	2.63	13
14	Lack of interest among the beneficiaries	2.47	14

As understood from the table, high perishability of the produce and lack of training programmes were the major constraints faced by extension personnel in the implementation of the programme. The perishable nature of vegetables makes marketing difficult. Establishing facilities for on-site marketing of vegetables and procurement by using state-of-the-art storage facilities only can resolve this problem.

Lack of training programmes also emerged as a major problem. Officials who implement the market led programmes are not adequately trained in marketing. Farmers and facilitators like Karshakamithras have to be trained on account keeping and market promotion. They should also get access to reliable information on markets.

There are also many institutional, organisational and administrative constraints faced by extension personnel as shown above. Out of the 14 constraints listed in the order of severity, the least severe among them is lack of interest among the farmers. This is indicative of the fact that farmers would show interest in market-oriented interventions anticipating better marketing options and better remuneration. It is the responsibility of the extension agencies to devise suitable programmes for overcoming the difficulties in marketing.

Summary and Conclusion

Chapter 5

SUMMARY AND CONCLUSION

Priorities of the agricultural extension system in the country are changing in response to the emerging challenges in the agricultural sector. Extension systems across the world have largely responded to these challenges by updating the content and reforming service delivery. Market-led extension is an adaptation of the conventional extension systems to respond to the ever-increasing influence of market forces on agricultural production. This mode of extension essentially assists farmers in solving their marketing problems. It has been widely accepted that sustainable agricultural production not only needs extension strategies for disseminating production related information, but also market related information. Keeping this in view, development departments and agencies have initiated several market-oriented programmes to make farmers aware of marketing operations and to equip them with the knowledge and skills to meet the requirements of the market. Obviously, this would require substantial changes in production strategies and therefore, market-oriented programmes should essentially contain components that can facilitate this transition.

It is in this backdrop this study was conducted to analyze the market-led extension initiatives of the Department of Agriculture Development and Farmers' Welfare, Kerala, with the following specific objectives:

- To identify market-led extension initiatives of the Department of Agriculture Development and Farmer's Welfare, Government of Kerala
- To characterize these initiatives in terms of selected parameters
- To examine the effectiveness of innovative market interventions piloted by the Department

Thrissur district was purposively selected for the study on account of the presence of all the market-oriented development programmes of the Department, including the pilot programme for market facilitation, namely *Karshakamithra*. Ten panchayats were randomly selected from four blocks in the district. Forty respondents each from the three programmes namely, *Eco shop*, *Karshakamithra* and *Weekly Market* were

selected for the study to constitute a total sample size of 120 beneficiaries. The sample of respondents also included 24 extension personnel involved in the implementation of the programmes.

The study followed ex-post facto research design since the events under observations had already occurred and the variables could not be manipulated. The independent variables included in the study were age, gender, marital status, family type, level of education, farming experience, annual income, total area under cultivation, area under vegetable cultivation, volume of production, marketable surplus, extension contact, knowledge on marketing strategies, market orientation and attitude towards market-led extension programmes. Dependent variable in the study was the effectiveness of market-led extension programmes as perceived by beneficiaries and extension personnel.

A pilot study was conducted by collecting data from a group of non-respondents using a draft interview schedule and based on the observations thereof, a structured interview schedule was prepared. with inputs from experts. While primary data were collected from the respondents through personal interview, secondary data were collected from scheme papers and various reports provided by the Principal Agricultural Office and Krishi bhavans.

The study was analyzed by estimating frequency, percentages, and quartiles. Non parametric tests like Kruskal Wallis test and Man Whitney U test, Kendall coefficient of concordance, *etc.* also were employed for analysis. Multivariate techniques including factor analysis, binary logistic regression and linear regression analysis were also used to determine the key factors that influenced the perceived effectiveness of market led programmes selected for the study.

Salient findings of the study are presented below:

Profile of beneficiaries

- The highest percentage (55.80%) of beneficiaries of market-led extension programmes were in old age category followed by middle aged (42.50%) and younger age group (1.70%)

- Majority of the respondents were males (82.50%) and only 17.50 per cent of them were females, which clearly showed less participation of women in marketing of agricultural produce and related activities
- About 65 per cent of the respondents had nuclear family while 35 per cent belonged to a joint family
- While majority (47.52%) of the beneficiaries of market-led extension programmes had high school level of education, 22.5 per cent had middle school level education and 21.7 per cent had sought collegiate education. None of them was illiterate
- With regard to farming experience, 70.83 per cent of the respondents had farming experience of more than 10 years followed by 22.5 per cent with experience between 5-10 years and 6.67 per cent with less than 10 years
- As regards total area under cultivation, 57 per cent of the beneficiaries had land area greater than one acre, followed by 29.17 per cent with less than 0.5 acre and 23.33 per cent with 0.5-1-acre land
- While 49.17 per cent of the beneficiaries had vegetable land area between 0.1-0.5 acre, 43.33 per cent had area greater than 0.5-acre and 7.5 per cent had less than 0.1-acre land area
- Majority of the beneficiaries (59.17%) were observed to have annual income higher than one lakh. About 27.50 per cent had annual income ranging between 50,000 rupees to one lakh and remaining 13.33 per cent had income less than 50,000 rupees
- Majority of the beneficiaries (50.83%) of the market-led extension programmes had produced only less than 20 kg per week. Out of the total respondents, 41.67 per cent were found to obtain weekly yield ranging from 20-50 kg vegetables and 7.5 per cent had production more than 50 kg.
- Among the beneficiaries, 68.33 per cent had marketable surplus less than 20 kg and 30 per cent had 20-50 kg and 1.67 per cent had marketable surplus more than 50 kg

- Majority of the beneficiaries (53.33%) had medium level of extension contact. While 24.17 per cent had high extension contact, 22.5 per cent had only less extension contact
- The distribution of respondents based on their knowledge level on marketing strategies revealed that majority of the respondents (64.17%) had medium level of knowledge. Out of the total respondents, 24.17 per cent of them had high knowledge level and only 11.67 per cent fell under lower knowledge level category
- A significant majority of the respondents (83.33%) had medium level of market orientation, followed by 9.17 per cent with high market orientation and 7.5 per cent with low levels of orientation
- Majority of the respondents (60%) had favourable attitude towards market-led extension programmes. While 25 per cent of the respondent had most favourable attitude remaining 15 per cent respondents recorded 'least favourable' attitude towards the programmes

Effectiveness of market-led extension programmes

- Perceived effectiveness of market-led extension programmes varied significantly across the beneficiaries of the three programmes. Perception on different dimensions of effectiveness were also compared. Farmers who were associated with Ecoshops had mean perception score of 57.85 on service dimension, 44.64 regarding advisory dimension, 84.75 on market intelligence, 47.85 on facilitation and 41.50 on organizational dimension. Overall perception score of beneficiaries was 55.70
- In the case of Karshakamithra, mean perception score on dimensions of service, advisory, market intelligence, facilitation organization and overall perception were 55.28, 44.42, 83.33, 44.50, 39.75 and 52.56 respectively
- As regards Weekly Markets, mean perception scores on service, advisory, market intelligence, facilitation organization and overall perception were 55.64, 38.50, 83.33, 44.50, 39.75 and 52.56 respectively

- Perception of beneficiaries on the effectiveness of the three programmes differed significantly with Ecoshop registering highest perception score followed by Karshakamithra and Weekly Markets
- Perception on different dimensions of effectiveness of the three programmes were found to differ among the beneficiaries. Beneficiaries of Ecoshops having highest mean score on effectiveness for service, advisory, market intelligence and facilitation followed by Karshakamithra and Weekly Market. In the case of organization dimension, Karshakamithra had highest mean perception score compared to Ecoshop and Weekly Market
- Scores on perception of extension personnel on effectiveness of market led programmes differed significantly among the respondents, with Ecoshop getting the highest score on effectiveness followed by Karshakamithra and Weekly Markets
- Beneficiaries of market led programmes and extension personnel differed significantly in their perception on effectiveness of Ecoshop and Karshakamithra. However, no significant difference was observed among them on their perception on Weekly Market

Effect of personal and psychological attributes of the beneficiaries on their perception on effectiveness of market-led extension programmes

Out of the thirteen personal and psychological attributes, farming experience, volume of production and knowledge on marketing strategies of the farmers were found to have significant influence on their perception on effectiveness of various market led programmes selected for the study.

Factors that influence perception of farmers on effectiveness of various market led programmes

- Factor analysis by the method of principle component analysis was performed to reduce the number of independent variables
- Five factors were extracted with an eigen value greater than one and a cumulative variance of 79 per cent. However, variance explained by each of the

factors were 33.47 per cent, 13.55 per cent, 11.89 per cent, 10.90 per cent and 9.48 per cent respectively

- First factor viz. farmer's endowment factor explained maximum variance (33.47%) and it consisted of variables like volume of production, marketable surplus, annual income, total land area and vegetable land area
- Second factor viz. personal attributes explained a variance of 13.55 per cent and it included age and farming experience of respondents
- Orientation factor, which included market orientation and extension contact was found to explain a variance of 11.89 per cent
- Fourth factor, knowledge factor, explained a variance of 10.90 per cent had highest factor loading for knowledge on marketing strategies
- Fifth factor, attitude factor, explained variance of 9.48 per cent had more factor loading for attitude towards market-led extension programmes
- These five factors were used as independent variables to fit a regression of perceived effectiveness on these factors. The model could explain almost 57 per cent of variation in the scores on perceived effectiveness through the factors namely farmer's endowment factor, personal attributes, orientation factor, knowledge and attitude
- Of the five factors, orientation factor which included market orientation and extension contact was found to be the most significant contributor that could predict the perception on effectiveness.
- Perception on market orientation and extension contact significantly differed across the three programmes. Beneficiaries of Ecoshop had higher scores on market orientation, with others, followed by farmers of Karshakamithra and Weekly Market programmes
- Beneficiaries of Karshakamithra were found to have highest score in the case of extension contact followed by Ecoshop and Weekly Market

Constraints faced by beneficiaries in marketing

Major constraints faced by beneficiaries in marketing were identified from pilot study. These constraints were divided into different dimensions like general constraints,

production related constraints, financial constraints, market infrastructure related constraints and information and communication related constraints. The respondents had high degree of agreement to rank the constraints (Kendalls' $W = .618$). The most severe constraint faced by the beneficiaries was 'information and communication' related constraints followed by general constraints, financial constraints, production related constraints and market infrastructure related constraints.

Constraints faced in implementing the programmes

Major constraints faced by extension personnel in implementing the programmes were found to be ranked with high degree of concordance among the respondents (Kendalls' $W=.618$). Among them, the most severe constraints were 'perishability of the produce' and 'lack of training programmes' in the interventions.

Conclusion

- Even though the concept of market-led extension had gained prominence in the academic circle, it hasn't obtained practical utility in majority of the development initiatives
- Production-oriented extension should be revisited and market-oriented extension paradigm has to be promoted by development agencies
- Market oriented programmes of the Department of Agriculture viz. *Eco Shops*, *Weekly Markets* and *Karshakamithra* do not address the issues of marketing of vegetables comprehensively
- These programmes lack essential components like training, market intelligence and networking with other institutions
- Market-led extension programmes of development agencies should have mandatory components of training and market intelligence
- Exclusive training programmes for market-oriented production and other subsequent processes have to be developed with focus on crops and market channels
- Awareness of the stakeholder communities on various schemes and programmes has to be enhanced to make them more market orientated

- The marketing programmes of the Department have been operating only at a smaller scale, which need to be extended for better market opportunities for farmers irrespective of seasonal variations in demand
- As the physical endowments of the farmers influence the perception on effectiveness, production of vegetables has to be intensified with adequate supply of quality inputs and more area for cultivation through collectivisation of farm land
- The farmers also require facilities for aggregation and logistic support

Recommendations

- All the market-oriented programmes of the state government have to be dovetailed and co-ordinated with singular objective so as to widen the marketing opportunities of farmers
- Infrastructure facilities should be provided according to the need of market especially in the case of Eco shops and Weekly Market
- It is important to check whether all the scheme components are actually addressed during functioning of the same especially provision for grading, labelling *etc.*
- Storage facilities including cold storage have to be provided for perishable commodities
- Awareness programmes need to be conducted on scientific farming and marketing aspects in collaboration with other institutes and government agencies
- Marketing officials and Karshakamithras should be provided with proper training on marketing and related activities
- Extensive capacity building programmes for providing market orientation to extension personnel and farming community have to be developed and implemented
- Since market orientation and extension contact were found to be the most significant factors that determine the variability of perception on effectiveness,

extension agencies have to design programmes to provide farmers with practical knowledge and orientation to farmers through series of outreach programmes

- Realtime market information has to be provided to the farming community to plan production and post-harvest operations
- The current market-oriented schemes of the Department of Agriculture have to be redesigned with components of training, infrastructural development and market information

PLATE
PHOTOS TAKEN DURING SURVEY



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Appendix 1

QUESTIONNAIRE FOR BENEFICIARIES

KERALA AGRICULTURAL UNIVERSITY (KAU)

COLLEGE OF AGRICULTURE

KAU P.O. THRISSUR 680656

Department of agricultural extension

Market-led extension initiatives of the Department of Agriculture Development and Farmers' Welfare, Kerala: An analysis

The information furnished will be used only for the research purpose and the data will be kept strictly confidential

Name of the block:

Respondent no:

Panchayat:

Contact no:

Farmer profile

- 1. Name of the farmer:**
- 2. Age:**
- 3. Gender:**
- 4. Education:** Illiterate /Primary school /High school /Higher secondary /Collegiate
- 5. Family type:** Nuclear /Joint
- 6. Family size:** Adult /Children /Total
- 7. Farming experience in vegetable cultivation (No of years):**
- 8. Total land area (in acres)**
Area owned (acre):
- 9. Area under vegetable cultivation**
Area owned (acre):

10. Major vegetables under cultivation:

11. Annual income: Rs.....

12. Marketable surplus

SI No	Particulars	Quantity of produce			
		1	2	3	4
	Crop				
A)	Total production				
B)	Domestic consumption				
1	Home consumption				
2	Seed				
3	Cattle /poultry feed				
4	Labourers				
5	Others (specify)				
	Total (B)				
C)	Marketable surplus (A-B)				

13. Mention the market-led extension initiatives in which you are involved

- a) Karshakamithra
- b) Nattuchandha
- c) Ecoshop
- d) Others, if any

14. Extension contacts

SI No	Extension personnel/agency	Weekly	FN	Monthly	Half yearly	Yearly
1	Agricultural officer					
2	Agricultural assistant					
3	Karshakamithra					

15. Market Orientation

Sl.No	Statements	SA	A	UD	DA	SDA
1	A farmer can get good price through value addition					
2	A farmer can get good price by grading his products					
3	Farmers are ready to wait for better price, provided they have better storage facility					
4	Market is the most important component as far as the farmer is concerned					
5	One should grow those crops which have more market demand					
6	One should cultivate those varieties which have more market demand					
6	Formation of niche market can help farmers to get more profit					
7	A farmer can get high price by following quality standards					
8	One should follow suitable planting time based on the market demand					

SA= Strongly Agree; A=Agree; UD=Undecided; DA=Disagree; SDA= Strongly disagree

16. Trainings undergone

- a. Have you undergone any training as a part of this scheme?
- b. If yes, how many trainings?

Sl No	Title/topic of training	No of training days	Skill acquired	Rating given to training				
				Very good	Good	Neutral	Bad	Very bad

17. Knowledge level of farmers on marketing strategies

Statements/ Particulars	True	False
Conducting regular market research can help in successful marketing of vegetables (based on market demand)		
Product differentiation, including new or renewed product introduction diminishes sales in vegetable markets.		
Prices of the vegetable/ commodity depends on the demand and supply forces existing in the market		
Direct marketing is more efficient than indirect marketing		
Sorting and grading of vegetables fetch more price		
Attractive packaging and proper labelling of vegetables negatively affect its marketing		
Producer share in consumer rupees come down due to the presence of middle man		
Storing vegetables in cold storage accelerates its deterioration rate		
Processing of vegetables improves its shelf life		
Vegetable producer organizations facilitates linkage with the banks and line Departments		
FPO ensures better income for the producers through an organized system		
Selling of vegetables in small quantities will increase the marketing cost/transaction cost		
Marketing of perishables are more difficult than others		

18. Attitude towards various market led schemes

Sl No	Statements	SA	A	UD	DA	SDA
1	Measures to assure the quality and safety of the produce is being focussed through the scheme					
2	Promoted demand driven production of vegetables					
3	Enables processing and higher value addition in vegetables					
4	Establishment of pre-cooling / cold storage units aided marketing of vegetables					
5	Technical support and financial assistance rendered guided farmers to make timely marketing decisions					
6	Infrastructure facilities provided through the scheme failed to reduce the post-harvest losses					
7	Scheme involves more participation of small and marginal farmers					
8	Scheme involves less participation of large-scale farmers					
9	Scheme doesn't favour direct selling of produce in the market					
10	Scheme doesn't provide assistance in taking decision on what inputs to use and where to get it					
11	The scheme failed to reduce post-harvest losses					

12	Timely information support is not - provided through scheme					
13	Scheme doesn't help in getting premium prices and optimum return					
14	Training programmes conducted never improved skills in carrying out marketing operations					

SA= Strongly Agree; A=Agree; UD=Undecided; DA=Disagree; SDA= Strongly disagree

19. Effectiveness of market-led extension programmes as perceived by beneficiaries

Sl No	Statement	HE	VE	E	LE	NE
1	Service					
	Support of extension personnel during critical decision-making periods/ situation					
	Timely distribution of inputs					
	Quantity and quality of inputs supplied were satisfactory					
	Support for proper grading under the scheme					
	Support for proper packaging under the scheme					
	Storage facilities available for farm produce					
	Maintaining price stability					
2	Advisory					
	Support for adoption of scientific crop production practices					
	Consultancy support for export-oriented production					

	Trainings in vegetable production and marketing for developing marketing skills					
	Information on potential vegetable varieties were provided					
	Assistance for developing and improvising marketing methods and skills					
	Advises on Crop specific production practices					
	Advise on financing vegetable production and marketing were offered					
3	Market intelligence					
	Information on consumer-based data					
	Information on current rates in market					
	Maintenance of price records					
	Information on consumer preference provided					
	Information on possible changes in the market					
	Information on opportunities and challenges					
4	Facilitation					
	Govt policies regarding agriculture and agriculture marketing					
	Credit support to farmers for vegetable production					
	Subsidy support to farmers					
	Forum for interaction among farmers, traders, office bearers, extension workers and scientists					
	Programmes for capacity development in marketing					
	Opportunities provided for online trading					
5	Organization					
	Formation of cooperative societies for producer farmers					

	Formation of commodity wise self-help groups of farmers					
	Formation of consumer organizations					
	Formation of farmer knowledge groups or farm field school					

HE = Highly effective, VE = Very effective, E = Effective, LE = Least effective, NE = Not effective

20. Constraints faced by beneficiaries in marketing

Sl No	Constraints	Most Severe	Severe	Medium severe	Less severe	Least severe
General constraints						
1	Role of the scheme is not clear					
2	Lack of participation of farmers					
3	Lack of assured income for farmers					
4	Lack of training programmes as a part of the scheme					
5	Lack of farmer representations in market committee					
Production constraints						
1	Unavailability of improved seeds and other inputs					
2	Lack of components in schemes addressing crop loss					

	due to various vagaries					
3	Seasonal variations affecting crop production					
4	Low support prices for vegetables					
5	High perishability of vegetables					
Market infrastructural constraints						
1	Inadequate storage facility					
2	No provision for improved method of grading					
3	No provision for improved method of standardization					
4	Lack of deep freeze storage facility					
5	Problems of marketing channel					
Financial constraints						
1	Non availability of fund					
2	Lack of assistance in initial investment					
3	High labour cost and cost of input					
4	High cost of transportation					

6	Delay in receiving payment					
Information and communication constraints						
1	Inadequate timely information on demand and supply					
2	Delayed information about market prices					
4	Lack of communication skill					
5	Lack of credibility of information received					
6	Poor technical and technological literacy					

Appendix 2

QUESTIONNAIRE FOR EXTENSION PERSONNEL

KERALA AGRICULTURAL UNIVERSITY (KAU)

COLLEGE OF AGRICULTURE

KAU P.O. THRISSUR 680656

Department of Agricultural Extension

Market-led extension initiatives of the Department of Agriculture Development and Farmers' Welfare, Kerala: An analysis

The information furnished will be used only for the research purpose and the data will be kept strictly confidential

Profile of the extension personnel

- 1) **Name of the officer:**
- 2) **Age:**
- 3) **Contact no:**
- 4) **Gender:**
- 5) **Educational qualification:**
- 6) **Designation:**
- 7) **Experience (no of years):**
- 8) **Scheme details**

Sl No	Name of the scheme	Quantity of produce procured (per	Quantity of produce sold (per month) (kg)	Business turnover
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		month) (kg)		
	Karshakamithra			
	Weekly Market			
	Ecoshop			

9. Financial outlay

Total amount sanctioned for the programme (in rupees):

SI No	Components	Amount in rupees
1	Infrastructure	
2	Manpower support	
3	Operational expenses including documentation and transportation	
4	Training	
5	Revolving fund (if any)	
6	Others (specify)	

10. Trainings provided

Name of the scheme	Number of trainings provided	Title/ Topic of training	Duration of training	Number of beneficiaries participated
Karshakamithra				

Ecoshop				
Weekly Market				

11. Effectiveness of market-led extension programmes as perceived by extension personnel

Sl No	Statement	HE	VE	E	LE	NE
1	Service					
	Support of extension personnel during critical decision-making periods/ situation					
	Timely distribution of inputs					
	Quantity and quality of inputs supplied were satisfactory					
	Support for proper grading under the scheme					
	Support for proper packaging under the scheme					
	Storage facilities available for farm produce					
	Maintaining price stability					
2	Advisory					
	Support for adoption of scientific crop production practices					
	Consultancy support for export-oriented production					

	Trainings in vegetable production and marketing for developing marketing skills					
	Information on potential vegetable varieties were provided					
	Assistance for developing and improvising marketing methods and skills					
	Advises on Crop specific production practices					
	Advise on financing vegetable production and marketing were offered					
3	Market intelligence					
	Information on consumer-based data					
	Information on current rates in market					
	Maintenance of price records					
	Information on consumer preference provided					
	Information on possible changes in the market					
	Information on opportunities and challenges					
4	Facilitation					
	Govt policies regarding agriculture and agriculture marketing					
	Credit support to farmers for vegetable production					
	Subsidy support to farmers					
	Forum for interaction among farmers, traders, office bearers, extension workers and scientists					
	Programmes for capacity development in marketing					
	Opportunities provided for online trading					
5	Organization					
	Formation of cooperative societies for producer farmers					

	Formation of commodity wise self-help groups of farmers					
	Formation of consumer organizations					
	Formation of farmer knowledge groups or farm field school					

HE = Highly effective, VE = Very effective, E = Effective, LE = Least effective, NE = Not effective

12. Constraints faced in implementation of the program

Sl No	Constraints	Most severe	Severe	Medium	Less severe	Least severe
1	Lack of fund					
2	Proper guidelines regarding the programme are not provided					
3	Inefficient budget allocation					
4	Lack of coordination among the line departments					
5	Lack of coordination among functionaries					
6	Lack of training programmes					
7	Inadequate extension activities					
8	Lack of interest among the beneficiaries					
9	Less no of experienced staff					

10	Lack of feedback and information delivery system					
11	High labour cost					
12	High transportation cost					
13	Poor technical and technological literacy among beneficiaries					
14	High perishability of produce					
15	Seasonal variations affecting crop production					

**MARKET-LED EXTENSION INITIATIVES OF THE
DEPARTMENT OF AGRICULTURE DEVELOPMENT AND
FARMERS' WELFARE, KERALA: AN ANALYSIS**

By

PARVATHY SASIDHARAN

(2019-11-116)

Abstract of the thesis

*Submitted in partial fulfilment of the
requirement for the degree of*

Master of Science in Agriculture

Faculty of Agriculture

Kerala Agricultural University, Thrissur



DEPARTMENT OF AGRICULTURAL EXTENSION

COLLEGE OF AGRICULTURE

VELLANIKKARA, THRISSUR- 680 656

KERALA, INDIA

2021

Abstract

Sustainability of agriculture can be ensured only by building up the capacity of agricultural systems to increase productivity and maximize profit. For this, farmers have to be profusely supported to link production with market and to deliver quality produce to consumers, this will remain an uphill task for the small and marginal farmers. Also, farmers should be oriented to new systems of market linked production and the protocols of value chain and supply chain management.

It has been widely reported that lack of market-oriented production by resource poor farmers is mainly due to absence of appropriate and timely information on technology and market trends. This has necessitated introduction of a diversified, demand driven and technology intensive system of extension and advisory service by the government. Market led extension system is an adaptation of conventional extension system with functional components to assist farmers in marketing processes. Even though the concept of market led extension has gained prominence in the academic circle, it has not been mainstreamed in development initiatives.

Department of Agriculture acts as the most important agency in field level extension. Kerala, has of late laid increasing emphasis on marketing of produce and value addition through various programmes. Hence, it is important to study the market led extension initiatives in the state. Thrissur district was purposively selected for the study owing to the presence of a number of marketing interventions implemented in the district and also due to the fact that, Karshakamitra was piloted in the same district. Along with Karshakamitra, two other programmes *viz.*, Ecoshop and Weekly market, were also selected for the study. Ten panchayats were randomly selected from the four blocks in the district. The sample included 120 beneficiaries and 24 extension personnel.

The mean perceived effectiveness score of beneficiaries and extension personnel on the three programmes revealed that except in the case of market intelligence, all other dimensions including service, advisory, facilitation and organization, extension personnel had the highest mean perceived effectiveness score compared to beneficiaries. Comparing the perceived effectiveness of beneficiaries for the three programmes using Kruskal Wallis test, it was observed that Ecoshop had the highest mean perception score (72.15) compared to Karshakamitra (62.31) and Weekly Market (47.04). Comparing the dimensions of perceived effectiveness, beneficiaries of the three programmes differed significantly in their perception

on the effectiveness of advisory services, facilitation and organization. In the case of service and market intelligence, perception levels almost remained the same.

The profile of respondents showed that majority of them belonged to old age (55.8%) category and 82.5% of the respondents were male farmers. Majority of the respondents (70.83%) were well experienced farmers, with 47.5% of them having a total land area greater than 1 acre. As far as vegetable production is concerned, 50.83% of the respondents had volume of production less than 20 Kg. Majority of the respondents belonged to medium category for extension contact, market orientation, knowledge on marketing strategies and attitude towards programmes. Effect of personal and psychological attributes of beneficiaries on perceived effectiveness showed that farming experience, volume of production and knowledge on marketing strategies were the significant attributes which helped the respondents to be categorized under more perceived effectiveness group.

Five factors were extracted through Principal Component Analysis with a cumulative variance of 79%. These factors were named as farmer's endowment factor, personal attributes, orientation factor, attitude and knowledge on the basis of variables having higher factor loading for each factor. Extracted factors were used as independent variables to fit a regression of perceived effectiveness on these factors. The variance explained by the model fitted was 57% with the third factor more significant to predict the dependent variable (market orientation and extension contact).

Constraints faced by beneficiaries in marketing were categorized into five groups *viz.*, general, production related, market infrastructure related, financial and information and communication related constraints. Constraints faced by extension personnel in the implementation of the programme was also noted. A significant value of Kendall's coefficient of concordance showed that there existed strong agreement among the respondents to rank the constraints. It has been recommended that marketing initiatives should be implemented location specifically based on the production pattern and marketing strategies of the particular area. Awareness programmes need to be conducted on scientific farming and marketing aspects in collaboration with other institutes and government agencies. Further, marketing officials should be provided with proper training and capacity building programmes regarding marketing and related activities.