EFFECTIVENESS OF E-MARKETING OF CARDAMOM IN KERALA- AN EXPLORATORY ANALYSIS

by

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THESIS

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2021

DECLARATION

I, hereby declare that the thesis entitled **"EFFECTIVENESS OF E-MARKETING OF CARDAMOM IN KERALA- AN EXPLORATORY ANALYSIS"** is a bonafide record of research work done by me during the course of research and the thesis has not previously formed the basis for the award to me of any degree, diploma, associateship, fellowship or other similar title, of any other University or Society.

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LIST OF ABBREVIATIONS AND SYMBOLS USED

%	Per cent
&	And
₹	Indian Rupee
/	Per
≤	Less than or equal to
>	Greater than
kg	Kilogram
ha	Hectares
et al.	And co-workers/co-authors
Fig.	Figure
No.	Number
MT	Million Tonnes
NRs.	Nepalese Rupee
ICT	Information and Communication Technology
GDP	Gross Domestic Product
e-NAM	National Agriculture Market
ROI	Return on Investment
EM	E-Marketing
MEI	Marketing Effectiveness Index
SD	Standard Deviation
AEUs	Agro-Ecological Units
SMS	Subject Matter Specialist
KVK	Krishi Vigyan Kendra
ATMA	Agriculture Technology Management Agency
ADA	Assistant Director of Agriculture
DDA	Deputy Director of Agriculture

Introduction

CHAPTER I

INTRODUCTION

Cardamom (*Elettaria cardamomum*) the queen of spices enjoys a unique position in the international spices market. After saffron and vanilla, cardamom is widely regarded as the world's third most costly spice. Cardamom is used to flavour a variety of foods, confections, and beverages. It is also used for medicinal purpose, both in Allopathy and Ayurveda systems of medicine. Indian cardamom is particularly unique on the international market due to its different growing techniques. It needs a humid and cool climate with plenty of sunshine and appropriate rainfall. Cardamom is a labor-intensive crop that is grown commercially in plantations beneath the shade of large forest trees.

Cardamom production is estimated to be around 121,939 MT globally. Until 2000, India was the primary producer and exporter of cardamom, but Guatemala has since emerged as a serious rival in the international spice market. India, Indonesia and Guatemala produce more than 85 per cent of world cardamom and account for nearly 78 per cent of world cardamom export (ICA, 2019). India has been the birthplace of spices since the dawn of time, producing nearly every type of spice known to man. Cardamom is one of the few agricultural products produced in India that has a strong export focus.

In India, cardamom cultivation is mostly limited to three states, namely Kerala, Karnataka, and Tamil Nadu. The evergreen forest of the Western-Ghats in India's south-west Malabar Coast is the natural habitat of small cardamom. The 'Cardamom Hills' are a popular name for this location. Kerala is the highest producer of cardamom in India contributing 89 per cent of its total production, followed by Karnataka (6%) and Tamil Nadu (5%). Kerala accounts for more than 56 per cent of the entire area under cardamom in India (Spices Board, 2021).

In Kerala, Idukki district dominates in cardamom production due to its favourable geographical location and climate, which is highly suitable for small cardamom. The district is having notable contribution in the area and production of various spices in the state. For this reason Idukki is called the 'Spices District' of India. Which accounts for 79 per cent cardamom area (31166 ha) and 97 per cent of total production (9785 MT) in the state (GoK, 2021). Small cardamom is a most important source of income for the spice farmers of the district.

Marketing plays a vital role in determining the income and profits of the spice farmers. The processes involved in the movement of produce from the growers to the final consumers are referred to as marketing of spice. In the case of cardamom, the yield is calculated based on the quantity of dried fruits. The average auction price of cardamom over the course of a year is used to establish the market price. In our country, there is a complex and interconnected system of spice markets that allows produce to travel from the farmers to the customers.

In order to regulate the prices of cardamom in the international and domestic markets, to regulate the players in the market and to establish systematic procedures of trade, Government of India in the year 1955-56 introduced manual auction system. As per the Cardamom (Licensing and Marketing) Rules, 1987 only the authorised dealers can distribute cardamom. The Spices Board grants permission for dealing in cardamom both for internal trade and export. The manual auction mechanism, contrary to expectations, did not result in healthy competition at auction centres. To overcome the problems inherent in the manual auction, on the appeal of cardamom planters, the Spices Board decided to replace the manual auction system with e-auction system. In August 2007, the Spices Board of India introduced e-auction for cardamom in Bodinayakanur, Theni district, Tamil Nadu. There were forty buyer terminals at this e-auction centre. In December 2007, the second e-auction centre, with sixty terminals, opened in Vandanmedu, Idukki, Kerala.

In Kerala and Tamil Nadu, the e-auction had supplanted the traditional cardamom outcry auctions. The licensed dealers are given a user id and password under the new

system. To participate in an auction, dealers must first log into the system. A bid is placed by pressing keys on a standard computer keyboard. During the auction, buyers' identities are protected. Only the auction masters' terminal shows the name of the top bidder. A central display board lists the lot number, quantity, number of bags, and current highest bid for each lot in the auction. The e-auction mechanism has made the auction process more transparent. In both centres, the system is up and running. Cardamom is a key source of foreign cash for India, although it is not a freely traded commodity.

E-auction is beneficial to both cardamom growers and traders by promoting healthy competition among the bidders. Trading is electronically monitored and the minimum price is discovered through competitive bidding. The software developed by the Tata Consultancy Services is used for e-auctioning. Planters register their cardamom through collection depots of auctioneers. Consequently, the auctioneers issue cardamom registration receipt for a particular auction to the individual planters and take samples from the lots. Auctioneers receive one per cent commission from the farmer for the service rendered by them. Under e-auction, the market price is discovered through competitive bidding by licensed dealers.

To have an in-depth analysis on marketing effectiveness of cardamom farmers undertaking e-auction and marketing using other e-marketing platforms over the conventional marketing mechanism, and to understand the benefits and constraints of e-marketing system perceived by the farmers who undertake e-marketing of cardamom, the present study on 'Effectiveness of e-marketing of cardamom in Kerala – an exploratory analysis' becomes very relevant.

A detailed study has been framed with the following objectives:

1. To develop and standardize an index to measure the marketing effectiveness of farmers.
2. To measure and compare the marketing effectiveness of farmers undertaking conventional marketing and e-marketing of cardamom.

3. To delineate the benefits and constraints of e-marketing as perceived by the farmers.
4. To study the relationship between personal and socio-economic factors and marketing effectiveness of cardamom farmers.
5. To compare the personal and socio-economic variables of farmers undertaking conventional marketing and e-marketing of cardamom.

1.1. SCOPE AND IMPORTANCE OF THE STUDY

The internet has changed the world, a global market is now accessible to any business with a website. Agro-industry is no exception to this. However, because of the perishable nature of agricultural produce, consideration for effective marketing gains importance. Proper handling and packaging, storage, timely delivery and knowledge of internet operations for marketing are crucial. Farms in India are small in size and knowledge of the farmers on the application of Information and Communication Technology (ICT) in agricultural marketing is limited. The promotion of e-marketing of agricultural produce necessitates the active involvement of the public as well as private sector to develop infrastructure and provide information and training, which can contribute to competitive marketing in the sector.

As per the Boston consulting group report, 50 per cent of India's internet users in 2020 are from rural areas. Rural India contributes over 60 per cent in GDP (Gross Domestic Product) of our country so the e-commerce users in rural India may increase in future (Kour *et al.*, 2018). Internet is becoming widely available and e-marketing has also become more popular. There are many websites and mobile applications for buying or selling products and even social media is being utilized as a platform for online marketing.

In developing countries like India, with limited resources, poor infrastructure, and fierce competition, electronic marketing (e-marketing) is still a generally underutilized facility for agricultural marketing. Therefore, a better grasp of e-marketing, its benefits,

challenges, and potential for this sector, as well as how these technologies might be used for effective marketing, is required.

However, the e-marketing of agricultural produce is not gaining required momentum in Kerala as in other states due to the lack of implementation of e-NAM (National Agriculture Market). The prominent area where e-marketing is utilized in Kerala is in the e-auctioning of cardamom. The exploratory study on the effectiveness of e-marketing of cardamom is first of its kind since no literature regarding the studies on the effectiveness of e-marketing of agricultural produce could be traced. Hence it becomes relevant to carry out a study on the effectiveness of e-marketing of cardamom in Kerala in order to evaluate the performance and usefulness of e-marketing and also to understand the drawbacks of the system and thereby suggest possible interventions that can enhance its acceptance for the farmers.

1.2. LIMITATIONS OF THE STUDY

The study being a single investigator research, has limitations of time and resources. Personal interview with respondents was employed for the data collection. As most of the information provided by them is from their recall memory, there may be chances of human bias and prejudices. In spite of the limitations, every effort was taken by the researcher to make the study as systematic and objective as possible.

1.3. ORGANISATION OF THE THESIS

The description of the research work has been presented under five chapters. The first chapter 'introduction' explains the need, objectives, scope of the study, and limitation of the study. In the second chapter, the review of literature associated to the current study is discussed. The third chapter 'methodology' covers the process of investigation, sampling, method of data collection, measurement of dependent and independent variables and the statistical tools used for the study. The fourth chapter 'results and discussions' explains the findings of the study along with meaningful inferences. The fifth and final chapter represents the summary of the study, along with salient findings of the work done

and suggestions for future areas of research. The references, abstract and appendices of the thesis are given at the end.

Review of Literature

CHAPTER II

REVIEW OF LITERATURE

Review of literature covers the theoretical orientation of the study. A comprehensive literature review is mandatory for any scientific research. It helps in analyzing the past studies related to the present research objectives and also help to form a better framework for interpretation of the results. Also an exhaustive review of literature enables us to come up with a well structured thesis.

The main focus of this chapter is to present a resume of conceptual formulations pertaining to marketing effectiveness and e-marketing. After a thorough review of literature it was observed that very limited attempt has been made in this area. However keeping in view the major objectives of the study, the related literatures reviewed are presented under the following headings.

2.1. Concept of e-marketing

2.2. Concept of marketing effectiveness

2.3. Profile characteristics of the respondents

2.4. Marketing effectiveness of the respondents

2.5. Benefits and constraints perceived by the farmers

2.6. Suggestions

2.1. CONCEPT OF E-MARKETING

Strauss and Frost (2001) defined e-marketing as the use of electronic data and applications in the invention, distribution and pricing of ideas, goods and services in order to generate exchanges that meet individual and corporate objectives.

Becherer and Halstead (2004) reported that online auctions offer 24-hour availability seven days a week, rapid gratification, and interactivity to purchasers. Customers can sometimes have more control over price and product or service customization because of this involvement. Increased knowledge of a product category could also be a good thing.

Weinberg (2009) expressed the social media marketing is the process of promoting a website, products, or services on a certain social media service. In comparison to traditional marketing, he believes that social media marketing has a greater potential for reaching customers.

El-Gohary (2010) defined electronic marketing as a fresh attitude and current realistic approach to promoting goods, services, information, and even ideas via the internet and other electronic means.

The use of the internet in various economic sectors is growing, particularly in developing countries' agriculture sector. In Korea 56 per cent of farmers use the internet, compared to 50 per cent in Singapore, 45 percent in Cuba and 20 per cent in Egypt. Rural businesses could use ICT to give people with a variety of information, ranging from agricultural operations to marketing and sales activities (UNCTAD, 2010).

According to Dehkordi *et al.* (2012) e-marketing is the application of information technology to traditional marketing practises. E-marketing attempts to improve marketing efficiency and effectiveness in ways that traditional marketing has not. As a result, electronic marketing and all of its tactics delivered more value to customers than traditional marketing ever could.

Jingqiang (2013) stated that different from traditional marketing in both its concepts and channels, the e-marketing is comprehensively upgraded in speed, width and depth of marketing, which brings considerable benefits to the agricultural companies and has become a powerful tool for competition.

According to Nyawira and Winnie (2013) as e-marketing is a relatively new invention, the youthful generation is more aware of it, and so age and education level can impact the success of e-marketing adoption.

Tsekouropoulos *et al.* (2013) defined e-marketing as the use of the internet and related digital technologies to accomplish marketing goals and support the modern marketing idea. It combines direct response and indirect marketing features, and it employs a variety of technology to help businesses communicate with their customers.

Taherdoost and Jalaliyoon (2014) observed that the creation of a worldwide marketplace just a mouse click away, thanks to the internet, is a key occurring across industries today, and enterprises are seeking to migrate towards an electronic environment.

E-marketing means using digital technologies which help you to sell gods and services. It includes many latest practices like search engine advertising, co-registration, search engine optimization, mails, websites and other technological tools (Kour *et al.*, 2018).

Ruaykijakarn *et al.* (2018) stated that farmers can use online marketing as an alternative marketing channel; it can also eliminate the need for middlemen in many areas of the selling process, allowing enterprises to sell directly to end users.

2.2. CONCEPT OF MARKETING EFFECTIVENESS

Drucker (2007) defines effectiveness as 'doing the right thing' and efficiency as 'doing things right'. Effectiveness can be learned and is the key to an organization's success.

Gopika (2009) in her study 'Entrepreneurial effectiveness of agripreneurs in Kerala' reported that majority (>50% each) of the agripreneurs in the three selected districts possessed medium level of effectiveness in market management.

According to Solcansky and Simberova (2010) the quality with which managers go to the market to optimize their spending in order to get good outcomes in the short and long term is referred to as marketing effectiveness.

Tuan (2012) defined marketing effectiveness as how well a marketing strategy is translated into marketing actions in a proactive response to market movements for customer affinity to a corporate or product brand, as well as the spread of brand impression throughout the community.

According to Eid and El-Gohary (2013) EM (E-Marketing) adoption by SBEs (Small Business Enterprises) can improve marketing performance and increase marketing effectiveness by lowering costs with the use of technology and EM tools.

Milichovsky (2015) reported that the entire marketing effectiveness process must be improved continuously, especially during economic and financial crises and marketing effectiveness should be defined as the return on investment in these efforts.

From a financial standpoint, marketing effectiveness can be described as the company's return on investment in marketing initiatives (Milichovsky and Simberova, 2015).

Bolos *et al.* (2016) stated that stakeholders can improve the effectiveness of their advertising efforts, strengthen the case for pursuing different marketing strategies, and evaluate whether the cost of e-marketing is justified and whether it yields a positive return on investment (ROI) by measuring the effectiveness of their e-marketing.

Kotler in his study 'From sales obsession to marketing effectiveness' identified five components of marketing effectiveness *viz.*, customer philosophy, integrated marketing organization, adequate marketing information, strategic orientation and operational efficiency (Nwokah and Briggs, 2017).

Kalauni and Joshi (2019) in their study on production economics, marketing and success aspects of large cardamom in Bhojpur, Nepal observed that as the number of marketing intermediaries grows, the marketing margin and marketing costs increase, whereas marketing efficiency and producers' share decrease.

2.3. PROFILE CHARACTERISTICS OF THE FARMERS

2.3.1. Age

As observed by Caswell *et al.* (2001) with the progress in the age of farmers, they find that the returns from adopting the technology will take lot of time and hence the interest in adoption also reduces.

Meera *et al.* (2004) reported that out of the farmers using the three projects' services; *Gyandoot*, *Warana* and *iKisan*, 52% were middle-aged, 37% young and 11% old. The frequency distribution was highly skewed towards the younger respondents.

Chetan (2011) observed that adoption of cardamom cultivation practices by the farmers of Chikmagalur district revealed that, majority (48.00 %) of the cardamom growers belongs to the middle age group followed by young age (26.66 %) and old aged (25.34 %) group.

As reported by Kabir (2015) in his study 'Attitude and level of knowledge of farmers on ICT based Farming' majority (60%) of the ICT based farming farmers belonged to young age group which is followed by middle age (27.8%) and old age (12.2%) group.

Swaroop (2016) in his study about the accessibility and extent of utilization of Information and Communication Technologies for the adoption of enhanced agricultural practices reported that most of the respondents were middle aged (54.17%).

Waghulkar *et al.* (2017) observed that out of total 24 respondents 50 per cent are from 31-40 age group and 12.5 per cent are from 51-60 age group, demonstrates the youth's dominance in the greenhouse agricultural industry.

Ajith (2018) observed based on results of his study that nearly 50 per cent of farmers belonged to old age group followed by 45 per cent and 4.16 per cent farmers who belonged to middle and young age group respectively.

2.3.2. Education

According to Quazi and Iqbal (1991) organizational and individual correlates to the adoption of internet technology reveals that education was an important determinant of innovation adoption.

Meera *et al.* (2004) in their study about ICT in agricultural development with comparative analysis of three projects from India revealed that 15 per cent of the farmers were illiterate, about 24 per cent had primary education, nearly 26 per cent were educated up to middle school and nearly 32 per cent had studied up to high school level.

One of the most important variables influencing the adoption of new technology in the farming sector is education (Truong, 2008).

Ram *et al.* (2010) in his study on entrepreneurial behavior of vegetable farmers concluded that half (50%) of the growers were graduate and above which were followed by those with high school (24.7%), middle school (18%) and primary school (6.7%) level of education.

Gills (2012) observed that most (33%) of the cardamom growers had education up to secondary level and 20 per cent of the cardamom growers had primary and high school level of education.

Peter (2014) in his study on 'Farmer-to-farmer extension in Kerala agriculture: A critical analysis of LEADS (lead farmer centred extension advisory and delivery services) project in Kollam district' found that 65 per cent of the farmers had high school education followed by 32 per cent of the farmers with college level education.

Waghulkar *et al.* (2017) reported that 45.8 per cent (11) of the respondents are graduates and only 5 of them are in high school range which enlights the impact of education on greenhouse business.

Lahan and Deka (2019) in their study 'Application of Information and Communication Technology (ICT) in farm management in Jorhat district of Assam' concluded that majority (41.6%) of the respondents were educated up to high school followed by primary school (40%), higher secondary (10%) and graduate (8.3%).

2.3.3. Area under cardamom cultivation

Meera *et al.* (2004) reported that almost 70% of the farmers who benefit from the *Gyandoot* project are small and marginal farmers. It is over 78 percent in the *Warana* Wired Village project. The frequency distribution of farmers in the *iKisan* project, on the other hand, is heavily skewed towards medium land holdings.

Ganiger (2012) concluded that 39.16 per cent of respondents were marginal farmers followed by 18.33 per cent small farmers and 17.49 per cent medium farmers.

Mathew and James (2017) found that there are 26 marginal growers among the 50 growers, each with less than 2 hectares of land. The hectare of industry is made up of small and marginal growers.

Kattel *et al.* (2020) observed that out of 300 sampled households, about 32 per cent were commercial large cardamom producing farmers having 1 ha and above upland allocated for production whereas 68 per cent were smallholders having less than 1 ha land allocated large cardamom production in study areas.

2.3.4. Experience in cardamom cultivation

Chittem (2010) stated that 57.5 per cent of farmers had medium level of experience in farming followed by 23.75 per cent with high and 18.75 with low level of experience.

Mukherjee (2011) observed that 46 per cent of the farmers had 20 to 30 years of farming experience followed by 42 per cent of farmers with less than 20 years of farming experience.

Zanu (2012) in his study found that farmers' experience in farming and the use of upgraded technologies have a favourable and substantial relationship.

Athira (2017) concluded that 80.83 per cent had more than 20 years of farming experience followed by 16. 66 per cent had 10 to 20 years and 2.5 per cent had less than 10 years of farming experience.

Bhandari and Bhandari (2018) reported that with an average farming experience of 22 years, the average area, production, and productivity of large cardamom were 0.86 ha, 200 kg and 232 kg per hectare, respectively.

2.3.5. Production of cardamom

Varghese (2007) stated that Guatemala has a higher output of 250 kg per hectare. However, depending on the season and timing of rainfall, the average yearly yield of cardamom in India ranges from 65 to 80 kg per hectare.

Reshma (2017) observed that the average yield of dry cardamom capsules from a well grown plantation would be around 450 to 500 kg per hectare. However, the yield may vary depending upon the type of soil and variety of cardamom cultivated and normally 400 to 500 plants can be cultivated in one acre.

Bhandari and Bhandari (2018) reported that the cardamom productivity was 248.90 kg per hectare in the mono cropping system, which was somewhat higher than the agro-forestry system (224.85 kg/ha).

Ishaq *et al.* (2019) reported that in the third year, the small farmers were getting average yield of 75 kg per acre, whereas average yield of large farmers was 125 kg per acre.

Kattel *et al.* (2020) found that the average production of large cardamom in 2017-18 was 194.8 kg which was significantly different among commercial farmers (349.2 kg) than small holders (122.4 kg).

2.3.6. Price received

According to Reardon and Barret (2000) when commodity prices rise, output increases, especially for export-oriented commodities. Price increases make it easier to construct supermarket chains, cooperatives, export-oriented programmes, processing zones and other forms of agro-industrialization in developing countries.

Hameedu (2014) concluded that in the domestic market, the price of cardamom was ₹1013 per kg in 2010-11, which decreased to ₹614 per kg in 2011-12 and slightly climbed to 677.59 per kg in February 2013 and remunerative rates are required for the crop's development in the state.

The price is calculated in terms of money and accounting and it protects the organization's production costs and all other linked expenses in order to maximise profits (Abrar *et al.*, 2016).

Kumari *et al.* (2017) observed that the farmers' perceptions of multiple price sources and the effectiveness of price utilization are aided by fellow farmers, input suppliers, traders and local mandis.

Kaur and Singh (2017) stated that in comparison to the other three aspects of the marketing mix, price is the most variable in e-marketing since it can be altered fast to meet market demand.

Price of cardamom depends upon the size, litre weight, color and aroma. The first quality (7 mm and above) cardamom will get premium price. Usually medium and large farmers grade their produce before selling so that they will get premium price. The small

farmers sell cardamom directly to the traders, and they get only lower price (Reshma, 2017).

Khatiwada *et al.* (2019) observed that the price of large cardamom was ₹2,700 in 2014, but it has reduced to ₹850 in 2018, a 68 per cent decrease. In 2016, the price of large cardamom soared above ₹3000, but the price could not keep up.

Nija (2019) reported that the price was only ₹487.84 per kilogram in 2005-06 which increased to ₹968.22 in 2010-11. But again the price declined to the rate of ₹610.23 in 2014-15. Not only annual, but unexpected monthly variations can also be seen in the price of cardamom. For example, the average price in 2017 is ₹750 a kg in November from ₹900 during March-April.

Kattel *et al.* (2020) reported that in fiscal year 2017-18, the price of large cardamom was found very low as compared to previous year (NRs.958/kg) due to global market demand and price fluctuation that makes farmers and traders more vulnerable in the eastern part of Nepal. The cost of production of one kg cardamom was estimated NRs.656 and recent selling price was NRs.1,000 per kg.

2.3.7. Extension contact

IT can aid in the efficient delivery of commodities by allowing extension workers to collect, save, retrieve and communicate a wide range of information to farmers, changing them from extension workers to knowledge workers (Meera *et al.*, 2004).

Gopika (2009) in her study 'Entrepreneurial effectiveness of agripreneurs in Kerala' noted that majority of the agripreneurs possessed medium to low levels of extension contact. The agricultural officers and the input dealers were the most important source of information for the commercial farmers.

According to Tiamiyu (2009) high contact with various extension agents will enable the farmers to be more familiar and knowledgeable about the use of improved agricultural innovations.

Sinhga *et al.* (2012) observed that farmers are exposed to more interactions with extension staff and obtain scientific information to access production and management methods from many sources when they have a higher level of extension contact.

According to Mathew and James (2017) the Spices Board has proposed a number of development plans to help cardamom growers. Field officers mostly contact farmers, whereas journals and other officers assist other growers. As a result, the majority of marginal farmers are unaware of it.

Anju (2018) concluded that with respect to extension agency contact, a greater majority (81.67%) of the cardamom growers paid regular visits to the agriculture officers, followed by occasionally visiting agricultural assistants (46.67%) and agricultural scientists (51.67 %). A greater proportion of cardamom growers did not have any contact with Additional Director of Agriculture (90%), SMS of KVK (76.67%) and ATMA (76.67%).

Bhandari and Bhandari (2018) reported that the majority of farmers were unable to acquire technical assistance and training; only 23 per cent of farmers received assistance and training from the District Agriculture Development Office (DADO). Only 7 per cent of farmers had access to improved large cardamom drying facilities, while 93 per cent of farmers relied on traditional drying methods. Farmers groups accounted for more than half of all farmers.

2.3.8. Attitude towards e-marketing

Customers who are price conscious have positive attitudes toward mobile advertisements, coupons that contain discounts and even banking activities and mobile banking tools. Consumers who do not have fixed line internet access have different

attitudes toward mobile ads, shopping and leisure activities than those who do (Chowdhury *et al.*, 2006).

According to Chauhan (2010) farmers have a positive attitude toward the use of the internet. Farmers perceive the internet as a rich source of world wide information on agriculture and the fastest way to exchange information in the shortest time. More over three-quarters of the respondents said they wanted to use the internet on their own at least once a week.

Alavion and Allahyari (2012) reported that approximately 46 per cent of the respondents were interested in putting e-commerce to use. From this group, 33 per cent requested technical assistance, 19 per cent were willing to invest in the idea, and 50 per cent chose the option "I would invest."

Arora and Rathore (2013) concluded that more over two-thirds of the respondents had a somewhat positive attitude, with 18.18 per cent having the least positive attitude and only 12.27 per cent having a highly positive attitude.

Palaiah *et al.* (2016) in their study about farmer's attitude on the usage of ICT tools for communication on farm information revealed that 40.83 per cent of the farmers were having positive attitude towards ICT tools followed by least positive attitude (31.67 %) and most positive attitude (27.5%) for ICT tools.

Ruaykijakarn *et al.* (2018) observed that knowledge and attitudes are the key factors in accepting marketing innovation. Knowledge is the result of the attitudes whether positive or negative, and the attitude will affect the behavior of the stimulus to stimulate farmer's attitudes towards marketing innovation. The result showed that the farmers had a high level of attitude towards marketing innovation (80%).

2.3.9. Awareness on digital tools

Meera *et al.* (2004) reported that nearly half of the 120 farmers in the study had a high level of media exposure, roughly 38% had a medium level of exposure and only 12% had a low level of media exposure.

Madhusudhan (2009) in 'Study on farmer participation and effectiveness of e-extension through the website raitamitra. kar. nic. in' reported that majority (58.34%) of farmers had low computer use efficiency followed by medium (33.13%) and high (8.54%) computer use efficiency.

Vadivelu and Kiran (2013) observed that when compared to traders (75%), farmers' awareness of different components of market information and their utility was quite low (11 to 37 %).

The most critical thing to have when engaging in internet-based marketing is awareness (Taherdoost and Jalaliyoon, 2014).

Kabir (2015) noted that half of the respondents (50%) reported a medium level of understanding of various ICT tools, followed by low (26.7%) and high (23.3%) levels of understanding.

Kumar (2016) in this study 'Impact of Information and communication technologies (ICTs) on agriculture in Haryana' noted that all the farmers (100%) were accessible for mobile phones.

Waghulkar *et al.* (2017) reported that there was a significant positive association of 62.9% at P=0.001 levels on awareness of e-banking and e-commerce, indicating that 62.9 per cent of farmers who are aware of internet banking and e-commerce are interested in online marketing.

2.3.10. Adoption of digital tools

Manouselis *et al.* (2009) reported that although just 24 per cent of farmers had access to a computer, 90 per cent of them had access to a mobile phone. As a result, basic

computers are qualified to replace the new generation of mobile phones that can connect to the internet. Farmers are attracted by aspects such as ease in carrying and the lack of complexity of mobile phones.

The attitude of users of ICTs are important to their adoption. Hands on experience, proper motivation and also interaction with e- learner farmers will build the confidence level of non e-learner farmers and will help them to overcome their technophobia (Balakrishnan *et al.*, 2013).

Eid and El-Gohary (2013) revealed that the use of e-marketing tools have a favourable influence on small business enterprises' pre-sales activities, after-sales activities, marketing performance and marketing effectiveness.

Bolos *et al.* (2016) stated that majority of the adults (85%) are internet users and smartphone users (67%). In the year 2000, only 14 per cent of seniors used the internet, whereas now a 58 per cent of senior citizens uses the internet.

Anju (2018) observed that all of the cardamom growers (100%) were regularly exposed to television programmes and mobiles to get the information related to agriculture. More than half (53.33%) of the respondents occasionally using internet for getting information about agriculture and 98.33 per cent of the farmers never depend on information kiosks for information related to agriculture.

Naik (2018) in 'study on ICT tools usage by the farmers in Anantapur district of Andhra Pradesh' noted that all farmers (100 %) have adopted television and majority (81.6%) of the respondents owned a smart phone for their own.

Luqman *et al.* (2019) reported that the accessibility to ICT tools was very low for majority (56.7%) of the respondents and only low (15.3%) of farmers had a high level of availability of ICT tools.

2.4. MARKETING EFFECTIVENESS OF THE FARMERS

2.4.1. Marketing channel

The marketing channel is a network of interdependent organizations participating in the process of making a product or service available for use or consumption. In channel arrangements, producers, wholesalers, retailers and other channel actors execute marketing functions that contribute to product flow. Intermediaries are those who act as a link between producers and customers (Castano, 2001).

Marketing channels are the routes through which agricultural produce move from producers to consumers. The length of channel varies from commodity to commodity, depending on the quantity to be moved, the form of consumer demand and degree of regional specialization in production (Acharya and Agarwal, 2011).

Behera *et al.* (2015) observed that the middlemen involvement and poor supply chain facilities have increased agricultural prices up to 60 per cent without actually adding any value.

Tangjang and Sharma (2018) observed that Channel III was found to be the longest, involving four separate intermediaries between the producer and the customer, followed by channel I, which had three middlemen and channel II, which had two intermediaries. The majority of the produce (43%) was sold through channel I, followed by 29 per cent through channel II and the smallest amount through channel III (28 %).

Ishaq *et al.* (2019) in his study found various channels used in the marketing of cardamom such as; Channel I: Producer – Auction Centre – Wholesalers – Retailers – Consumers, Channel II: Producer – Auction Centre – Licensed Dealers/Traders – Retailers – Consumers and Channel III: Producer – Auction Centre – Retailers – Open Market.

2.4.2. Marketing cost

Acharya and Agarwal (2011) defined marketing cost as the cost involved in moving the product from the point of production to the point of consumption, that is the cost of performing the various marketing functions and of operating various agencies.

When marketing expenses rise, marketing effectiveness and efficiency appear to decline with time, as seen by customers' low levels of satisfaction and loyalty, as well as their aversion to marketing efforts (Karlicek *et al*, 2014).

Bhandari and Bhandari (2018) reported that the Farmers' marketing costs were just about 1.42 per cent of their overall variable costs.

Tangjang and Sharma (2018) concluded that the Channel III had the highest marketing cost of the commodity (₹22.01 per kg), followed by channel I (₹14.56 per kg), and channel II (₹7.47 per kg). Because large cardamom is a low-volume, high-value crop, the marketing cost per unit of product is minimal in comparison to other bulky agricultural products.

2.4.3. Price spread

The economic efficiency of the marketing system is generally measured in terms of price spread of an agricultural commodity. The smaller the price spread, the greater the efficiency of the marketing system (Acharya and Agarwal, 2011).

Bhandari and Bhandari (2018) in their study on 'Marketing and socioeconomics aspects of large cardamom production in Tehrathum, Nepal' found that the farmers (NRs.2086 per kg) received the biggest share of the margin, followed by district dealers (NRs.44.5 per kg) and local collectors (NRs.20.5 per kg).

Tangjang and Sharma (2018) in their study on 'Marketing pattern of large cardamom (*Amomum Sabulatum*) in Tirap district of Arunachal Pradesh, India' reported that the highest price spread was found in channel III, which involved four intermediaries

(₹548.63 per kg), followed by channel I, which involved three intermediaries (₹507.13 per kg) and channel II, which involved two intermediaries (₹381.32 per kg).

2.4.4. Producer's share in consumer's rupee

Acharya and Agarwal (2011) defined producer's share in consumer's rupee as the price received by the farmer expressed as a percentage of the retail price that is the price paid by the consumer.

Tangjang and Sharma (2018) observed that the producer's share of the consumer's rupee was largest in channel-II (72.56%), where two intermediaries were involved, followed by channel-I (65.92%), where three intermediaries were involved and lowest in channel-III (65.52%), where four intermediaries were involved.

Kalauni and Joshi (2019) reported that when farmers sell their large cardamom directly to the exporter, they have a greater producer's share (90.32%), but in the domestic market channel with a large number of middlemen, they have the lowest producer's share (69.21%). According to the cardamom value chain analysis, the marketing efficiency and producer's share of consumer rupees decreased as the number of intermediaries increased.

2.4.5. Market information utilization

Meera *et al.* (2004) stated that the market information, including daily updates on the prices of agricultural commodities in the surrounding district's marketplaces, was regarded as one of the most important ICT services by the *Gyandoot* project's beneficiary farmers. 90 per cent of farmers deemed this as most appropriate, allowing them to sell at the markets where their products would command the highest prices.

Amrutha (2009) observed that modern management relies on a market information system to help them solve problems and make decisions. A market information system is a method of obtaining, processing, storing, and using data in order to improve marketing decisions and communication.

Accurate, adequate and timely availability of market information facilitates decision about when and where to market the products. Market information creates a competitive market process and checks the length of monopoly or profiteering by individuals. It is the lifeblood of a market (Acharya and Agarwal, 2011).

Farmers' knowledge of market information in general was found to be lower than that of traders, owing to the fact that farmers' access to market information in terms of communication networks is limited (Vadivelu and Kiran, 2013).

Behera *et al.* (2015) stated that the four 'A's of marketing information are accuracy, availability, applicability, and analysis; a farmer can decide how much to produce, when and where to sell and a trader can grow trade.

Farmers accept whatever price the traders offer them if they do not have access to accurate market information. However, under the influence of the information technology revolution, this position has recently changed drastically (Kumari *et al.*, 2017).

2.4.6. Timeliness of marketing

Manivel *et al.* (2012) reported that the majority of respondents (40%) said the best time to sell produce is at the start of the season, followed by during the season (24.3%) and right after harvesting (22.3%). As a result, cardamom growers do not keep their supply on hand for an extended period of time in anticipation of a price increase. They usually dispose of the produce either just after harvest (as in Tamil Nadu) or during the season (as in the case of farmers from Karnataka). Kerala farmers undertake the tradition of selling their goods at the start of the season.

2.4.7. Ease of marketing

It has been analyzed that improved market pricing information flow, along with easier market access, can result in the much-desired market orientation of the system of production (Rehman *et al.*, 2012).

According to Chalermphol *et al.* (2014) appropriate market management is a prime aspect in promotion of commercial vegetable production.

2.5. BENEFITS AND CONSTRAINTS PERCEIVED BY THE FARMERS

2.5.1. Benefits of e-marketing

According to Becherer and Halstead (2004) with the exception of personal selling, websites can perform nearly all of the functions of traditional marketing communications. They are informational and persuasive, just like advertising; they ask for and handle orders, just like direct mail and infomercials; and just like public relations, they can assist shape a company's or brand's image. Customers making purchasing decisions need real-time information on pricing and delivery options.

Kashyap and Raut (2006) noted that the 'anytime-anywhere' e-marketing's advantage leads to efficient price discovery, lower transaction costs for trading and a more transparent and competitive environment.

According to Wen (2007) agricultural e-marketing has a good impact on the elimination of intermediaries, cost savings and customer acquisition. The essential question is what kind of system should be established to enable farmers sell their products through internet marketing because most farmers possess a tiny piece of farmland with little investment.

According to Adrian (2010) farmers might go online at any moment and get all the information they need about the service they want without having to visit the companies who provide it. Farmers may also be better informed and promote their products more easily with the help of the internet. Web sites have several advantages over traditional marketing promotions, including a relatively low cost of promotion, a high level of communication, and availability 24 hours a day, seven days a week.

Using advanced ICT to facilitate agricultural marketing tasks and procedures such as purchasing and selling, payment, grading, standardization and transportation in an efficient manner might result in improved solutions (Rehman *et al.*, 2012).

The primary benefits of social media marketing are cost savings and increased reach. Social media platforms are typically less expensive than other marketing platforms like face-to-face sales or sales through intermediaries or distributors (Fikri, 2019).

According to Joseph (2020) the introduction of e-auction appears to have had a substantial impact on reducing the price gap between different lots of cardamom sold through auctions and hence the subordinated exclusion that existed under the previous system.

2.5.2. Constraints perceived by the farmers

Eszes (2010) noted that lack of personal approach, reliance on technology, security-privacy issues, maintenance expenses owing to a continually evolving environment, higher pricing transparency, increased price competitiveness and worldwide competition due to globalization are all downsides of e-marketing.

Murugesan and Rajarajan (2016) found that one of the worst problems faced by the farmers is the lack of remunerative prices. They are compelled to dispose their products at a very low price and thereby the middlemen avail the opportunity of deriving undue benefits.

Farmers are not fully informed about modern cardamom marketing tactics, particularly those pertaining to the export market, such as export pricing, statutory rules of importing nations and government-sponsored export incentives and benefits (George and Cherian, 2017).

Mathew and James (2017) reported that financial difficulties affect 44 per cent of growers, while marketing issues affect 42 per cent of growers. The lack of an open market

for cardamom is the most significant marketing issue. Farmers are also affected by a lack of institutional aid and awareness. Other than assistance from the Spices Board, none of the growers receive any other help.

Though e-auction has made cardamom trading more systematic and transparent, the stakeholders were without an effective mechanism to hedge price risk which was very high in cardamom. Moreover, the price discovery through the e-auction platform was less efficient as the trading was localized and participation by the stakeholders was limited (Reshma, 2017).

According to Anbuchelvi (2019) with the advancement of online trading of cardamom through auction centers, which eliminates so many intermediaries and various commissions, planters are not getting remunerative prices for their products.

Ishaq *et al.* (2019) reported that for planters' perceptions of issues in cardamom marketing, fluctuation in prices was ranked highest with a mean score of 65.62, followed by inadequate financial resources with a mean score of 63.13. Higher commission costs were ranked III, indebtedness to traders was ranked IV, lack of market information was ranked V, lack of transportation was listed VI, absence of regulated market was ranked VII, sparse storage facility was ranked VIII, and absence of processing and grading was ranked IX.

Nija (2019) concluded that many external factors influence price, including import, export, domestic use, festive demand, weather, capsule size and color. Due to the price fluctuations, sometimes the farmers keep the capsules in the store anticipating higher price in future, which is not at all advisable. Also mixing of the imported, cheap and inferior quality cardamom with Indian cardamom influences unfavorably on its price. However, cardamom farmers found it very difficult to tally the low market price with its rising production cost.

2.6. SUGGESTIONS

Varghese (2007) found that the grower should obtain working capital at a rate of less than 6 per cent to make it profitable. The government should convince commercial banks to provide more loans to cardamom growers at interest rates below 6 per cent. A special package from the government is also required to assist small and marginal cardamom farmers who are cultivating this crop just for the sake of survival.

To overcome the current situation of cardamom production in Kerala and processing and marketing in Bodinayakanur, Tamil Nadu, a cardamom grading machine, a cardamom curing device and a cardamom processing unit should be established (NIAM, 2011).

As suggested by Manivel *et al.* (2012) to protect grower interests, the government needs to play a bigger role in setting the minimum support price and establishing the appropriate preparations for cardamom export. To take advantage of the economic gains, farmers may be urged to use scientific grading, standardisation, packaging and storage.

The necessity for direct marketing of agricultural products is urgent. Efforts might be made to provide facilities such as godowns and warehouses for holding stocks and lifting the entire stock that farmers are prepared to sell at an incentive price. This allows farmers to keep their inventories until prices settle (Vadivelu and Kiran, 2013).

According to Hameedu (2014) plant protection and pest management knowledge, government and non-governmental organizations encouraging diseased plant replacement with some compensation, financial support during lean periods, storehouse feasibility, information on the use of bio-fertilizers and bio-pesticides, and providing knowledge for sorting and grading are all needed.

According to Mathew and James (2017) cardamom needs an open market, marginal producers and those without *pattayam* should be granted crop loans to execute seasonal operations, fertilizer prices should be managed and the Spice Board should ensure that the majority of growers profit from various schemes.

Ishaq *et al.* (2019) pointed out to suggestions such as financial assistance to cardamom planters, provision of vital marketing information, the Spice Board can introduce new high yielding hybrid varieties of cardamom and make special efforts to improve cultivation methods, the Spice Board and Cardamom Research Centre must create awareness of organic farming and its benefits to cardamom farmers and they must provide bio-pest control technology information.

Methodology

CHAPTER III
METHODOLOGY

Methodology refers to the systematic and theoretical analysis of methods applied to a field of study. The main focus of this chapter is on the methods and procedures employed in the study for data collection, data analysis, and interpretation of the results. The research methodology followed for the research are outlined under the following heads.

3.1. Research design

3.2. Locale of the study

3.3. Selection of respondents

3.4. Operationalization and measurement of variables

3.5. Benefits and constraints perceived by the farmers

3.6. Suggestions to overcome the constraints

3.7. Data collection techniques

3.8. Statistical tools used for data analysis

3.9. Hypothesis

3.1. RESEARCH DESIGN

A research design is a plan, a roadmap and blueprint approach of investigation for obtaining answers to research questions (Kothari, 2004).

Exploratory research design was employed in the study. When there are few or no previous studies to rely on for forecasting an outcome, an exploratory research design is employed in a research problem. The emphasis is on gathering insights and familiarity in

preparation for further examination or when research challenges are in the beginning stages of investigation.

3.2. LOCALE OF THE STUDY

The study was conducted in Idukki district of Kerala as this district ranks first in terms of area and production of cardamom in Kerala. Cultivation in Idukki district accounts for 79.65 per cent of the total area under cardamom cultivation in the state (GoK, 2020). Among the four AEUs (Agro Ecological Units) of Idukki, AEU-14; Southern High Hills and AEU-16; Kumily Hills were selected based on maximum area under cardamom cultivation, for identifying the respondents.

3.3. SELECTION OF RESPONDENTS

Two categories of respondents were selected for the study; farmers undertaking conventional marketing of cardamom and farmers undertaking e-marketing of cardamom. Five Panchayats each were selected from the two AEUs based on the maximum area under cardamom cultivation. From each Panchayat six farmers undertaking conventional marketing and six farmers undertaking e-marketing of cardamom were randomly selected. Thus a total of 120 respondents comprising 60 farmers undertaking conventional marketing of cardamom and 60 farmers undertaking e-marketing of cardamom, constituted the sample for the study.

3.4. OPERATIONALISATION AND MEASUREMENT OF VARIABLES

3.4.1. Operationalization and measurement of independent variables

Based on major objectives of the study, review of literature, discussion with experts and observations of the researcher, the independent variables identified included personal, social, economic and psychological variables which were believed to influence the dependent variable. Forty independent variables were identified based on various literature, which was subjected to judges' rating by experts. It was tendered in the form of

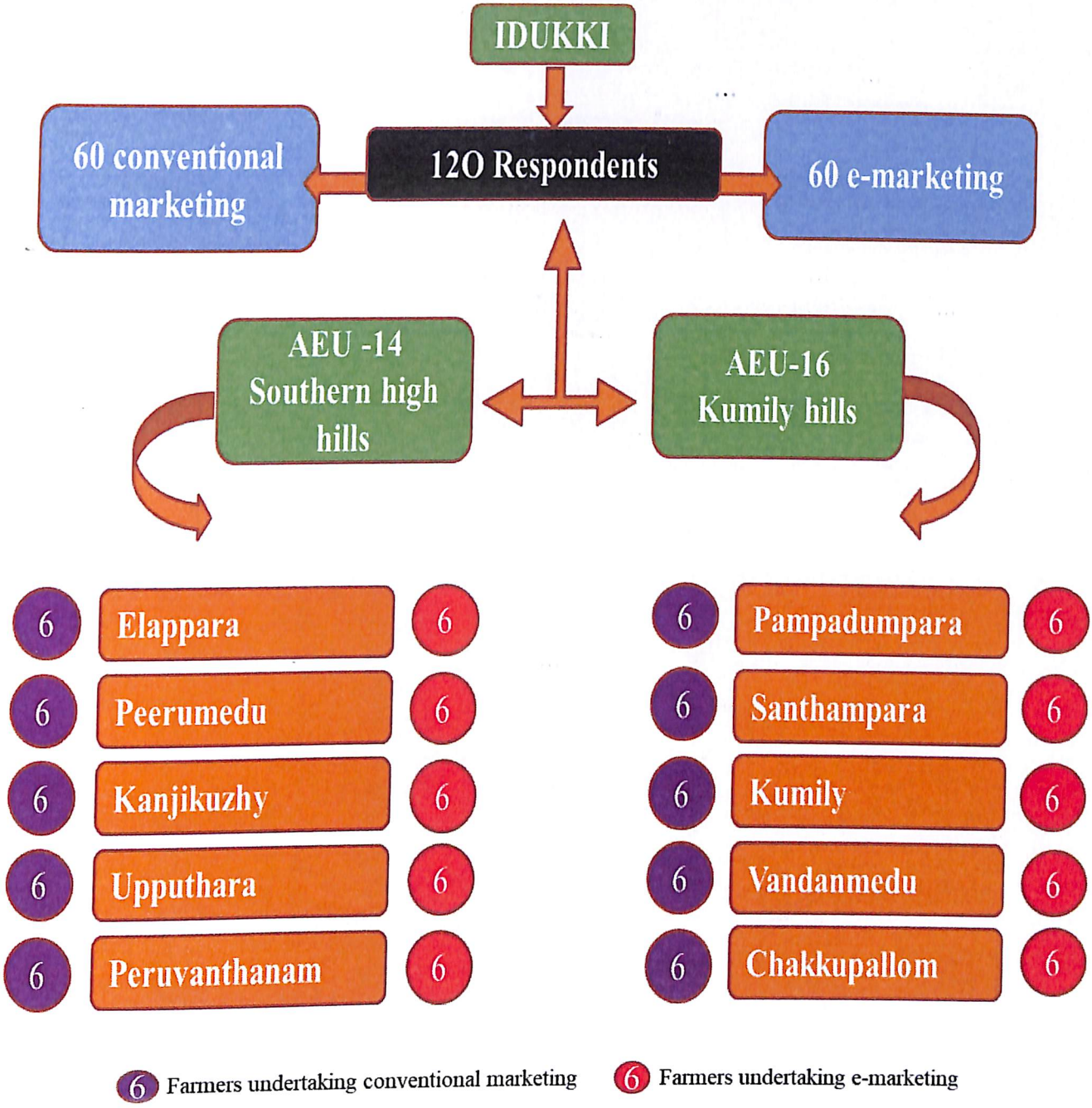

Fig.1 Selection of respondents

a questionnaire to collect responses from the judges on a five-point continuum with response pattern as 'most relevant', 'more relevant', 'relevant', 'less relevant' and 'least relevant' with scores of 5,4,3,2,1 respectively. The questionnaire is furnished in the Appendix 1.

The copies of questionnaire were sent to sixty judges through post and email. Forty-two judges responded. The score assigned by these judges were added up for each variable. The ten variables having the highest scores were selected as the independent variables for the study. The selected independent variables with their corresponding measurement procedure are presented in Table 1.

Table 1. Selected independent variables with their corresponding measurement procedure

Sl. No.	Independent variables	Measurement
1.	Age	Chronological age of respondent
2.	Education	Procedure developed by Trivedi (1963) with slight modification
3.	Area under cardamom cultivation	Operational holdings classification of Agricultural Census 2015-16 Report (2018)
4.	Experience in cardamom cultivation	Experience of farmers expressed in number of years
5.	Production of cardamom	Production of cardamom expressed in kilo gram per acre
6.	Price received	Price received expressed in rupees per kilogram of cardamom
7.	Extension contact	Procedure followed by Manoj (2000) with slight modification
8.	Attitude towards e-marketing	Arbitrary scale developed
9.	Awareness on digital tools	Scale followed by Raghunath (2016) with slight modification

10.	Adoption of digital tools	Procedure followed by Alan (2019) with slight modification

3.4.1.1 Age

Age was operationalized as the number of chronological years completed by the farmers at the time of interview. It was measured by asking the actual age of respondents. With quartiles as check, respondents were categorised as in the table below with respect to their age.

SL. No.	Category	Criteria
1.	Young age	$\leq Q_1$
2.	Middle age	$> Q_1$ to $\leq Q_3$
3.	Old age	$> Q_3$

The respondents were categorized into different groups and expressed as frequency and percentage.

3.4.1.2. Education

Education was operationalized as the number of years of formal education completed by the farmer at the time of enquiry. Level of education of the respondents were measured using the scale developed by Trivedi (1963) with slight modification.

SL. No.	Category	Score
1	Illiterate	1
2	Primary school	2
3	Middle school	3
4	High school	4
5	Higher secondary	5
6	Degree and above	6

The respondents were categorized into different groups based on their level of education and expressed as frequency and percentage.

3.4.1.3. Area under cardamom cultivation

Area under cardamom cultivation was operationalized as the extent of land under cardamom cultivation in hectares. It was categorized based on the operational holding classification on the census report 2015-16 of Government of India (2018).

SL. No.	Category	Area (Hectares)
1.	Marginal	<1
2.	Small	1-2
3.	Semi-medium	2-4
4.	Medium	4-10
5.	Large	≥10

The respondents were categorized into different groups based on their extent of area under cardamom cultivation and expressed as frequency and percentage.

3.4.1.4 Experience in cardamom cultivation

Experience in cardamom cultivation was operationalized as the total number of years a farmer has been engaged in cardamom cultivation. It was measured by asking the actual years of experience of the respondents in cardamom cultivation. With quartiles as check, the respondents were categorised with respect to their experience, as in the table below.

SL. No.	Category	Criteria
1.	Low	$\leq Q_1$
2.	Medium	$> Q_1$ to $\leq Q_3$
3.	High	$> Q_3$

The respondents were categorized into different groups based on their experience in cardamom cultivation and expressed as frequency and percentage.

3.4.1.5. Production of cardamom

Production of cardamom was operationalized as the total quantity of cardamom produced per acre in a crop season. It was measured by asking the farmers the actual quantity of cardamom produced in kilogram per acre. With quartiles as check, the respondents were categorised with respect to their quantum of production as in the table below.

SL. No.	Category	Criteria
1.	Low	$\leq Q_1$
2.	Medium	$> Q_1$ to $\leq Q_3$
3.	High	$> Q_3$

The respondents were categorized into different groups based on their production of cardamom and expressed as frequency and percentage.

3.4.1.6. Price received

Price received was operationalized as the average price received in rupees per kilogram of cardamom by the farmer in a crop season. It was measured by asking the farmers the actual price they received in rupees for selling a kilogram of cardamom. It was categorized into different price ranges based on the average auction price which prevailed at the time of data collection.

SL. No	Rupees per kg
1.	≤1000
2.	1000-1200
3.	1200-1400
4.	>1400

The respondents were categorized into different groups based on the price received and expressed as frequency and percentage.

3.4.1.7. Extension contact

Extension contact was operationalized as the degree to which the farmer maintains contact with extension agencies or personnel for obtaining information in agriculture. It was measured using the procedure followed by Manoj (2000) with slight modifications.

Sl. No.	Extension Agency	Frequency of contact		
		Regularly (2)	Occasionally (1)	Never (0)
1	Agricultural Officers			
2	Agricultural Assistants			
3	ADA/DDA			
4	Agricultural Scientists			
5	SMS of KVKs			
6	ATMA-resource persons			
7	Any others			

By summing up the scores for contacts with different extension agencies, the total score was obtained. The score ranges from 0-14. With quartiles as check, respondents were categorised as in the table below, with respect to their extension contact.

SL. No.	Category	Criteria
1.	Low	$\leq Q_1$
2.	Medium	$> Q_1$ to $\leq Q_3$
3.	High	$> Q_3$

The respondents were categorized into different groups based on their extension contact and expressed as frequency and percentage.

3.4.1.8. Attitude towards e-marketing

Attitude towards e-marketing was operationalized as the positive or negative mental predisposition of the farmer towards e-marketing. It was measured using an arbitrary scale developed for the purpose of the study. The scale consists of 8 statements to measure the attitude of farmers, scored in five-point continuum, as Strongly agree, Agree, Undecided, Disagree and Strongly disagree with weighted scores of 5,4,3,2 and 1 for positive statements. Reverse scoring procedure was followed for the negative statements.

Sl. No.	Statements + -	SA 5 1	A 4 2	UD 3 3	DA 2 4	SDA 1 5
1	E-marketing is the best marketing system to prevent the farmers' exploitation by the intermediaries (+)					
2	E-marketing is difficult to adopt without the necessary technical know-how and skills (-)					
3	In e-marketing, the transactions are more reliable and receipts are prompt (+)					
4	Farmer cannot solely depend upon e-marketing to market his produce (-)					
5	E-marketing serves to reduce the susceptibility of the farmers to fall prey to the pressures created by the traders and middlemen (+)					
6	Demand of the product in e-marketing mode is not consistent (-)					
7	Deferred payment of money in e-marketing prompts me to sell my cardamom to the local traders which ensures quick payment (-)					
8	I prefer e-marketing to conventional marketing in cardamom (+)					

By summing up the scores for different statements, the total score was obtained. The scores range from 8-40. With quartiles as check, respondents were categorised with respect to their attitude towards e-marketing, as in the table below.

SL. No.	Category	Criteria
1.	Negative	$\leq Q_1$
2.	Neutral	$> Q_1$ to $\leq Q_3$
3.	Positive	$> Q_3$

The respondents were categorized into different groups based on their attitude towards e-marketing and expressed in frequency and percentage.

3.4.1.9. Awareness on digital tools

Awareness on digital tools was operationalized as the extent to which the farmers are informed of various digital tools available for e-marketing. It was measured using the scale followed by Raghunath (2016) with slight modification.

Sl. No.	Digital tool	Aware (1)	Not aware (0)
1	Television		
2	Mobile phone		
3	Computer		
4	Internet		
5	Social media		
6	Information kiosk		
7	E mail		
8	Search Engine		
9	Agricultural websites and web portals		

10	Video conferencing		
11	Agricultural expert systems		
12	Mobile agricultural applications		
13	E newspaper		

By summing up the scores for different digital tools, total score was obtained. The score ranges from 0-13. With quartiles as check, respondents were categorised as below with respect to their awareness on digital tools.

SL. No.	Category	Criteria
1.	Low	$\leq Q_1$
2.	Medium	$> Q_1$ to $\leq Q_3$
3.	High	$> Q_3$

The respondents were categorized into different groups based on their awareness on digital tools and expressed as frequency and percentage.

3.4.1.10. Adoption of digital tools

Adoption of digital tools was operationalized as the use of various digital tools and internet-based services by farmer for agricultural purposes. It was measured using the procedure followed by Alan (2019) with slight modification.

Sl. No.	Digital tool	Yes (1)	No (0)
1	Television		
2	Mobile phone		
3	Computer		
4	Internet		
5	Social media		

6	Information kiosk		
7	E mail		
8	Search Engine		
9	Agricultural websites and web portals		
10	Video conferencing		
11	Agricultural expert systems		
12	Mobile agricultural applications		
13	E newspaper		

By summing up the scores for different digital tools adopted, total score was obtained. The scores range from 0-13. With quartiles as check, respondents were categorised as in the table below with respect to their adoption of digital tools.

SL. No.	Category	Criteria
1.	Low	$\leq Q_1$
2.	Medium	$> Q_1$ to $\leq Q_3$
3.	High	$> Q_3$

The respondents were categorized into different groups based on their adoption of digital tools and expressed as frequency and percentage.

3.4.2. Operationalisation and measurement of dependent variable

3.4.2.1. Marketing effectiveness

Based on the objectives of study, marketing effectiveness of cardamom farmers undertaking conventional marketing and e-marketing of cardamom was selected as the dependent variable.

In this study, marketing effectiveness was operationally defined as the measure of how effective a marketer's marketing strategy or market plan is fruitful in meeting the goal of optimizing their economic benefits.

Marketing effectiveness was measured using the index developed for the purpose of the study. Based on major objectives of the study, literature review, discussion with experts and observations of the researcher, economic and psychological variables were identified as components of marketing effectiveness. Based on extensive review of literature an exhaustive list of variables were made and the relevance of the variables were rated by experts in the realm of Agricultural Economics and Agricultural Extension. Ten variables which were presumed to contribute to marketing effectiveness were identified. It was shared in the form of a questionnaire to collect responses from the judges on a five-point continuum with response pattern as 'most relevant', 'more relevant', 'relevant', 'less relevant' and 'least relevant' with scores of 5,4,3,2,1 respectively. The questionnaire is furnished in the Appendix 2.

The copies of questionnaire were sent to twenty judges through post and email. Fifteen of the judges responded. The score assigned by these judges were added up for each variable, and the other variables suggested were considered and incorporated after modifications. The seven variables having the highest score were selected as the components of marketing effectiveness for the study.

The components identified were marketing channel, marketing cost, price spread, producer's share in consumer's rupee, market information utilization, timeliness of marketing and ease of marketing, which includes both quantitative and qualitative variables. The qualitative variables were measured with arbitrary scales developed for the study. Based on review of literature, discussion with experts and observations of the researcher, statements to measure each qualitative variable were identified. The quantitative variables were measured in actual figures.

The statements selected for the arbitrary scales of market information utilization, timeliness of marketing and ease of marketing were selected based on judges' rating by experts in the field of Agricultural Extension and Economics. It was given in the form of a questionnaire to collect responses from the judges on a five-point continuum with response pattern as 'most relevant', 'more relevant', 'relevant', 'less relevant' and 'least relevant' with scores of 5,4,3,2,1 respectively. The questionnaire is furnished in the Appendix 3.

The copies of questionnaire were sent to fifteen judges through post and email. Twelve of the judges responded. The score assigned by these judges were added up for each statement, and the other statements suggested were considered and incorporated after modifications. The statements having the highest scores were selected under the respective scales for measuring the qualitative components of marketing effectiveness for the study.

The marketing effectiveness index consists of seven components of which marketing channel, marketing cost and price spread negatively influence the marketing effectiveness while the components such as producer's share in consumer's rupee, market information utilization, timeliness of marketing and ease of marketing have a positive influence on the marketing effectiveness. Each of the components were measured and standardized for index development.

Values of the components with positive effect on marketing effectiveness were standardized with the formula;

$$Zi = \frac{X - Xmin}{Xmax - Xmin}$$

Which ranges from 0 to 1.

Values of the components with negative effect on marketing effectiveness were standardized with the formula;

$$Zi = \frac{Xmax - X}{Xmax - Xmin}$$

Which ranges from 1 to 0.

Marketing Effectiveness Index (MEI) was used to measure the marketing effectiveness of the respondents. The total score was calculated by adding the standardized values obtained for the seven components. The total score ranges from 0 to 7. This score was used to calculate the marketing effectiveness index score.

Marketing Effectiveness Index (MEI) is given by the formula;

$$\text{MEI} = \frac{\sum_{i=1}^{n} Zi}{n} \times 100$$

MEI = (Sum of obtained standardized score for the seven components / 7) × 100

The index score of marketing effectiveness ranges from 0 to 100. Based on the MEI, the respondents were grouped into three categories namely low, medium and high, considering the quartile values and expressed as frequency and percentage.

SL. No.	Category	Criteria
1.	Low	$\leq Q_1$
2.	Medium	$> Q_1$ to $\leq Q_3$
3.	High	$> Q_3$

The seven components and their respective items of measurements were provided in the interview schedule and the respondents were asked to respond to the statements (Appendix 4).

3.4.2.2. Components of marketing effectiveness

The seven components of marketing effectiveness were operationalized as follows;

3.4.2.2.1. Marketing channel

Defined as the chain of intermediaries through whom the commodity passes in reaching the consumers from the producers. It was measured as the number of parties in the marketing channel adopted by the farmer in marketing of cardamom.

3.4.2.2.2. Marketing cost

Defined as the actual expenses incurred by farmer in taking the produce to market including market fee, handling, assembling, and transportation charges. It was measured by asking the farmer the actual expenses in rupees, spent for marketing a quintal of cardamom.

3.4.2.2.3. Price spread

Defined as the difference between the price paid by consumers and the net price received by the producer for an equivalent quantity of produce. The real price spread in rupees is used to calculate it.

3.4.2.2.4. Producer's share in consumer's rupee

Defined as the proportion of the price received by the farmer that is paid by the consumer. It was measured as the percentage of consumer's price received by the producer.

3.4.2.2.5. Market information utilization

Defined as the extent of use of timely information on prices and quantities of cardamom, for decision making in marketing of the produce. It was measured using an arbitrary scale developed for the purpose of the study. By summing up the scores for different statements, the total score was obtained. The scores range from 7-35.

3.4.2.2.6. Timeliness of marketing

Defined as scheduling the marketing of the produce for the most appropriate time, on the basis of market information, to fetch maximum profits. It was measured using an arbitrary scale developed for the purpose of the study. By summing up the scores for different statements, the total score was obtained. The scores range from 2-10.

3.4.2.2.7. Ease of marketing

Defined as the relative convenience of the farmer in marketing his produce with the marketing plan he adopts. It was measured using an arbitrary scale developed for the purpose of the study. By summing up the scores for different statements, the total score was obtained. The scores range from 11-55.

3.5. BENEFITS AND CONSTRAINTS PERCEIVED BY THE FARMERS.

The benefits and constraints of e-marketing perceived by the farmers were identified based on the interaction and discussion with farmers who undertake e-marketing of cardamom during the data collection using an interview schedule. The benefits and constraints identified based on open-ended questions were listed and ranked according to their frequency and percentage.

3.6. SUGGESTIONS TO OVERCOME THE CONSTRAINTS

Suggestions for overcoming the constraints of e-marketing were collected from the respondents and experts based on interactions and discussions.

3.7. DATA COLLECTION TECHNIQUES

A pre-tested well-structured interview schedule was administered to the respondents. Personal interview was employed as the method of data collection. The schedule was pre-tested with 20 respondents selected outside the sample area and suitable changes were made based on the information collected. Incorporating these corrections, the final interview schedule was prepared. The interview was conducted in the local language. The final interview schedule is enclosed in Appendix 4.

3.8. STATISTICAL TOOLS USED FOR DATA ANALYSIS

Statistical methods used to analyze the data and draw conclusions are detailed below;

3.8.1 Quartiles

The respondents were grouped based on the quartile values of independent and dependent variables. After grouping of the respondents, their frequencies and percentages were worked out.

3.8.2 Frequency and percentage analysis

After grouping the respondents into various categories, percentage analysis was used for simple and meaningful interpretation of the data. It is calculated by multiplying the frequency with hundred and further dividing it with the total number of respondents.

3.8.3 Mean

The mean is the average of a data set. The mean values were used to compare the two categories of respondents for their independent and dependent variables.

3.8.4 Standard deviation

Standard deviation was used to quantify the amount of dispersion in a data set. It is the positive square of the squared deviations taken from the arithmetic mean.

3.8.5 Z-test

Z-test is a statistical tool used to determine whether mean values of two populations are different when the variances are known and the sample size is large. It can be used to compare population means. Z-test was used to compare the marketing effectiveness index scores of two categories of respondents and the components of marketing effectiveness.

3.8.6 Factor analysis

Factor analysis is used to reduce a large number of variables into a smaller number of factors. This method takes the largest common variance from all variables and converts it to a single score. Factor analysis was carried to find out the contributing factors of marketing effectiveness.

3.8.7 Karl Pearson's correlation analysis

Karl Pearson's coefficient of correlation was used to illustrate the relationship between the dependent and the independent variables of the study. Correlation analysis was carried out to find whether the independent variables had any association with marketing effectiveness.

3.9. HYPOTHESIS

A research hypothesis is a conjectural statement of the relation between two or more variables (Kerlinger, 1973). A hypothesis must be testable to allow a verification or falsification. In this study the null hypothesis set and established were;

1. There exists no difference in the marketing effectiveness of the farmers undertaking conventional marketing and e-marketing.
2. There exists no significant relationship between independent variables and marketing effectiveness.
3. There are no constraints faced by the farmers undertaking e-marketing.

Results and Discussion

CHAPTER IV

RESULTS AND DISCUSSION

This chapter highlights the findings of the study in line with the objectives. They are categorized under the following heads.

4.1. Distribution of respondents based on profile characteristics

4.2. Marketing effectiveness of the respondents

4.3. Factor analysis of marketing effectiveness components

4.4. Comparative analysis of conventional marketing and e-marketing effectiveness with Z-test

4.5. Correlation analysis between dependent and independent variables

4.6. Benefits of e-marketing perceived by the farmers

4.7. Constraints of e-marketing perceived by the farmers

4.8. Suggestions for improving the effectiveness of e-marketing of cardamom

4.9. Validation of hypothesis

4.1. DISTRIBUTION OF RESPONDENTS BASED ON PROFILE CHARACTERISTICS

The distribution of respondents based on the independent variables selected through judges rating are presented below.

4.1.1 Age

Age was operationalized as the number of chronological years completed by the farmers at the time of interview. Table 2 presents the distribution of respondents based on their age.

Table 2. Distribution of respondents based on their age

Sl. No.	Category (Years)	Conventional marketing(n=60)		E-marketing (n=60)		Total (N=120)	
		f	%	f	%	f	%
1	Young Age (≤35)	14	23.3	23	38.3	37	31
2	Middle Age (>35 - ≤49)	31	51.7	24	40	55	46
3	Old Age (>49)	15	25	13	21.7	28	23
	Q_1= 35 Min= 23 Q_3= 49 Max= 70	Mean= 43.6 SD= 10.25		Mean= 41.35 SD= 10.89		Mean= 42.475 SD= 10.59	

From the analysis of Table 2 it was evident that 46 per cent of the respondents surveyed belonged to the middle age category, followed by respondents in young age (31%) and old age (23%).

On comparing the farmers undertaking conventional marketing and e-marketing, it was observed that more than fifty per cent of the farmers undertaking conventional marketing belonged to middle age (51.7%), followed by old age (25%) and young age (23.3%), whereas majority of the farmers undertaking e-marketing belonged to middle age (40%), followed by young age (38.3%) and old age (21.7%).

Respondents belonging to the young age category were more in e-marketing (38.3%) compared to conventional marketing (23.3%).

Hence it was concluded that more young farmers are adopting e-marketing over conventional marketing. The underlying reason for this might be the increased awareness on and adoption of ICT tools among young and middle aged farmers, compared to the old age farmers who wish to continue their traditional practices and due to their less

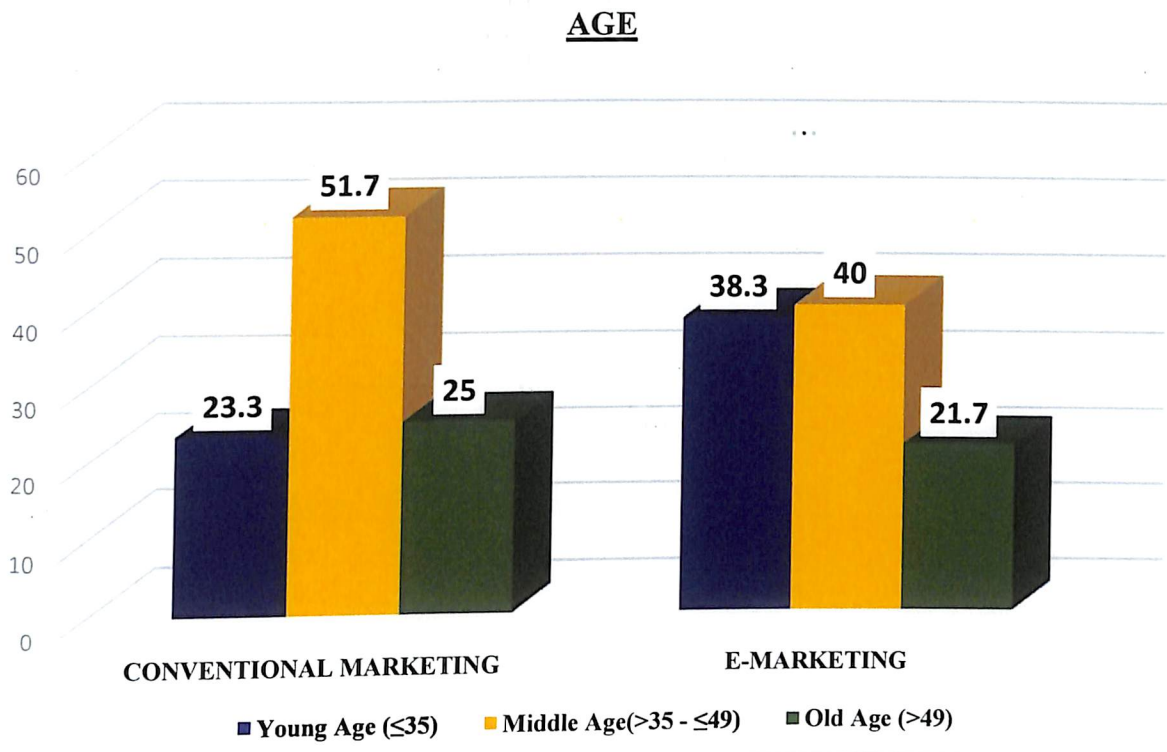

Fig. 2 Distribution of respondents based on age

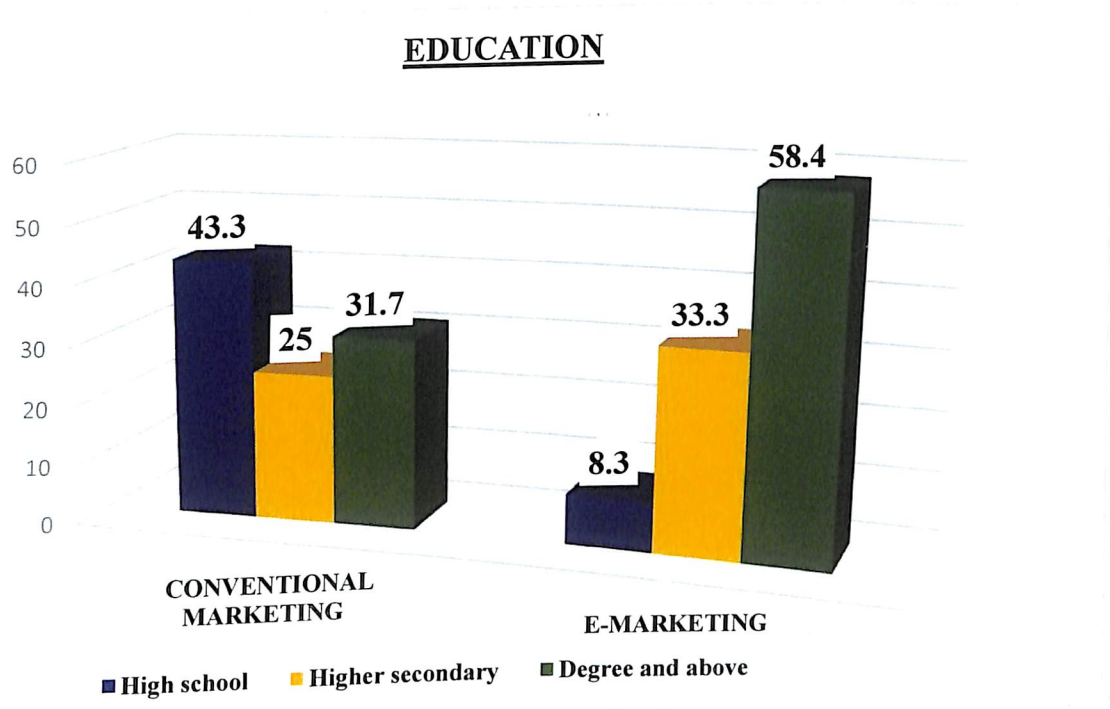

Fig. 3 Distribution of respondents based on education

proficiency in using ICT based services. The results obtained are in agreement with those of Meera *et al.* (2004), Chetan (2011) and Kabir (2015).

4.1.2. Education

Education was operationalized as the number of years of formal education completed by the farmer at the time of enquiry. The respondents were grouped into different categories based on their level of education as illiterate, primary school, middle school, high school, higher secondary and degree and above. Table 3 presents the distribution of respondents based on their education.

Table 3. Distribution of respondents based on their education

Sl. No.	Category	Conventional marketing (n=60)		E-marketing (n=60)		Total (N=120)	
		F	%	F	%	f	%
1	Illiterate	0	0	0	0	0	0
2	Primary school	0	0	0	0	0	0
3	Middle school	0	0	0	0	0	0
4	High school	26	43.3	5	8.3	31	25.8
5	Higher secondary	15	25	20	33.3	35	29.2
6	Degree and above	19	31.7	35	58.4	54	45

From the analysis of Table 3 it was inferred that all the respondents were literate with educational qualification ranging from high school to degree and above. Among the respondents surveyed, 45 per cent had educational qualification of degree and above, followed by higher secondary (29.2%) and high school (25.8%) level of education.

On comparing the farmers undertaking conventional marketing and e-marketing, it was observed that majority of the farmers undertaking conventional marketing had high school level of education (43.3%), followed by degree and above (31.7%) and higher secondary (25%) level of education, whereas majority of the farmers undertaking e-

marketing had degree and above level of education (58.4%), followed by higher secondary (33.3%) and high school level of education (8.3%).

Respondents having degree and above level of education were more in e-marketing (58.4%) compared to conventional marketing (31.7%).

Hence it was concluded that farmers undertaking e-marketing are having higher educational qualifications than farmers undertaking conventional marketing. The underlying reason for this might be the high literacy rate and the well-established educational system in the state of Kerala. Also the farmers with higher educational qualifications would be having the better exposure and experience with ICT tools and readiness to adopt the advanced practices, and hence e-marketing. The results obtained are in agreement with those of Ram *et al.* (2010), Peter (2014) and Waghulkar *et al.* (2017).

4.1.3. Area under cardamom cultivation

Area was operationalized as the extent of land under cardamom cultivation in hectares. Table 4 gives the distribution of respondents based on their area under cardamom cultivation.

Table 4. Distribution of respondents based on their area under cardamom cultivation

Sl. No.	Category (Hectares)	Conventional marketing(n=60)		E-marketing (n=60)		Total (N=120)	
		f	%	f	%	f	%
1	Marginal (<1)	19	31.7	4	6.7	23	19.2
2	Small (1-2)	14	23.3	13	21.7	27	22.5
3	Semi-medium (2-4)	14	23.3	20	33.3	34	28.3
4	Medium (4-10)	12	20	21	35	33	27.5
5	Large (≥10)	1	1.7	2	3.3	3	2.5
Min= 0.4 Max= 10		Mean= 2.513 SD= 2.275		Mean= 3.413 SD= 2.301		Mean= 2.96 SD= 2.32	

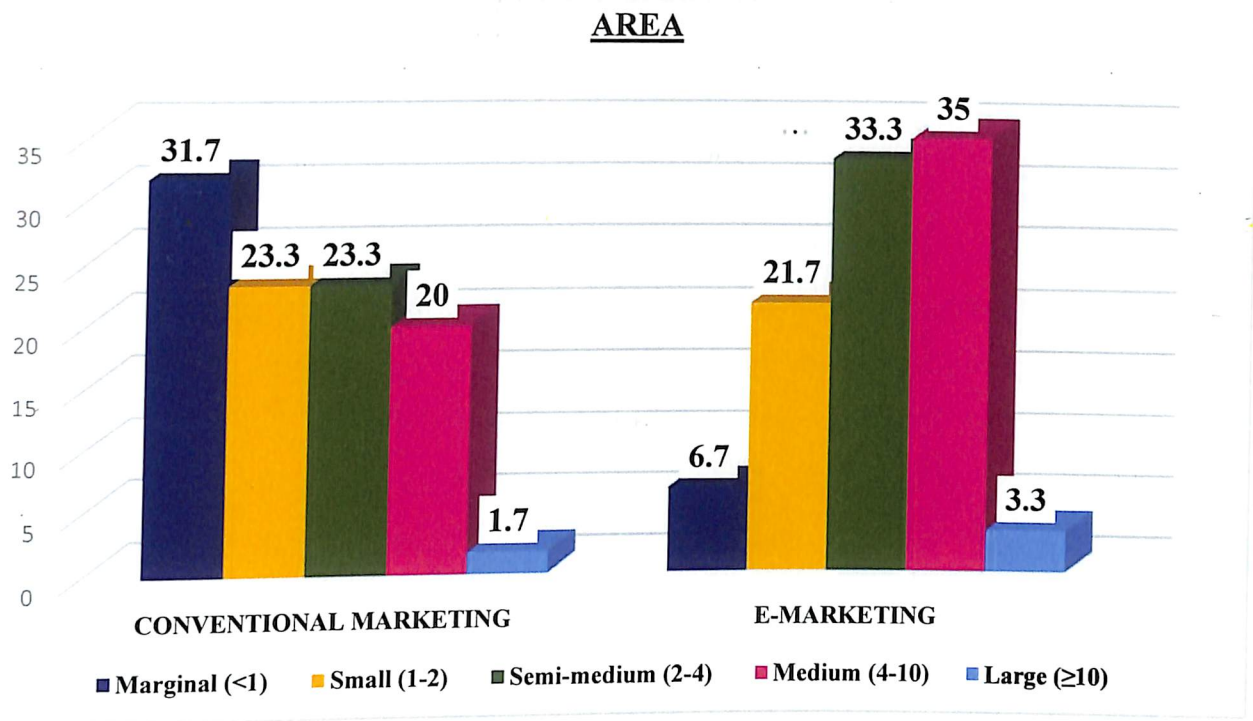

Fig. 4 Distribution of respondents based on area under cardamom cultivation

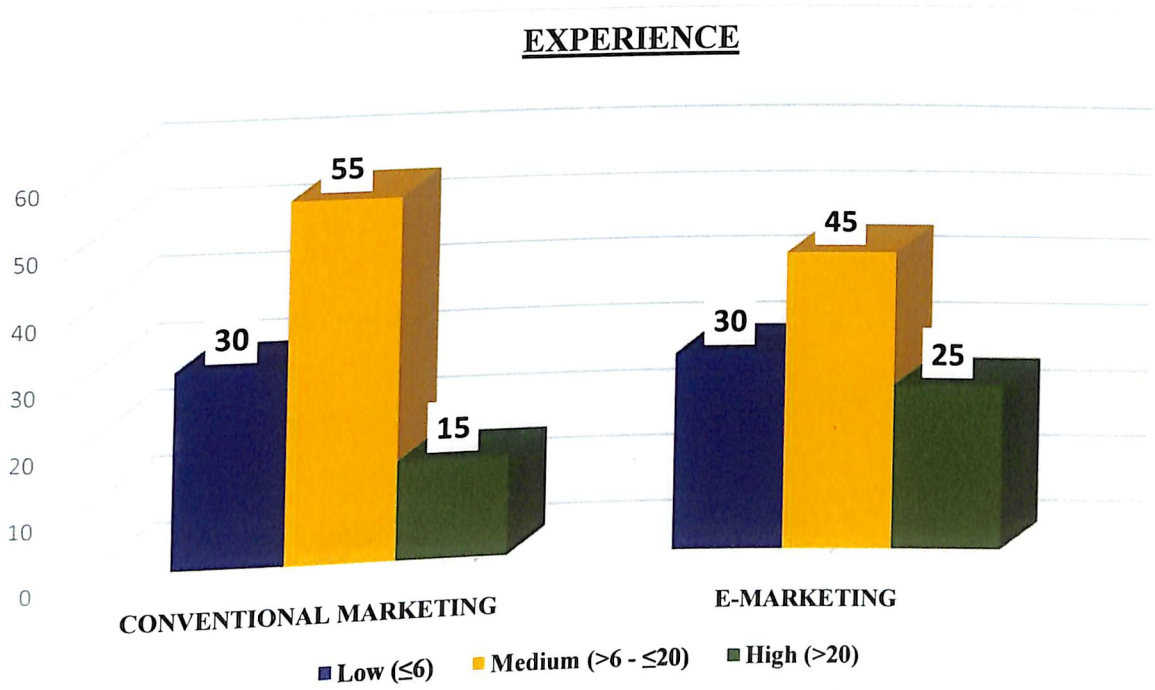

Fig. 5 Distribution of respondents based on experience in cardamom cultivation

Analysis of Table 4 reveals that majority (28.3%) of the respondents had semi-medium holdings under cardamom cultivation, followed by medium holdings (27.5%), small holdings (22.5%) and marginal holdings (19.2%).. Only 2.5 per cent of the respondents had large holdings under cardamom cultivation.

On comparing the farmers undertaking conventional marketing and e-marketing, it was observed that majority of the farmers undertaking conventional marketing had marginal holdings (31.7%), followed by small (23.3%), semi-medium (23.3%) and medium holdings (20%), whereas majority of the farmers undertaking e-marketing had medium holdings (35%), followed by semi-medium (33.3%), small (21.7%) and only 6.7 per cent of the respondents had marginal holdings under cardamom cultivation.

Respondents having marginal holding under cardamom cultivation were less in e-marketing (6.7%) compared to conventional marketing (38.3%). Respondents having medium and large holding under cardamom cultivation were more in e-marketing (38.3%) compared to conventional marketing (21.7%).

Hence it was concluded that farmers having more area under cardamom cultivation adopt e-marketing over conventional marketing. The underlying reason for this might be their higher production and financial stability to handle delayed payment. The results obtained are in agreement with those of Meera *et al.* (2004) and Ganiger (2012).

4.1.4 Experience in cardamom cultivation

Experience in cardamom cultivation was operationalized as the total number of years a farmer has been engaged in cardamom cultivation. Table 5 gives the distribution of respondents based on their experience in cardamom cultivation.

Table 5. Distribution of respondents based on their experience in cardamom cultivation

Sl. No.	Category (Years)	Conventional marketing (n=60)		E-marketing (n=60)		Total (N=120)	
		F	%	F	%	f	%

1	Low (≤6)	18	30	18	30	36	30
2	Medium (>6 - ≤20)	33	55	27	45	60	50
3	High (>20)	9	15	15	25	24	20
Q_1= 6 Min= 1 Q_3= 20 Max= 50		Mean= 14.22 SD= 11.3		Mean= 16.17 SD= 12.67		Mean= 15.2 SD= 11.9	

From the analysis of Table 5 it was evident that 50 per cent of the respondents surveyed had 6 to 20 years of experience in cardamom cultivation, followed by respondents with less than 6 (30%) and greater than 20 (20%) years of experience.

On comparing the farmers undertaking conventional marketing and e-marketing, it was observed that majority of the farmers undertaking conventional marketing (55%) and e-marketing (45%) had medium level of experience in cardamom cultivation, followed by low and high level of experience.

Respondents with higher experience were more in e-marketing (25%) compared to conventional marketing (15%).

Hence it was concluded that farmers with more experience in cardamom cultivation adopt e-marketing over conventional marketing. The underlying reason for this might be the fact that the farmers who were undertaking conventional marketing for years have switched to e-marketing after their better marketing experience and price in the new platform. The results obtained are in agreement with those of Chittem (2010) and Mukherjee (2011).

4.1.5. Production of cardamom

Production of cardamom was operationalized as the total quantity of cardamom produced per acre in a crop season. Table 6 presents the distribution of respondents based on their production of cardamom.

Table 6. Distribution of respondents based on their production of cardamom

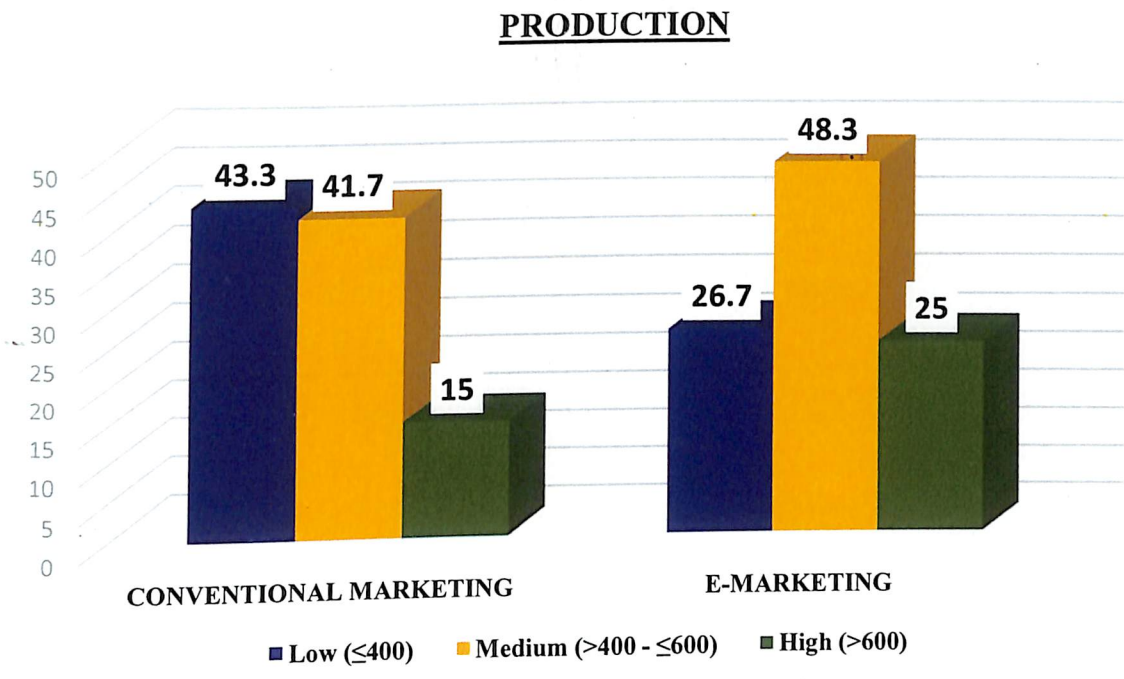

Fig. 6 Distribution of respondents based on production of cardamom

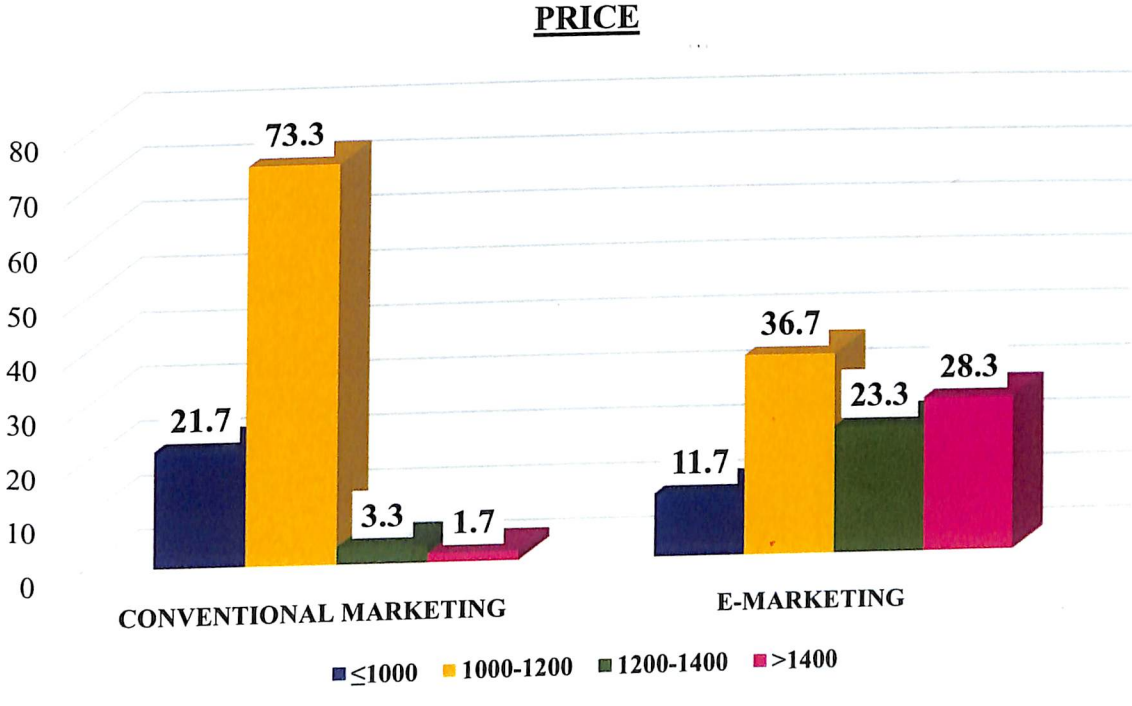

Fig. 7 Distribution of respondents based on price received

Sl. No.	Category (Kg/acre)	Conventional marketing (n=60)		E-marketing (n=60)		Total (N=120)	
		F	%	F	%	f	%
1	Low (≤400)	26	43.3	16	26.7	42	35
2	Medium (>400 - ≤600)	25	41.7	29	48.3	54	45
3	High (>600)	9	15	15	25	24	20
Q_1= 400 Min= 200 Q_3= 600 Max= 1000		Mean= 485.83 SD= 153.79		Mean= 529.17 SD= 149.94		Mean= 507.5 SD= 152.79	

Analysis of Table 6 revealed that 45 per cent of the respondents surveyed had production to the tune of 400 to 600 kilogram per acre, followed by less than 400 (35%) and greater than 600 (20%) kilogram per acre production of cardamom in a crop season.

On comparing the farmers undertaking conventional marketing and e-marketing, it was observed that majority of the farmers undertaking conventional marketing had low production (43.3%), followed by medium (41.7%) and high (15%), whereas majority of the farmers undertaking e-marketing had medium production (48.3%), followed by low (26.7%) and high (25%).

Respondents with high production were more in e-marketing (25%) compared to conventional marketing (15%).

Hence it was concluded that the farmers undertaking e-marketing have higher production than farmers undertaking conventional marketing. This may be attributed to the larger holding size, higher financial stability and higher spending on inputs resulting in higher production.

4.1.6. Price received

Price received was operationalized as the average price received in rupees per kilogram of cardamom by the farmer in a crop season. The distribution of respondents based on their price received is presented in Table 7.

Table 7. Distribution of respondents based on their price received

Sl. No.	Category (Rupees/kg)	Conventional marketing (n=60)		E-marketing (n=60)		Total (N=120)	
		F	%	f	%	f	%
1	≤1000	13	21.7	7	11.7	20	16.7
2	1000-1200	44	73.3	22	36.7	66	55
3	1200-1400	2	3.3	14	23.3	16	13.3
4	>1400	1	1.7	17	28.3	18	15
Min= 800 Max= 1900		Mean= 1083.75 SD= 142.82		Mean= 1265.75 SD= 203.65		Mean= 1174.75 SD= 197.55	

[Average price of cardamom during the survey period July-Sep,2021 = ₹1063/kg, Source: Spices Board of India-Archive-daily auction price of small cardamom]

From the analysis of Table 7 it was evident that 55 per cent of the respondents surveyed received 1000 to 1200 rupees per kilogram of cardamom, followed by respondents with less than 1000 rupees per kilogram (16.7%), greater than 1400 rupees per kilogram (15%) and 1200 to 1400 rupees per kilogram of cardamom.

On comparing the farmers undertaking conventional marketing and e-marketing, it was observed that most of the farmers undertaking conventional marketing realized price of 1000 to 1200 rupees per kilogram (73.3%), followed by less than 1000 rupees per kilogram (21.7%), whereas most of the farmers undertaking e-marketing received price between 1000 to 1200 rupees per kilogram (36.7%), followed by greater than 1400 rupees per kilogram (28.3%) and between 1200 to 1400 rupees per kilogram (23.3%).

Respondents who received higher price (more than 1200 rupees per kilogram) were more in e-marketing (51.6%) compared to conventional marketing (5%).

Hence it was concluded that the farmers undertaking e-marketing were realising better price for cardamom than farmers undertaking conventional marketing. The

underlying reason for this might be the less number of intermediaries in e-marketing compared to conventional marketing.

4.1.7. Extension contact

Extension contact was operationalized as the degree to which the farmer maintains contact with extension agencies or personnel for obtaining information in agriculture. The distribution of respondents based on their extension contact is presented in Table 8.

Table 8. Distribution of respondents based on their extension contact

Sl. No.	Category	Conventional marketing (n=60)		E-marketing (n=60)		Total (N=120)	
		F	%	F	%	f	%
1	Low (≤1)	19	31.7	13	21.7	32	26.7
2	Medium (>1 - ≤6)	31	51.6	31	51.6	62	51.6
3	High (>6)	10	16.7	16	26.7	26	21.7
	Q_1= 1 Min= 1 Q_3= 6 Max= 11	Mean= 3.92 SD= 2.72		Mean= 4.33 SD= 2.9		Mean= 4.125 SD= 2.81	

Analysis of Table 8 revealed that 51.6 per cent of the respondents surveyed had medium level of extension contact, followed by respondents with low (26.7%), and high (21.7%) level of extension contact.

On comparing the farmers undertaking conventional marketing and e-marketing, it was observed that majority of the farmers undertaking conventional marketing belonged to medium level of extension contact (51.7%), followed by low (31.7%) and high (16.7%) level of extension contact, whereas majority of the farmers undertaking e-marketing belonged to medium (51.7%), followed by high (26.7%) and low (21.7%) level of extension contact.

Respondents who belonged to high level of extension contact were more in e-marketing (26.7%) compared to conventional marketing (16.7%).

Hence it was concluded that the farmers undertaking e-marketing are having more extension contact than farmers undertaking conventional marketing. The underlying reason for this might be their higher level of education and enthusiasm to adopt advanced technologies and recommended practices. The results obtained are in agreement with those of Gopika (2009), Anju (2018) and Bhandari and Bhandari (2018).

4.1.8. Attitude towards e-marketing

Attitude towards e-marketing was operationalized as the positive or negative mental predisposition of the farmer towards e-marketing. Table 9 presents the distribution of respondents based on their attitude towards e-marketing.

Table 9. Distribution of respondents based on their attitude towards e-marketing

Sl. No.	Category	Conventional marketing (n=60)		E-marketing (n=60)		Total (N=120)	
		F	%	f	%	f	%
1	Negative (≤27)	33	55	2	3.3	35	29.2
2	Neutral (>27 - ≤35)	27	45	37	61.7	64	53.3
3	Positive (>35)	0	0	21	35	21	17.5
Q_1= 27 Min= 15 Q_3= 35 Max= 39		Mean= 26.58 SD= 4.22		Mean= 33.92 SD= 3.04		Mean= 30.25 SD= 5.19	

From the analysis of Table 9 it was evident that 53.3 per cent of the respondents surveyed had neutral attitude towards e-marketing, followed by respondents with negative (29.2%), and positive (17.5%) attitude towards e-marketing.

On comparing the farmers undertaking conventional marketing and e-marketing, it was observed that majority of the farmers undertaking conventional marketing had negative attitude towards e-marketing (55%), followed by neutral attitude (45%), whereas majority of the farmers undertaking e-marketing had neutral attitude towards e-marketing (61.7%), followed by positive (35%) and negative (3.3%).

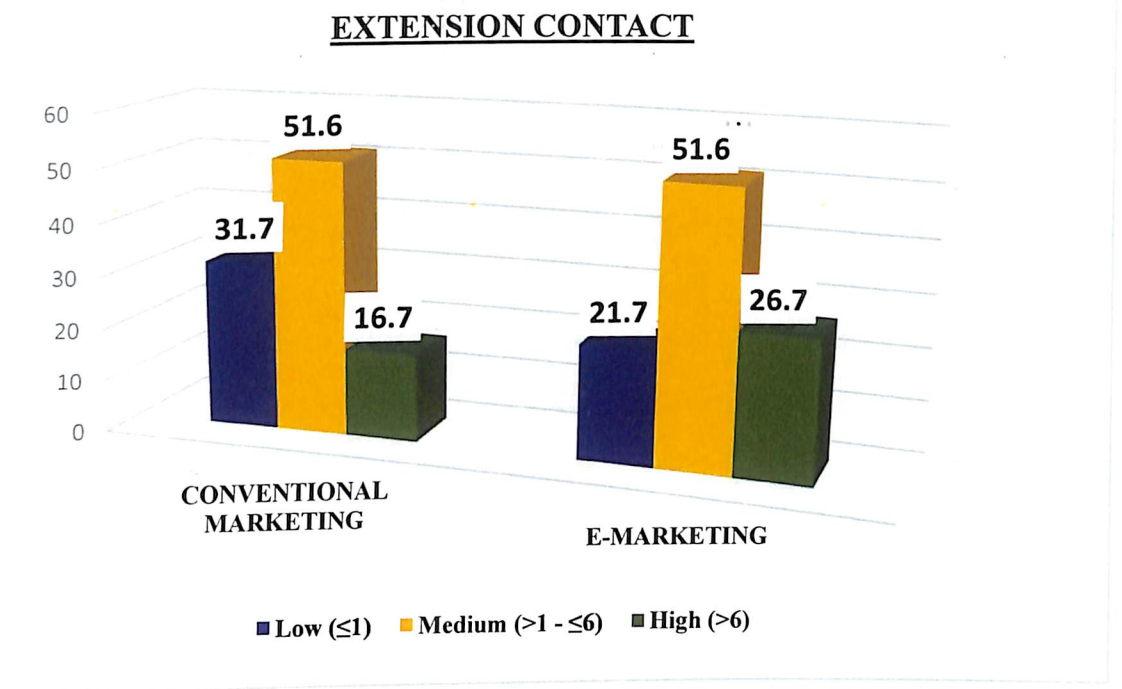

Fig. 8 Distribution of respondents based on extension contact

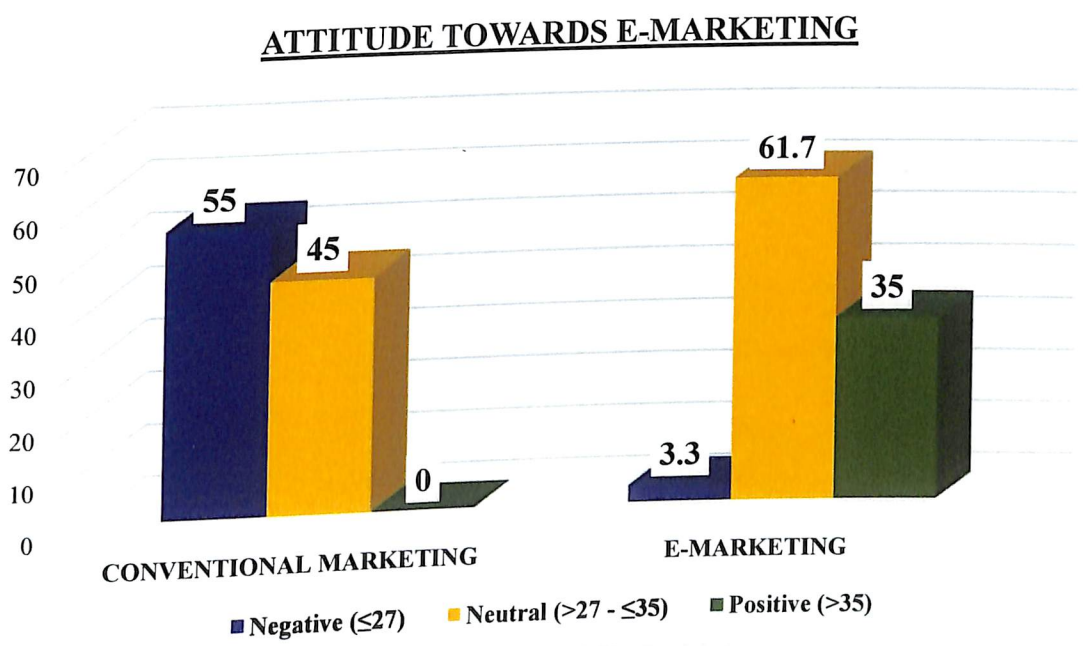

Fig. 9 Distribution of respondents based on attitude towards e-marketing

It was interesting to note that none of the farmers undertaking conventional marketing had a positive attitude towards e-marketing compared to 35 per cent of the farmers undertaking e-marketing who had positive attitude towards the same.

Hence it was concluded that the farmers undertaking e-marketing have more favourable attitude towards e-marketing as compared to the farmers undertaking conventional marketing. The underlying reason for this might be their rewarding experience with e-marketing and awareness about its advantages and disadvantages. The results obtained are in agreement with those of Arora and Rathore (2013) and Palaiah *et al.* (2016).

4.1.9. Awareness on digital tools

Awareness on digital tools was operationalized as the extent to which the farmers are informed of various digital tools available for e-marketing. The distribution of respondents based on their awareness on digital tools is presented in Table 10.

Table 10. Distribution of respondents based on their awareness on digital tools

Sl. No.	Category	Conventional marketing (n=60)		E-marketing (n=60)		Total (N=120)	
		F	%	F	%	f	%
1	Low (≤6)	20	33.3	10	16.7	30	25
2	Medium (>6 - ≤11)	40	66.7	45	75	85	70.8
3	High (>11)	0	0	5	8.3	5	4.2
	Q_1= 6 Min= 5 Q_3= 11 Max= 13	Mean= 7.92 SD= 2.33		Mean= 9.42 SD= 2.33		Mean= 8.66 SD= 2.44	

Analysis of Table 10 revealed that 70.8 per cent of the respondents surveyed had medium level awareness on digital tools, followed by respondents with low (25%), and high (4.2%) level awareness on digital tools.

On comparing the farmers undertaking conventional marketing and e-marketing, it was observed that majority of the farmers undertaking conventional marketing (66.7%) and e-marketing (75%) had medium level of awareness on digital tools, followed by low level of awareness on digital tools and least per cent of respondents had high awareness on digital tools.

It was pertinent to note that none of the farmers (0%) undertaking conventional marketing had high awareness on digital tools compared to 8.3 per cent of the farmers undertaking e-marketing who had high awareness on the use of digital tools.

Hence it was concluded that the farmers undertaking e-marketing are more aware of the use of digital tools than farmers undertaking conventional marketing. The underlying reason for this might be their higher educational qualifications and exposure to e-marketing mechanism. The results obtained are in agreement with those of Kabir (2015) and Kumar (2016).

4.1.10. Adoption of digital tools

Adoption of digital tools was operationalized as the use of various digital tools and internet-based services by farmer for agricultural purposes. Table 11 gives the distribution of respondents based on their adoption of digital tools.

Table 11. Distribution of respondents based on their adoption of digital tools

Sl. No.	Category	Conventional marketing (n=60)		E-marketing (n=60)		Total (N=120)	
		F	%	f	%	f	%
1	Low (≤4)	24	40	12	20	36	30
2	Medium (>4 - ≤9)	27	45	34	56.7	61	50.8
3	High (>9)	9	15	14	23.3	23	19.2
	Q_1= 4 Min= 3 Q_3= 9 Max= 11	Mean= 6.15 SD= 2.36		Mean= 7.6 SD= 2.37		Mean= 6.875 SD= 2.47	

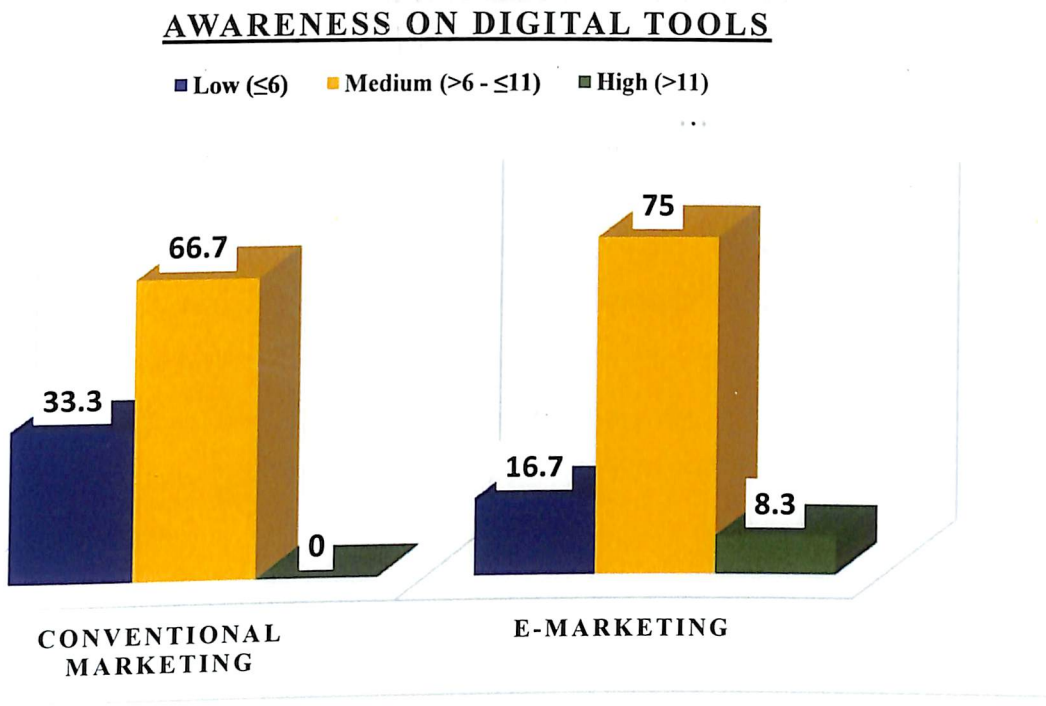

Fig. 10 Distribution of respondents based on awareness on digital tools

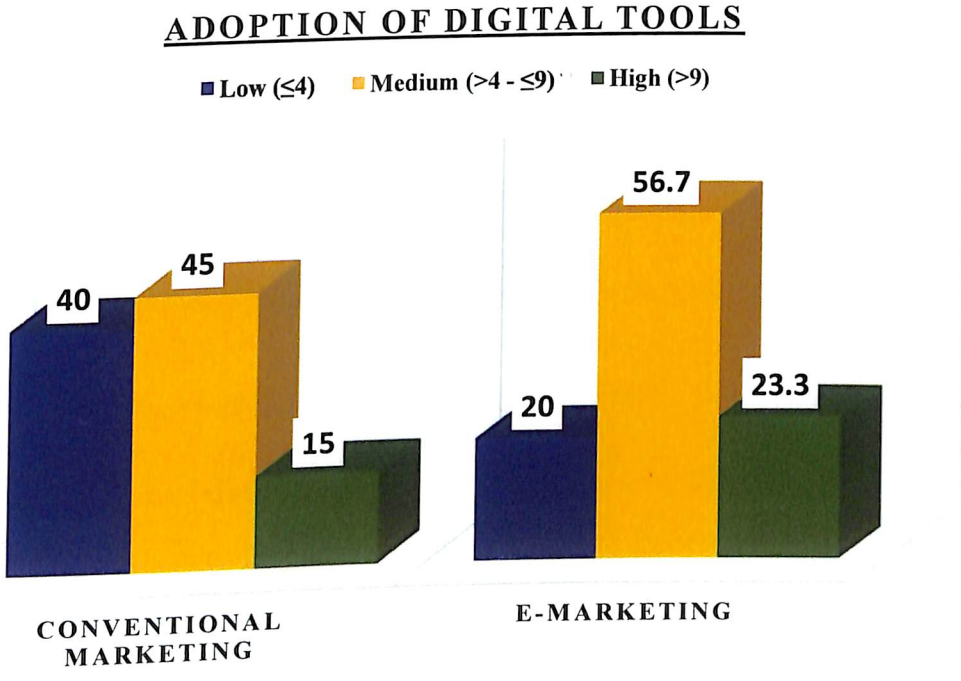

Fig. 11 Distribution of respondents based on adoption of digital tools

From the analysis of Table 11 it was evident that 50.8 per cent of the respondents surveyed had medium level adoption of digital tools, followed by respondents with low (30%), and high (19.2%) level adoption of digital tools.

While comparing the farmers undertaking conventional marketing and e-marketing, it was observed that majority of the farmers undertaking conventional marketing had medium level adoption of digital tools (45%), followed by low (40%) and high (15%) level of adoption of digital tools, whereas majority of the farmers undertaking e-marketing had medium (56.7%), followed by high (23.3%) and low (20%) level of adoption of digital tools.

Respondents who had high level of adoption of digital tools were more among farmers undertaking e-marketing (23.3%) compared to farmers undertaking conventional marketing (15%).

Hence it was concluded that the farmers undertaking e-marketing are having better adoption of digital tools than farmers undertaking conventional marketing. The underlying reason for this may be attributed to their awareness on digital tools and adoption of e-marketing mechanism. The results obtained are in agreement with those of Anju (2018), Naik (2018) and Luqman *et al.* (2019).

4.2. MARKETING EFFECTIVENESS OF THE RESPONDENTS

4.2.1. Analysis of components of marketing effectiveness

Marketing effectiveness was operationally defined as the measure of how effective a marketer's marketing strategy or market plan is fruitful in meeting the goal of optimizing their economic benefits. In this study the seven components of marketing effectiveness identified includes marketing channel, marketing cost, price spread, producer's share in consumer's rupee, market information utilization, timeliness of marketing and ease of marketing. Arbitrary scales and quartiles were used for categorizing the respondents based on the components of marketing effectiveness. The results are presented below.

4.2.1.1. Marketing channel

Marketing channel refers to the chain of intermediaries through which the cardamom passes in reaching the consumers from the producers. As number of parties in marketing channel increases, marketing effectiveness decreases.

Different marketing channels adopted by farmers undertaking conventional marketing and e-marketing of cardamom have been identified during the study. They are listed below.

Marketing channels under conventional marketing

1. Farmer ⟶ village trader ⟶ wholesaler ⟶ retailer ⟶ consumer (33.3%)
2. Farmer ⟶ village trader ⟶ e-auction centre ⟶ wholesaler ⟶ retailer ⟶ consumer (25%)
3. Farmer ⟶ village trader ⟶ wholesaler ⟶ exporter ⟶ retailer ⟶ consumer (16.7%)

Marketing channels under e-marketing

1. Farmer ⟶ e-auction centre ⟶ wholesaler ⟶ retailer ⟶ consumer (36.7%)
2. Farmer ⟶ e-auction centre ⟶ exporter ⟶ retailer ⟶ consumer (26.7%)
3. Farmer (website/social media) ⟶ consumer (20%)

The distribution of respondents based on their marketing channel adopted is presented in Table 12.

Table 12. Distribution of respondents based on their marketing channel

Sl. No.	Category (no. of parties in channel)	Conventional marketing (n=60)		E-marketing (n=60)		Total (N=120)	
		f	%	f	%	f	%
1	2	0	0	12	20	12	10
2	3	1	1.6	2	3.3	3	2.5

3	4	9	15	8	13.3	17	14.2
4	5	25	41.7	38	63.4	63	52.5
5	6	25	41.7	0	0	25	20.8

From the analysis of Table 12 it was evident that 52.5 per cent of the respondents surveyed adopted marketing channel with 5 parties, followed by marketing channel with 6 parties (20.8%), marketing channel with 4 parties (14.2%) and marketing channel with 2 and 3 parties (12.5%).

On comparing the farmers undertaking conventional marketing and e-marketing, it was observed that majority of the farmers undertaking conventional marketing adopted marketing channel with 6 parties (41.7%) and 5 parties (41.7%), followed by marketing channel with 4 parties (15%), whereas majority of the farmers undertaking e-marketing adopted marketing channel with 5 parties (63.4%), followed by marketing channel with 2 parties (20%).

Respondents who adopted marketing channel with fewer intermediaries (2 and 3 parties) were more among the farmers undertaking e-marketing (23.3%) compared to farmers undertaking conventional marketing (1.6%).

Hence it was concluded that the farmers undertaking e-marketing are adopting marketing channel with less number of intermediaries than farmers undertaking conventional marketing. This may be due to the fact that e-marketing involves direct marketing which involves fewer intermediaries. The results obtained are in agreement with those of Tangjang and Sharma (2018) and Kalauni and Joshi (2019).

4.2.1.2. Marketing cost

Marketing cost refers to the actual expenses incurred by farmer in taking the produce to market including market fee, handling, assembling, and transportation charges. As marketing cost increases, marketing effectiveness decreases. The distribution of respondents based on their marketing cost is presented in Table 13.

Table 13. Distribution of respondents based on their marketing cost

Sl. No.	Marketing cost (Rupees/quintal)	Conventional marketing (n=60)		E-marketing (n=60)		Total (N=120)	
		f	%	F	%	f	%
1	≤4000	5	8.3	3	5	8	6.7
2	4000-6000	8	13.3	14	23.3	22	18.3
3	6000-8000	44	73.4	33	55	77	64.2
4	>8000	3	5	10	16.7	13	10.8
Min= 2500 Max= 30000		Mean= 6297.25 SD= 1302.86		Mean= 7641.83 SD= 4730.51		Mean= 6969.54 SD= 3520.26	

Analysis of Table 13 revealed that 64.2 per cent of the respondents surveyed had a marketing cost between 6000 to 8000 rupees per quintal of cardamom, followed by marketing cost between 4000 to 6000 (18.3%), marketing cost greater than 8000 (10.8%) and marketing cost less than 4000 rupees per quintal of cardamom (6.7%).

On comparing the farmers undertaking conventional marketing and e-marketing, it was observed that most of the farmers undertaking conventional marketing (73.4%) and e-marketing (55%) had a marketing cost between 6000 to 8000 rupees per quintal of cardamom, followed by marketing cost between 4000 to 6000 rupees per quintal of cardamom in conventional (13.3%) and e-marketing (23.3%).

Respondents who had marketing cost less than 4000 were more among farmers undertaking conventional marketing (8.3%) compared to farmers undertaking e-marketing (5%).

Hence it was concluded that the farmers undertaking e-marketing incur more marketing cost than farmers undertaking conventional marketing. This may be due to the technical expenses involved in e-marketing for website maintenance, packing and commission charges. The results obtained are in agreement with those of Karlicek *et al.* (2014), Tangjang and Sharma (2018) and Kalauni and Joshi (2019).

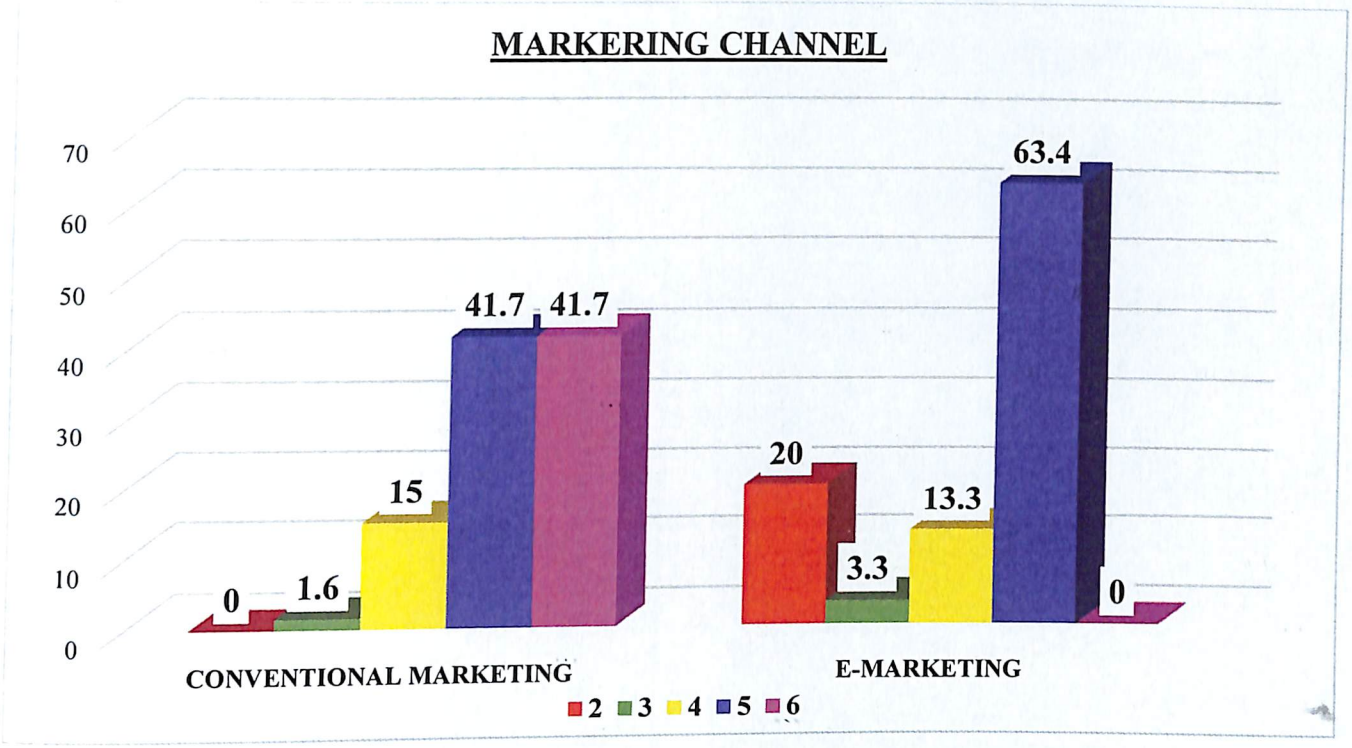

Fig. 12 Distribution of respondents based on marketing channel

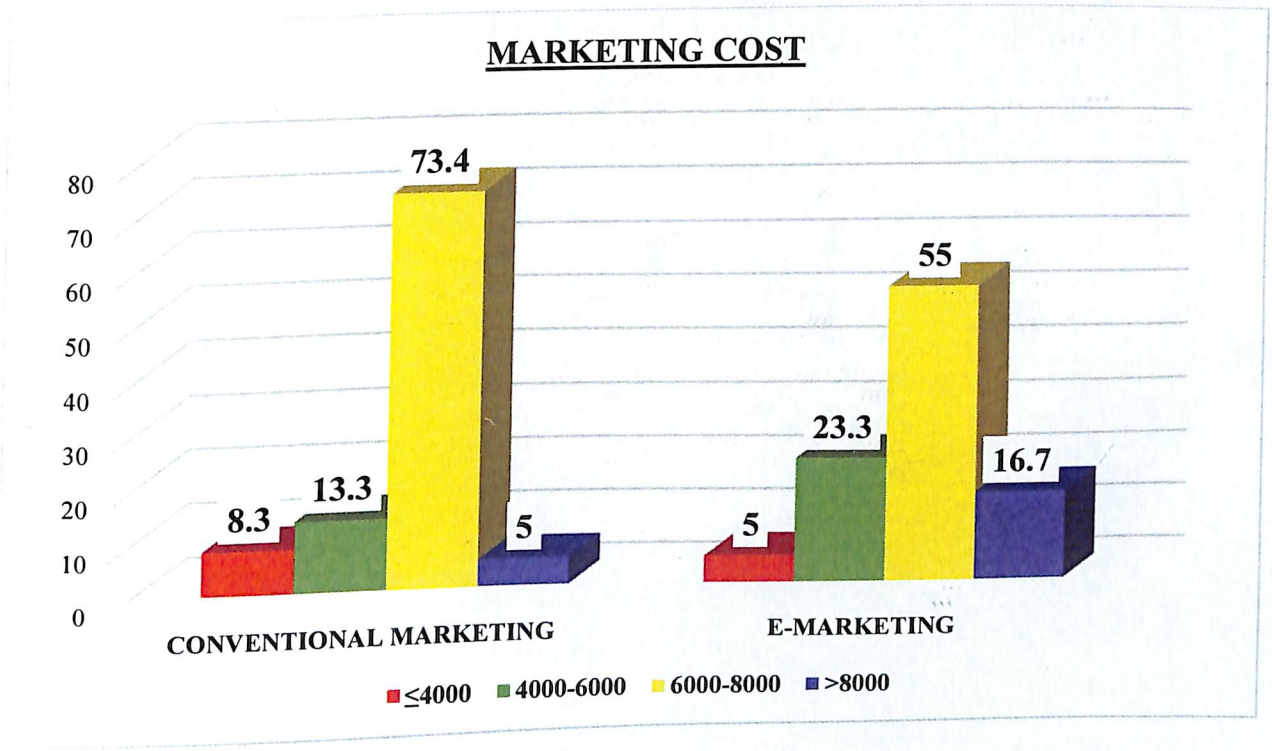

Fig. 13 Distribution of respondents based on marketing cost

4.2.1.3. Price spread

Price spread refers to the difference between the price paid by the consumers and the net price received by the producer for an equivalent quantity of produce. As price spread increases, marketing effectiveness decreases. The distribution of respondents based on their price spread is presented in Table 14.

Table 14. Distribution of respondents based on their price spread

Sl. No.	Price spread (Rupees)	Conventional marketing (n=60)		E-marketing (n=60)		Total (N=120)	
		F	%	F	%	f	%
1	≤200	0	0	12	20	12	10
2	200-300	6	10	4	6.7	10	8.3
3	300-400	17	28.3	5	8.3	22	18.3
4	400-500	11	18.3	6	10	17	14.2
5	500-600	12	20	13	21.7	25	20.9
6	600-700	10	16.7	12	20	22	18.3
7	>700	4	6.7	8	13.3	12	10
Min= 65 Max= 1138		Mean= 480.89 SD= 154.92		Mean= 468.17 SD= 227.22		Mean= 474.53 SD= 193.75	

From the analysis of Table 14 it was evident that 20.9 per cent of the respondents surveyed reported price spread between 500 to 600 rupees, followed by price spread between 600 to 700 (18.3%) and 300 to 400 (18.3%), between 400 to 500 (14.2%), less than 200 (10%) and greater than 700 (10%) and price spread between 200 to 300 rupees (8.3%).

On comparing the farmers undertaking conventional marketing and e-marketing, it was observed that majority of the farmers undertaking conventional marketing belonged to 300 to 400 rupees (28.3%) price spread category, followed by price spread between 500

to 600 (20%), whereas majority of the farmers undertaking e-marketing reported price spread between 500 to 600 rupees (21.7%), followed by price spread between 600 to 700 (20%) and less than 200 (20%).

Respondents whose price spread was less than 200 rupees were more among farmers undertaking e-marketing (20%). It was interesting to note that none of the farmers undertaking conventional marketing reported a price spread less than 200 rupees clearly indicating a higher price spread in case of conventional marketing.

Hence it was concluded that the farmers undertaking e-marketing are having less price spread than farmers undertaking conventional marketing. The underlying reason for this may be attributed to the higher selling price in e-marketing and minimum involvement of intermediaries. The results obtained are in agreement with that of Tangjang and Sharma (2018).

4.2.1.4. Producer's share in consumer's rupee

Producer's share in consumer's rupee refers to the proportion of the price received by the farmer that is paid by the consumer. As producer's share in consumer's rupee increases, marketing effectiveness increases. The distribution of respondents based on their producer's share in consumer's rupee is presented in Table 15.

Table 15. Distribution of respondents based on their producer's share in consumer's rupee

Sl. No.	Producer's share in consumer's rupee (Percentage)	Conventional marketing (n=60)		E-marketing (n=60)		Total (N=120)	
		f	%	F	%	f	%
1	≤60	9	15	13	21.7	22	18.3
2	60-65	12	20	5	8.3	17	14.2
3	65-70	11	18.4	13	21.7	24	20
4	70-75	18	30	5	8.3	23	19.2

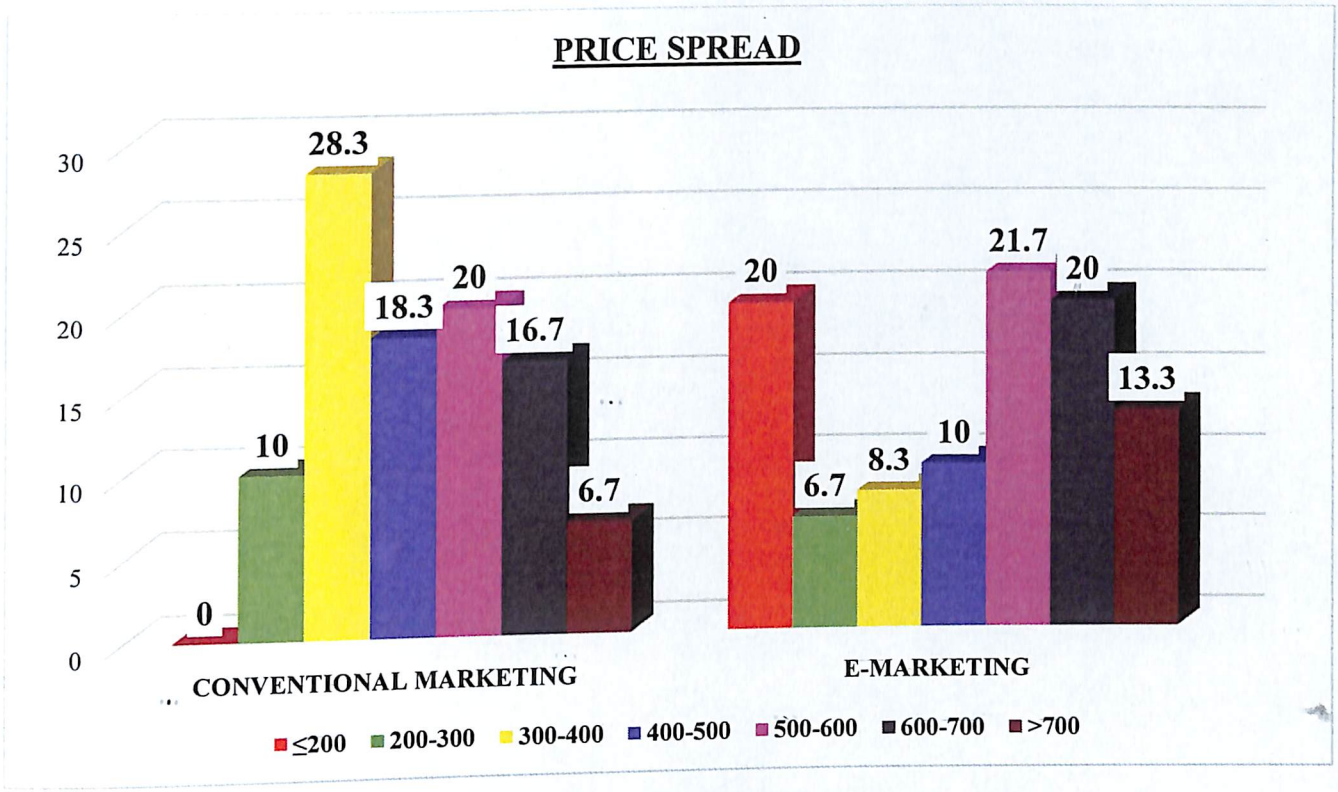

Fig. 14 Distribution of respondents based on price spread

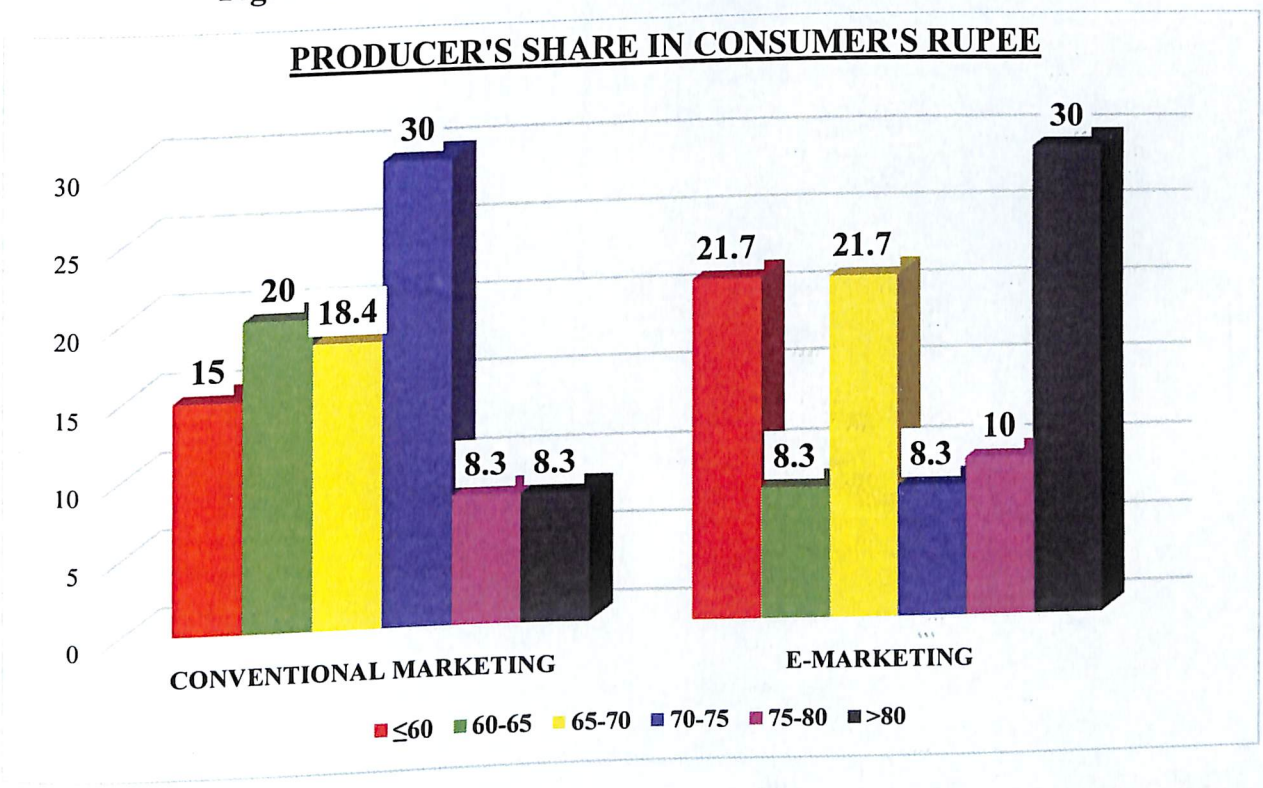

Fig. 15 Distribution of respondents based on producer's share in consumer's rupee

5	75-80	5	8.3	6	10	11	9.1
6	>80	5	8.3	18	30	23	19.2
Min= 52.28 Max= 94.82		Mean= 68.3 SD= 7.75		Mean= 72.47 SD= 13.17		Mean= 70.38 SD= 10.96	

Analysis of Table 15 revealed that 20 per cent of the respondents surveyed had producer's share in consumer's rupee between 65 to 70 percentage, followed by producer's share in consumer's rupee between 70 to 75 (19.2%) and greater than 80 percentage (19.2%), less than 60 (18.3%), between 60 to 65 (14.2%) and producer's share in consumer's rupee between 75 to 80 percentage (9.1%).

Majority of the farmers undertaking conventional marketing had producer's share in consumer's rupee between 70 to 75 percentage (30%), followed by producer's share in consumer's rupee between 60 to 65 (20%), whereas majority of the farmers undertaking e-marketing had producer's share in consumer's rupee greater than 80 percentage (30%), followed by less than 60 (21.7%) and between 65 to 70 (21.7%).

Respondents who had producer's share in consumer's rupee greater than 80 percentage were considerably more among farmers undertaking e-marketing (30%) compared to farmers undertaking conventional marketing (8.3%).

Hence it was concluded that the farmers undertaking e-marketing are having more producer's share in consumer's rupee than farmers undertaking conventional marketing. The probable reason for this might be the less involvement of intermediaries in e-marketing and remunerative prices. The results obtained are in agreement with those of Tangjang and Sharma (2018) and Kalauni and Joshi (2019).

4.2.1.5. Market information utilization

Market information utilization refers to the extent of use of timely information on prices and quantities of cardamom, for decision making in marketing of the produce. Market information utilization is perceived to have a positive influence on marketing

effectiveness. The distribution of respondents based on their market information utilization is presented in Table 16.

Table 16. Distribution of respondents based on their market information utilization

Sl. No.	Category	Conventional marketing (n=60)		E-marketing (n=60)		Total (N=120)	
		f	%	F	%	f	%
1	Low (≤30)	24	40	9	15	33	27.5
2	Medium (>30 - ≤33)	28	46.7	34	56.7	62	51.7
3	High (>33)	8	13.3	17	28.3	25	20.8
Q_1= 30 Q_3= 33	Min=19 Max= 35	Mean= 30.5 SD= 3.38		Mean= 32.32 SD= 2.33		Mean= 31.4 SD= 3.04	

From the analysis of Table 16 it was evident that 51.7 per cent of the respondents surveyed had medium level market information utilization, followed by respondents with low (27.5%), and high (20.8%) level market information utilization.

Comparison of market information utilization by the farmers undertaking conventional marketing and e-marketing revealed that majority of the farmers undertaking conventional marketing had medium level of market information utilization (46.7%), followed by low level (40%) and high level (13.3%) of market information utilization. Majority of the farmers undertaking e-marketing had medium level of market information utilization (56.7%), followed by high level (28.3%) and low level (15%) of market information utilization.

Respondents who had high level of market information utilization were more among farmers undertaking e-marketing (28.3%) compared to farmers undertaking conventional marketing (13.3%).

Hence it was concluded that the farmers undertaking e-marketing make better use of market information compared to the farmers undertaking conventional marketing. The

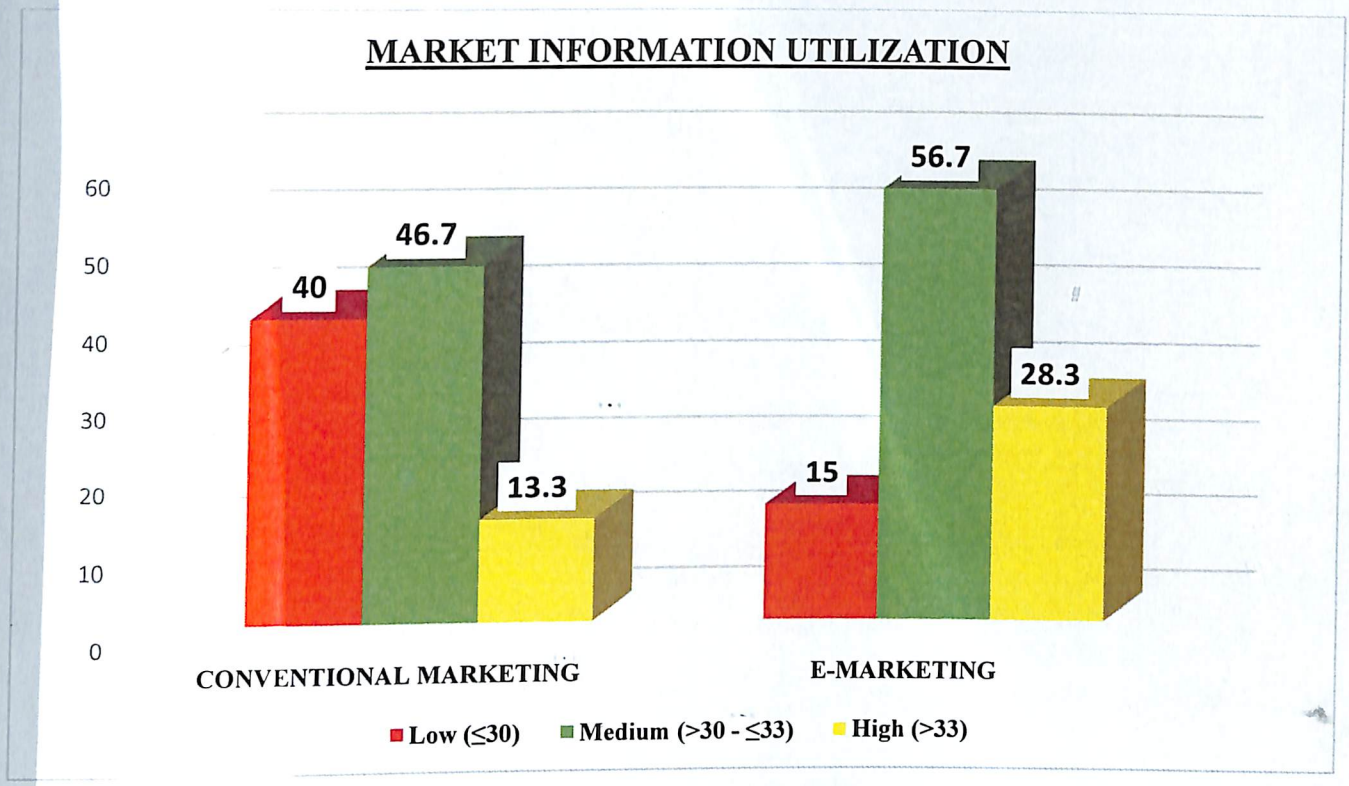

Fig. 16 Distribution of respondents based on market information utilization

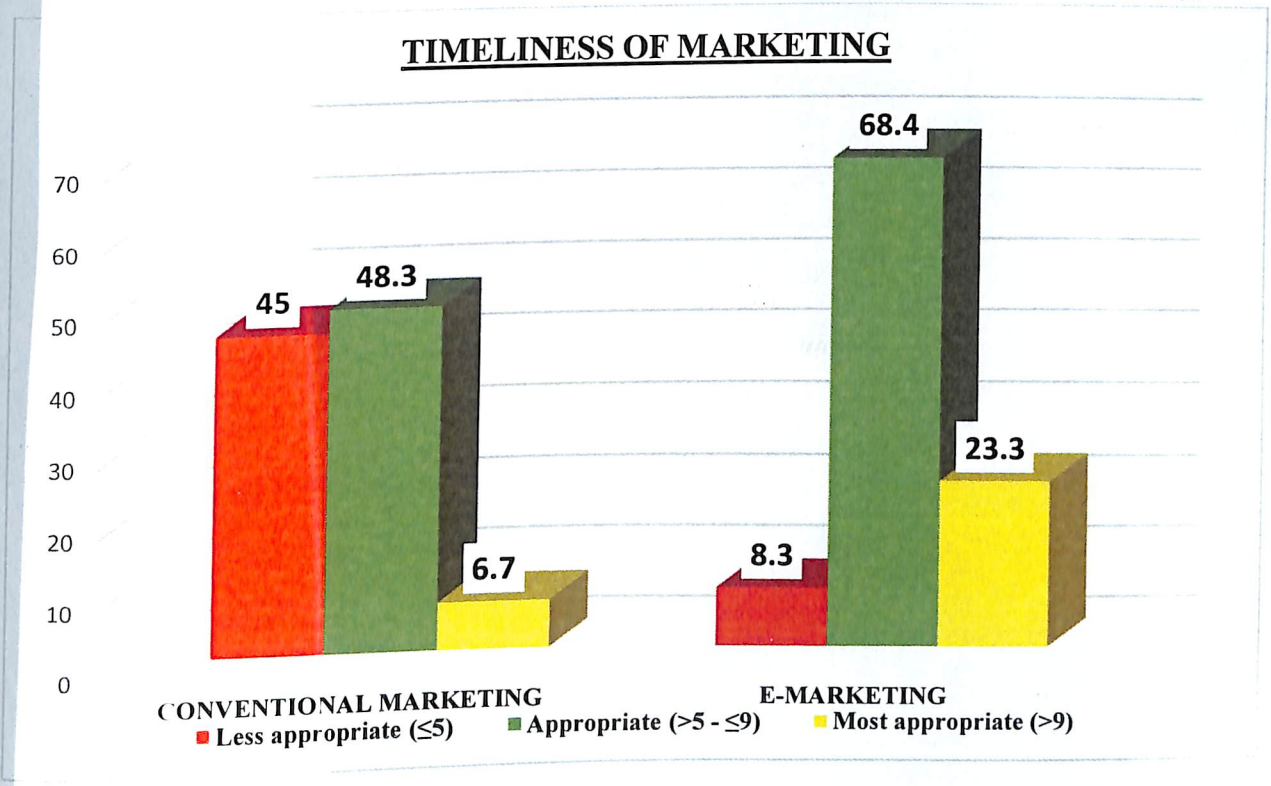

Fig. 17 Distribution of respondents based on timeliness of marketing

underlying reason for this may be their higher educational qualifications and regular search for price updates for selling the produce at reasonable price due to higher production. The results obtained are in agreement with that of Kumari *et al.* (2017).

4.2.1.6. Timeliness of marketing

Timeliness of marketing refers to the scheduling the marketing of the produce for the most appropriate time, on the basis of market information, to fetch maximum profits. Choice of the appropriate time for marketing the produce is found to increase the marketing effectiveness. The distribution of respondents based on their timeliness of marketing is presented in Table 17.

Table 17. Distribution of respondents based on their timeliness of marketing

Sl. No.	Category	Conventional marketing (n=60)		E-marketing (n=60)		Total (N=120)	
		f	%	F	%	f	%
1	Less appropriate (≤5)	27	45	5	8.3	32	26.7
2	Appropriate (>5 - ≤9)	29	48.3	41	68.4	70	58.3
3	Most appropriate (>9)	4	6.7	14	23.3	18	15
	Q_1= 5 Min= 2 Q_3= 9 Max= 10	Mean= 5.65 SD= 2.44		Mean= 8.02 SD= 1.69		Mean= 6.83 SD= 2.4	

From the analysis of Table 17 it was evident that the timeliness of marketing was appropriate in case of 58.3 per cent of the respondents surveyed, followed by respondents with less appropriate (26.7%), and most appropriate (15%) timeliness of marketing.

It was observed that in case of majority of the farmers undertaking conventional marketing the timeliness of marketing (48.3%) was appropriate, followed by less appropriate (45%) and most appropriate (6.7%), whereas in case of majority of the farmers

undertaking e-marketing the timeliness of marketing was appropriate (68.4%), followed by most appropriate (23.3%) and less appropriate (8.3%).

It could be inferred that majority of the respondents who undertook the best timely marketing of the produce were the farmers undertaking e-marketing (23.3%) compared to farmers undertaking conventional marketing (6.7%). This result may be attributed to their financial stability and ability to withhold selling till remunerative prices prevail in the market.

Storage and loss management strategies adopted by the farmers

For storage of cardamom, the processed (air dried) produce is bagged in a two layer packing, with inner plastic cover, and outer gunny bag. It is then stitched air tight and stored either at home or processing centre. Majority (71.7%) of farmers undertaking e-marketing store their produce and sell only at remunerative prices, whereas only 28.3 per cent of farmers undertaking conventional marketing store their produce and wait for the better price. Majority (43.3%) of farmers undertaking conventional marketing sell their produce immediately after harvest at prevailing prices, whereas only 3.3 per cent of farmers undertaking e-marketing do the same.

4.2.1.7. Ease of marketing

Ease of marketing refers to the relative convenience of the farmer in marketing his produce with the marketing plan he adopts. Easy marketing of the produce is found to influence the marketing effectiveness positively. The distribution of respondents based on their ease of marketing is presented in Table 18.

Table 18. Distribution of respondents based on their ease of marketing

Sl. No.	Category	Conventional marketing (n=60)		E-marketing (n=60)		Total (N=120)	
		f	%	f	%	f	%

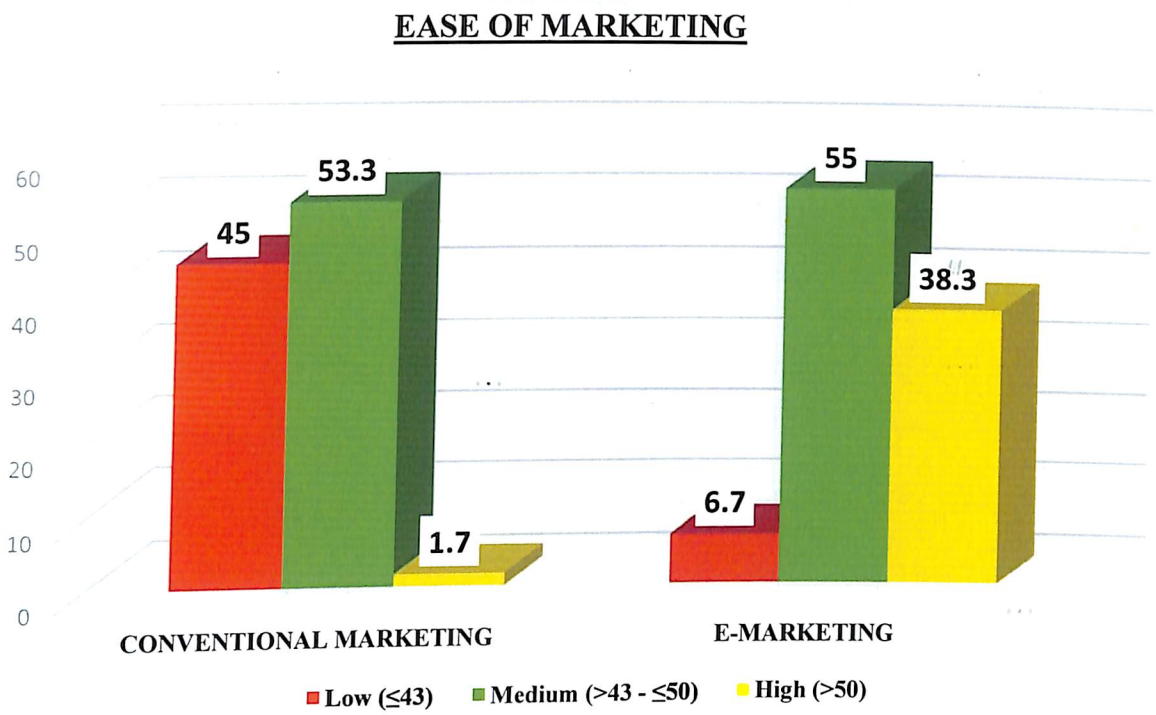

Fig. 18 Distribution of respondents based on ease of marketing

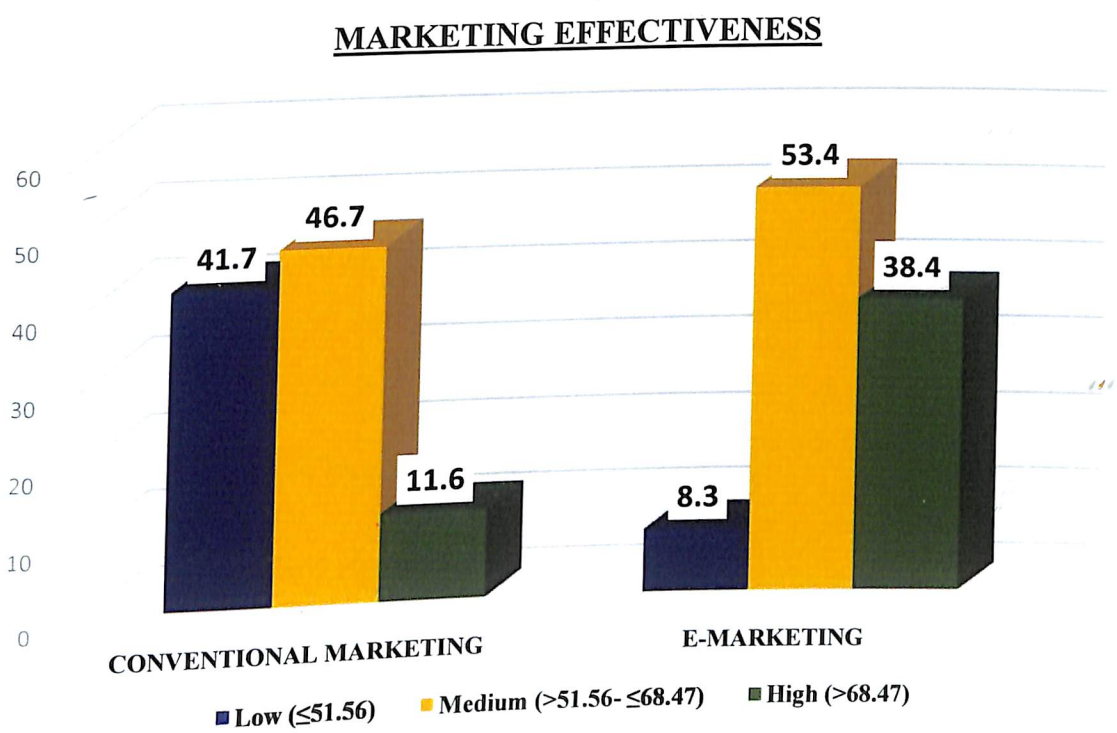

Fig. 19 Distribution of respondents based on marketing effectiveness

1	Low (≤43)	27	45	4	6.7	31	25.8
2	Medium (>43 - ≤50)	32	53.3	33	55	65	54.2
3	High (>50)	1	1.7	23	38.3	24	20
Q_1= 43 Q_3= 50	Min= 28 Max= 55	Mean= 43.02 SD= 4.66		Mean= 49.22 SD= 3.9		Mean= 46.12 SD= 5.29	

Analysis of Table 18 revealed that 54.2 per cent of the respondents surveyed had medium ease of marketing, followed by respondents with low (25.8%), and high (20%) ease of marketing.

On comparing the farmers undertaking conventional marketing and e-marketing, it was observed that majority of the farmers undertaking conventional marketing had medium ease of marketing (53.3%), followed by low (45%) and high (1.7%), whereas majority of farmers undertaking e-marketing had medium ease of marketing (55%), followed by high (38.3%) and low (6.7%) ease of marketing.

The farmers undertaking e-marketing reported better ease of marketing compared to farmers undertaking conventional marketing. This finding may be attributed to the fact that majority of the farmers undertaking e-marketing are medium to large farmers possessing own drying cum grading facilities and better transportation facilities. The farmers marketing through websites and social media do away with middle men since they undertake direct marketing of the produce.

4.2.2. Marketing effectiveness

Marketing effectiveness was measured using the index developed for the study. Respondents were grouped into different categories based on Marketing Effectiveness Index (MEI) with quartiles as check. The results are presented in Table 19.

Table 19. Distribution of respondents based on marketing effectiveness

Sl. No.	Category (MEI score)	Conventional marketing (n=60)		E-marketing (n=60)		Total (N=120)	
		f	%	F	%	f	%
1	Low (≤51.56)	25	41.7	5	8.3	30	25
2	Medium (>51.56-≤68.47)	28	46.7	32	53.4	60	50
3	High (>68.47)	7	11.6	23	38.4	30	25
	Q_1= 51.56 Min= 29.87 Q_3= 68.47 Max= 96.17	Mean= 53.91 SD= 10.65		Mean= 67.6 SD= 12.98		Mean= 60.75 SD= 13.678	

From the analysis of Table 19 it was evident that 50 per cent of the respondents surveyed had medium level of marketing effectiveness, followed by respondents with low (25%) and high (25%) level of marketing effectiveness.

On comparing the farmers undertaking conventional marketing and e-marketing, it was observed that majority of the farmers undertaking conventional marketing had medium level of marketing effectiveness (46.7%), followed by low (41.7%) and high level (11.6%) of marketing effectiveness, whereas majority of the farmers undertaking e-marketing had medium level of marketing effectiveness (53.4%), followed by high (38.4%) and low (8.3%) level of marketing effectiveness.

Respondents who had high level of marketing effectiveness were more among farmers undertaking e-marketing (38.4%) compared to farmers undertaking conventional marketing (11.6%). This result may be attributed to the shorter marketing channels, lesser price spread, higher producer's share in consumer's rupee, better market information utilization, better timeliness in marketing of the produce and better ease of marketing of farmers undertaking e-marketing though the cost of marketing weighed in favour of the farmers undertaking conventional marketing of cardamom.

Selection and use of other e-marketing platforms

Other than e-auction, marketing of cardamom through social media and websites are the other e-marketing platforms used by farmers. Social media marketing does not have

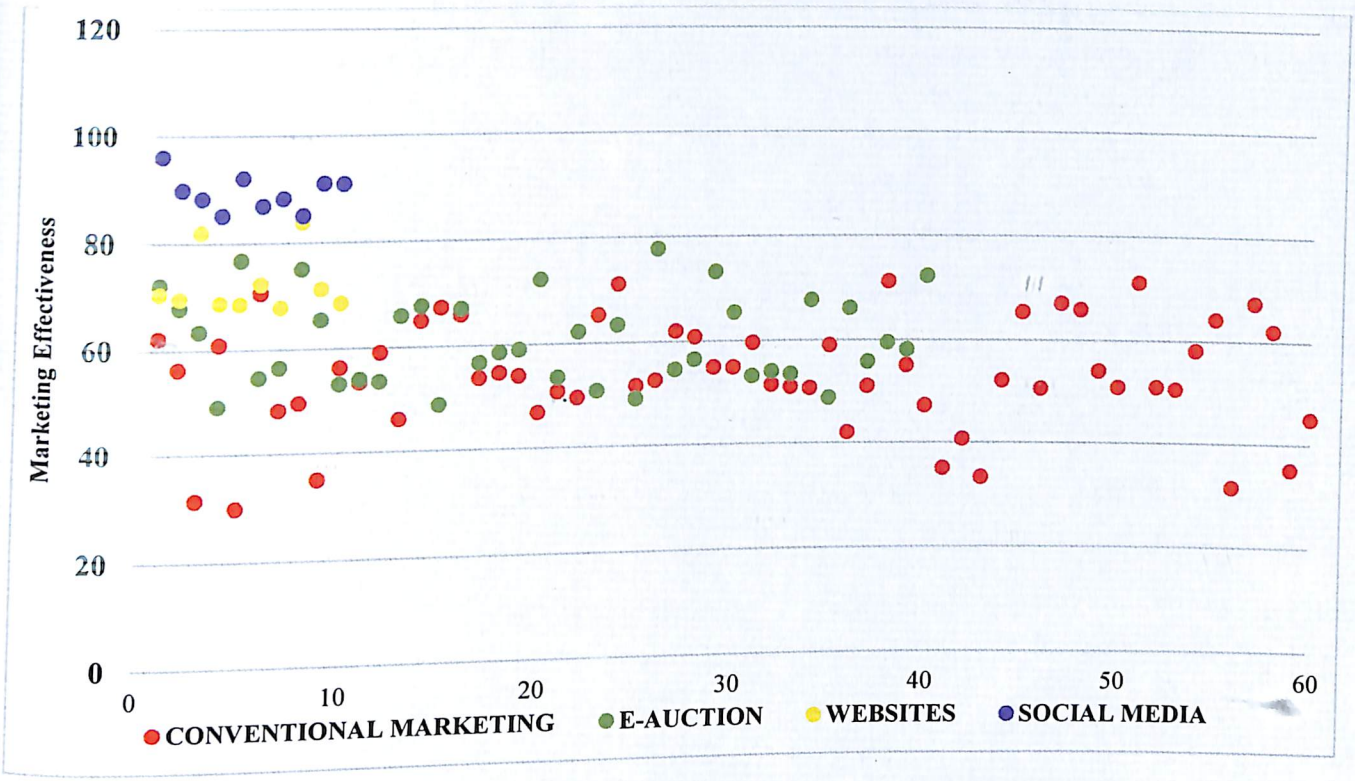

Fig. 20 Scatter diagram of marketing effectiveness of respondents

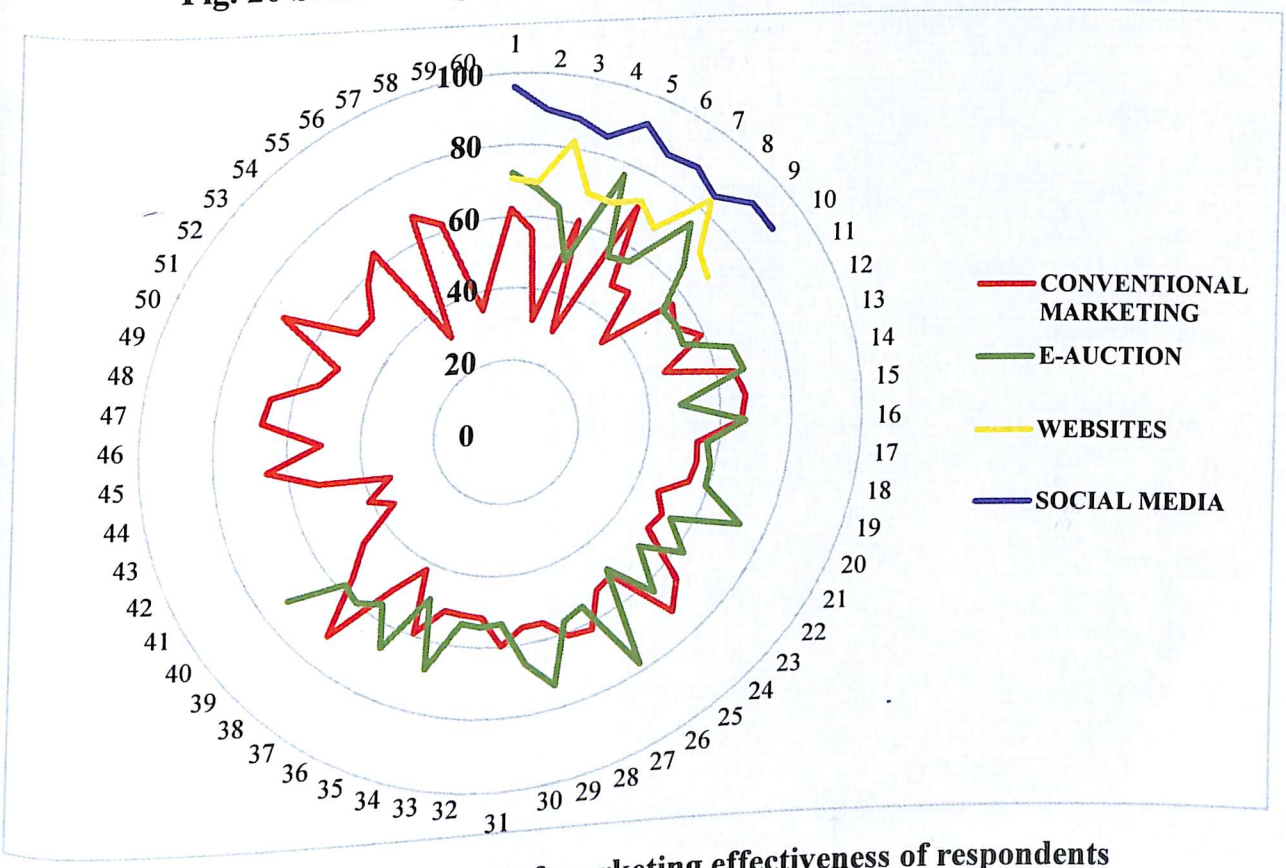

Fig. 21 Radar diagram of marketing effectiveness of respondents

any intermediaries, it is with maximum ease of marketing, minimum price spread (₹75.7), and maximum producer's share in consumer's rupee (94.42%). Marketing through websites requires additional charges, hence marketing cost is more, but it is compensated with higher selling price, it has minimum intermediaries, lesser price spread (₹439.7) and higher producer's share in consumer's rupee (75.8%) compared to that of e-auction (₹573.4, 66.14 %).

Effectiveness of marketing through social media and websites is higher than that of marketing through e-auction. The mean score value of Marketing Effectiveness Index for the respondents undertaking various platforms for marketing of cardamom are shown in the Table 20.

Table 20. Marketing effectiveness of various marketing platforms

Sl. No.	Mode of Marketing	MEI mean score
1	Conventional (n=60)	53.91
2	E-auction (n=40)	60.95
3	Websites (n=10)	72.41
4	Social media (n=10)	89.39

By comparing the marketing effectiveness of different mode of marketing in cardamom, it is clear that the most effective marketing is through social media, followed by marketing through websites and e-auction. And the least effective marketing is the conventional marketing.

4.3. FACTOR ANALYSIS OF MARKETING EFFECTIVENESS COMPONENTS

Factor analysis is a technique used to reduce a large number of variables into a fewer number of factors. This technique extracts maximum common variance from all variables and put them into a common score. Here it is used to reduce the components of

marketing effectiveness into few factors. The results of factor analysis are presented in Table 21.

Table 21. Total variance explained by factor analysis

Variable	Factor 1	Factor 2	% variance explained by variable
Marketing channels	-0.60	-0.25	69.31
Marketing cost	0.23	0.09	33.30
Price spread	-0.97	0.005	94.21
Producer's share in consumer's rupee	0.95	0.21	96.54
Market information utilization	0.09	0.54	34.26
Timeliness of marketing	0.06	0.67	48.91
Ease of marketing	0.31	0.69	65.11
Eigen value	2.361	1.343	
% variance explained by factor	58.44	33.24	
Cumulative variance	58.44	91.68	

From the above analysis it is evident that the seven components were reduced to two factors which explained around 91.68 per cent of the total variance. Out of these two factors, the first factor with its loading pattern indicates that a general factor is running throughout all the items explaining about 58.44 per cent of the variance. The second factor explains about 33.24 per cent of the total variance. In combination the two factors explain a cumulative variance about 91.68 per cent.

Table 22. Factor loadings of components of marketing effectiveness

Components	Factor 1	Factor 2	% variance explained by component

Producer's share in consumer's rupee	0.95		96.54
Price spread	-0.97		94.21
Marketing channel	-0.60		69.31
Ease of marketing		0.69	65.11
Timeliness of marketing		0.67	
Market information utilization		0.54	
Marketing cost			

The varimax rotation method has been applied to the results of factor analysis to make the output more reliable. Table 22 shows how the factors have been extracted from the 7 components and reduced to two factors. The components, producer's share in consumer's rupee, price spread and marketing channel constitute factor 1, which in common may be referred to as the quantitative components of marketing effectiveness. The components, ease of marketing, timeliness of marketing and market information utilization constitute factor 2, which can be referred to as the qualitative components of marketing effectiveness.

Producer's share in consumer's rupee is the component which explains maximum variance (96.54 %), followed by the components price spread (94.21), marketing channel (69.31%) and ease of marketing (65.11%). It may be rightly inferred from the above figures that higher producer's share in consumer's rupee and lower price spread contributes to higher marketing effectiveness of cardamom farmers.

4.4. COMPARATIVE ANALYSIS OF CONVENTIONAL MARKETING AND E-MARKETING EFFECTIVENESS WITH Z-TEST

Z-test is a statistical tool used to determine whether the mean values of two populations are different when the variances are known and the sample size is large. It can be used to compare population means. Here it was used to determine whether the marketing

effectiveness of the farmers undertaking conventional marketing and e-marketing are the same. It is analysed by comparing the means of each component of marketing effectiveness among the two categories of cardamom farmers.

The significant difference between means are assessed by Z-value in the test and the table value of 'Z' at 5% and 1% level of significance. The mean values of components of marketing effectiveness for conventional and e-marketing were compared using Z-test and the results are presented in Table 23.

Table 23. Comparison of marketing effectiveness of conventional and e-marketing with Z-test

Sl. No.	Components	Conventional marketing (n=60)		E-marketing (n=60)		Z calculated
		Mean	Variance	Mean	Variance	
1	Marketing channel	4.73	0.57	4.2	1.45	2.955**
2	Marketing cost	6297.25	1697460.53	7641.83	22377730.48	2.122*
3	Price spread	480.89	24000.7	468.17	51632.03	0.358
4	Producer's share in consumer's rupee	68.3	60.016	72.47	173.64	2.116*
5	Market information utilization	30.5	11.47	32.32	5.47	3.419**
6	Timeliness of marketing	5.65	5.96	8.02	2.86	6.172**
7	Ease of marketing	43.02	21.74	49.22	15.22	7.899**
	Marketing Effectiveness Index score	**55.69**	119.74	**67.6**	168.46	**6.315****

[*table value of Z at 5% level of significance = 1.96, **table value of Z at 1% level of significance = 2.576]

On analysis of Table 23, it was evident that the test results of all the components except price spread showed calculated Z-value greater than table value of 'Z'. The mean values of components such as marketing channel, market information utilization, timeliness of marketing and ease of marketing are having a highly significant mean difference at 1% level of significance between the farmers undertaking conventional and e-marketing. The mean values of components such as marketing cost and producer's share in consumer's rupee are having a significant mean difference at 5% level of significance between the two categories of farmers.

The test result of the comparison between the mean values of Marketing Effectiveness Index scores of the farmers undertaking conventional marketing and e-marketing showed a highly significant mean difference at 1% level of significance.

Hence it can be concluded that there is significant difference in the marketing effectiveness of the farmers undertaking conventional marketing and e-marketing of cardamom.

4.5. CORRELATION ANALYSIS BETWEEN DEPENDENT AND INDEPENDENT VARIABLES

Karl Pearson's coefficient of correlation is used for find the relationship between dependent and independent variables. Correlation analysis was carried out to find out as to whether the independent variables had any association with marketing effectiveness. The coefficients of correlation of the profile characteristics with marketing effectiveness of the respondents have been furnished in Table 24.

Table 24. Correlation between marketing effectiveness and independent variables

Sl. No.	Independent Variables	Correlation coefficient (r)
1	Age	-0.0405^{NS}
2	Education	0.278*

3	Area under cardamom cultivation	0.0021 NS
4	Experience in cardamom cultivation	0.1026 NS
5	Production of cardamom	-0.00093 NS
6	Price received	0.7083**
7	Extension contact	0.3003**
8	Attitude towards e-marketing	0.4065**
9	Awareness on digital tools	0.293*
10	Adoption of digital tools	0.348**

[**0.1% level of significance, *1% level of significance]

A perusal of Table 24 revealed that out of ten independent variables, six variables were significantly correlated to marketing effectiveness, of which four variables namely, price received, extension contact, attitude towards e-marketing and adoption of digital tools were positively correlated at 0.1% level of significance. Whereas two variables namely education and awareness on digital tools were positively and significantly correlated at 1% level of significance.

It was also inferred that other variables like age, area under cardamom cultivation, experience in cardamom cultivation and production of cardamom had no significant relationship with marketing effectiveness.

4.5.1. Education and marketing effectiveness

Education of respondents were found to have positive and significant correlation with their marketing effectiveness. The higher education of the respondents would contribute to better marketing effectiveness. It was observed that educated farmers showed more interest in collecting market information and preferred innovative marketing techniques. The findings are in line with the results obtained by Quazi and Iqbal (1991), Truong (2008) and Nyawira and Winnie (2013).

4.5.2. Price received and marketing effectiveness

Price received by the respondents were found to have positive and significant correlation with their marketing effectiveness. This leads to the inference that higher the price received by the farmers, higher would be their marketing effectiveness. Price received being the major factor in marketing of a produce, implies that the mechanism of marketing adopted is effective in giving good returns. The findings are in line with the results obtained by Kaur and Singh (2017).

4.5.3. Extension contact and marketing effectiveness

Extension contact of respondents were found to have positive and significant correlation with their marketing effectiveness. This leads to the inference that higher the extension contact of the respondent, more would be the marketing effectiveness. Extension contact being the source of technical information and support in production, it helps the farmers to get the right suggestions and appropriate solutions to arrange their marketing effectively. The findings are in line with the results obtained by Gopika (2009).

4.5.4. Attitude towards e-marketing and marketing effectiveness

Attitude towards e-marketing of respondents were found to have positive and significant correlation with their marketing effectiveness. This leads to the inference that a positive attitude towards e-marketing of the respondent positively influences the marketing effectiveness. Attitude being the prime factor in adopting or rejecting a method of marketing, a positive attitude towards e-marketing results in better adoption of e-auction and marketing over websites and social media which increases their marketing effectiveness. The findings are in line with the results obtained by Ruaykijakarn *et al.* (2018).

4.5.5. Awareness of digital tools and marketing effectiveness

Awareness of the respondents on digital tools were found to have positive and significant correlation with their marketing effectiveness. This leads to the inference that higher the awareness of the respondents on the importance and use of digital tools, more would be the marketing effectiveness. Awareness of digital tools being the source for developing an acquaintance with the e-marketing mechanism and its functioning, a better awareness on digital tools may indirectly contribute to marketing effectiveness. The findings are in line with the results obtained by Taherdoost and Jalaliyoon (2014).

4.5.6. Adoption of digital tools and marketing effectiveness

Adoption of digital tools by the respondents were found to have positive and significant correlation with their marketing effectiveness. This leads to the inference that higher the adoption of digital tools by the respondent, more would be the marketing effectiveness. Higher adoption of digital tools implies better availability of updated market information which in turn facilitates the development of a more effective marketing plan. The findings are in line with the results obtained by Eid and El-Gohary (2013).

4.6. BENEFITS OF E-MARKETING PERCEIVED BY FARMERS

Farmers undertaking e-marketing of cardamom through various platforms stand to gain many benefits over farmers undertaking conventional marketing. These benefits are identified, ranked and presented in Table 25. The benefits having highest frequency was given the highest rank.

Table 25. Benefits of e-marketing perceived by farmers

Sl. No.	Benefits	f	%	Rank
1	Proper transaction details and bills are available	50	83.3	I
2	Assurance of timely delivery and prompt payment	48	80	II
3	No information asymmetry between buyers and sellers	45	75	III

4	Market information is daily updated and available in various media	40	66.7	IV
5	Live auction is accessible, facilitating the analysis of marketing trend and price range	38	63.3	V
6	Constant demand and acceptance for the product	36	60	VI
7	Pricing through transparent processes	33	55	VII
8	Completely legal and secured marketing mechanism	30	50	VIII
9	Price discovery is effortless compared to conventional marketing	24	40	IX
10	Participating in an e-auction requires buyers to follow certain norms and conditions, which ensures their trustworthiness	20	33.3	X
11	Graded produce could be marketed to fetch a higher price	18	30	XI
12	Short marketing channels and least involvement of intermediaries in websites and social media marketing	16	26.7	XII
13	Ensures a remunerative price compared to conventional marketing	15	25	XIII
14	Protection against price fluctuations	12	20	XIV
15	Farmers' exploitation by intermediaries is less compared to conventional marketing	10	16.7	XV

It is evident from Table 25 that the major benefit of e-marketing as perceived by 83.3 per cent of the respondents was availability of proper transaction details and bills. Respondents opined that they feel secured and guaranteed about the payment in e-marketing.

The other important benefits perceived by the farmers were the assurance of prompt payment and timely delivery of cardamom to the buyers and the absence of information asymmetry between the buyers and sellers. This is because of the transparent mechanism of operation in e-marketing in general and specifically in e-auction which is organized by the Spices Board which is a Government agency.

4.7. CONSTRAINTS OF E-MARKETING PERCEIVED BY FARMERS

Farmers undertaking e-marketing of cardamom encounter many challenges while adopting the various platforms of e-marketing. These constraints are identified, ranked and presented in Table 26. The constraints having highest frequency was given the highest rank.

Table 26. Constraints of e-marketing perceived by farmers

Sl. No.	Constraints	f	%	Rank
1	Payment is delayed up to 20-30 days after e-auction resulting in financial inconvenience	40	66.7	I
2	In order to get early payment, farmers are forced to take loan from the auctioning agency, paying interest and there by exploiting the farmers	36	60	II
3	Lot number in the e-auction has effect on price offered; lots placed in the beginning and end of auction will have no competition in bidding	33	55	III
4	Re-pooling with low quality cardamom is done by traders in e-auction, which reduces the average auction price	32	53.3	IV
5	Traders are also participating in the e-auction along with planters; price offered for their lots are higher than those offered for the farmers	30	50	V
6	When green colour of produce is lost, the price drops, forcing the farmer to sell quickly	28	46.7	VI
7	Due to the considerable delay between pricing and payment, selling at real-time prices is not possible	27	45	VII

8	Proper regulation and monitoring of the e-auction system by spices board is lacking	25	41.7	VIII
9	Participation in e-auction requires a cardamom registration (CR) certificate, making it difficult for farmers who cultivate on non-registered lands to sell without a CR	23	38.3	IX
10	Farmers' produce has a shorter bidding time provided than traders' produce, resulting in farmers being unable to obtain the highest auction price possible	22	36.7	X
11	Longer marketing channel and relatively higher involvement of intermediaries in case of e-auction	20	33.3	XI
12	There are no buyers from within the state to participate in e-auction, and buyers from outside have a fixed price cap for bidding and hence the price will not appreciate in e-auction	17	28.3	XII
13	The farmers have no bargaining power and are forced to sell their produce at the price set in the e-auction	15	25	XIII
14	No regular demand can be expected in the case of marketing through websites and social media	14	23.3	XIV
15	No personal involvement of the farmers in selling their produce is there in e-auction	10	16.7	XV
16	Samples of produce displayed during e-auction are not included in sales; they are taken by the auctioning agency	8	13.3	XVI
17	Transportation to the cardamom collection points of the agency is inconvenient	6	10	XVII

It is evident from Table 26 that the major constraint in e-marketing as perceived by 66.7 per cent of the respondents was the delay in payment up to 20-30 days after e-auction resulting in financial inconvenience for the farmers. Respondents opined that this is the reason why the farmers are still not ready to opt for e-marketing and are forced to sell their produce in the local market for lower price, where they get immediate payment which is essential to meet the day to day requirements of the farm.

The farmers are forced to take loan from the auctioning agencies at high rates of interest in order to make up for the delayed payment and hence being exploited in the process. The lot numbers allotted to the farmers in the e-auction also has an influence on the price offered; the lots placed in the beginning and end of auction will not have competition in bidding. This is because of the absence of timely monitoring and regulation of e-auction by the Spices Board, so that remunerative prices can be assured for the farmers irrespective of their lot numbers.

4.8. SUGGESTIONS FOR IMPROVING THE EFFECTIVENESS OF E-MARKETING OF CARDAMOM

The major suggestions put forward by the farmers and experts in the field, consolidated and supplemented with the observations of the researcher has been listed below.

1. As payment is delayed up to 20-30 days after e-auction which is resulting in financial inconvenience to the farmers, mechanisms to ensure timely and prompt payment for the produce should be put in place.

2. Separate auctions may be held for planters and traders, since traders are also participating in the e-auction along with planters; price offered for their lots are higher than those offered for the farmers.

3. Spices Board should undertake regulation and monitoring of the e-auction system to reduce unhealthy practices like re-pooling with low quality cardamom in e-auction by the traders, which reduces the average auction price.

4. Spices Board could assist farmers in obtaining a good price in e-auction by maintaining a remunerative base price during bidding.

5. Proper and timely extension services should be provided in order to carry out the production of cardamom in a cost-effective manner, as farmers spend a lot of money on

fertilizers and pesticides without getting proper advisory services. Extension services should be extended to field visits in cardamom plantation and trainings to farmers at field level.

6. As cardamom registration certificates are mandatory for the farmers to participate in e-auction, the farmers should be provided registration for their land so that they can receive CR (Cardamom Registration) certificate and participate in auctions.

7. A base price for cardamom may be established to ensure that farmers receive a remunerative price for their produce. Given the higher cost of production of cardamom, which ranges from 1000 to 1300 rupees per kilogram, selling price less than 1500 rupees per kilogram will keep the farmers in loss.

8. Financial institutions may make it easier for the cardamom farmers to obtain loans by reducing the formalities and requirements. Since cardamom production requires a lot of investment, timely finance is essential.

9. The Spices Board may create a warehouse system so that the growers can store their produce safely and obtain a warehouse receipt in order to obtain a loan and be assured of a fair price.

10. Cardamom Farmer Producer Organizations (FPOs) may be encouraged to establish value addition and processing units, allowing the farmers to boost their income while lowering processing costs by combining machinery and technology investments. Ventures such as a cardamom oil extraction units should be supported technically and financially.

11. E-marketing in cardamom is yet to be explored and popularized; decreased competition does not result in a change in price and benefits. So awareness and promotion about more e-marketing channels, including websites and social media, can assist the farmers in direct marketing and reduce price spread. Farmers could find their own market.

12. The system of collecting samples without paying for it should be discontinued since the samples are neither added to the lots put up for sale nor returned to the farmers.

13. Since the color of the dried cardamom capsules has nothing to do with its scent or flavor, the superfluous necessity of the green color of cardamom should be done away with, so that the farmers will no longer be denied remunerative prices in the name of the color of the capsules.

14. In cardamom, an open market may be created by lifting the market restrictions, allowing the farmers to sell their produce wherever they desire.

15. Farmers' cooperatives can collect cardamom for export directly without involving intermediaries, so that the farmers could obtain better price while ensuring that the product meets the requisite quality and standards.

16. As a group, farmers can plan organic production of cardamom and obtain organic certification from the Central Government which will ensure higher prices for cardamom in the domestic and export markets.

17. The farmers' groups may be encouraged to secure GI tag for Idukki cardamom as the quality of the spice in terms of its aroma, flavor and color is much superior as compared to the cardamom from other states, which may be attributed the agro-ecology and geography of the place.

18. Bidding time for planters' lots (p-type lots) should be made at part with that of traders' lots (t-type lots). It is desirable that the bidding time be increased for the bidders to facilitate competitive bidding which results in appreciation in the auction price.

19. Crop-based research in cardamom should be accelerated to develop new varieties, pesticides and machinery. Also the farmers may be provided access to machinery, technology and other services in cardamom research stations.

20. Incubators should be established in research stations to develop cardamom-based value-added technologies and provide incubation facilities for the farmers to equip them to undertake profitable agri-business ventures.

21. e-NAM should be implemented in Kerala to expand the market of cardamom. This will benefit the farmers with longer negotiation time in the website for the produce and thereby enabling the farmer to fetch the best price.

22. Cardamom being a high value produce, a 'Cardamom Board' may be established to address the concerns specific to cardamom and focus deeply on the farmers' issues related to cardamom production. Monitoring and control in case of sale and use of pesticides in cardamom is essential.

4.9. VALIDATION OF HYPOTHESIS

A research hypothesis is a statement about the expected outcome of a scientific study. A hypothesis must be testable to allow a verification or falsification. In this study the hypothesis set and established were;

1. **There exists no difference in the marketing effectiveness of the farmers undertaking conventional marketing and e-marketing.**

The results from the Table 23 revealed that Marketing Effectiveness Index score of conventional marketing and e-marketing shows significant mean difference at 1% level of significance in the Z-test. So the marketing effectiveness of the farmers undertaking conventional marketing and e-marketing of cardamom are not the same. Hence the hypothesis was rejected.

2. **There exists no significant relationship between the independent variables and marketing effectiveness.**

The results from the Table 24 revealed that out of the ten independent variables, six variables were significantly correlated to marketing effectiveness, of which four

variables namely, price received, extension contact, attitude towards e-marketing and adoption of digital tools were positively correlated at 0.1% level of significance. Whereas two variables namely education and awareness on digital tools were positively and significantly correlated at 1% level of significance. Thus the null hypothesis was rejected.

3. **There are no constraints faced by the farmers undertaking e-marketing.**

The results from Table 26 revealed that the major constraints perceived by farmers undertaking e-marketing are delay in payment up to 20-30 days after e-auction, the need to avail loans from the auctioning agency to make up for the late payment and effect of lot number in the e-auction on the price offered. This shows that there are many constraints faced by the farmers undertaking e-marketing of cardamom. Hence the hypothesis was rejected.

Summary

CHAPTER V

SUMMARY

The queen of spices, cardamom (*Elettaria cardamomum*), has a unique place in the international spice market. Indian cardamom is particularly unique on the international market due to its different growing techniques. Until 2000, India was the primary producer and exporter of cardamom, but Guatemala has since emerged as a serious rival in the international spice market. Kerala is the highest producer of cardamom in India, accounting for 89 percent of the country's total output. Idukki district leads cardamom production in Kerala, accounting for 79 per cent of the state's cardamom area (31166 ha) and 97 per cent of total production (9785 MT) (GoK, 2021). In Kerala and Tamil Nadu, the e-auction had supplanted the traditional cardamom outcry auctions. Licensed dealers are given a user id and password in the new system. E-auction is beneficial to both cardamom growers and traders by promoting healthy competition among bidders. Trading is electronically monitored and the minimum price is discovered through competitive bidding. However, the e-marketing of agricultural produce is not gaining required momentum in Kerala as in other states due to lack of implementation of e-NAM (National Agriculture Market). The exploratory study on the effectiveness of e-marketing of cardamom is first of its kind since no literature regarding the studies on the effectiveness of e-marketing of an agricultural produce could be traced. Hence, to have an in-depth analysis on marketing effectiveness of cardamom farmers undertaking e-auction and marketing using other e-marketing platforms over the conventional marketing mechanism, and to understand the benefits and constraints of e-marketing system perceived by the farmers who undertake e-marketing of cardamom, the present study becomes relevant.

Hence the current study was undertaken with the following objectives:

1. To develop and standardize an index to measure the marketing effectiveness of farmers.

2. To measure and compare the marketing effectiveness of farmers undertaking conventional marketing and e-marketing of cardamom.
3. To delineate the benefits and constraints of e-marketing as perceived by the farmers.
4. To study the relationship between personal and socio-economic factors and marketing effectiveness of cardamom farmers.
5. To compare personal and socio-economic variables of farmers undertaking conventional marketing and e-marketing of cardamom.

The sample for the study consisted a total of 120 respondents comprising 60 farmers undertaking conventional marketing and 60 farmers undertaking e-marketing of cardamom, who were selected randomly from each five Panchayats in the two AEUs of Idukki district of Kerala. The study envisaged to measure and comparatively assess the marketing effectiveness of farmers undertaking conventional marketing and e-marketing of cardamom. Ten independent variables selected through judges' ratings were age, education, area under cardamom cultivation, experience in cardamom cultivation, production of cardamom, price received, extension contact, attitude towards e-marketing, awareness on digital tools and adoption of digital tools.

The data were collected from the respondents through personal interview using a well-structured and pre-tested interview schedule. Appropriate statistical analyses were used for interpretation of the data and generation of results.

The salient findings of the study were:

1. More than fifty percent of the farmers undertaking conventional marketing belonged to middle age (51.7%), followed by old age (25%) and young age (23.3%), whereas majority of the farmers undertaking e-marketing belonged to middle age (40%), followed by young age (38.3%) and old age (21.7%).

2. Majority of the farmers undertaking conventional marketing had high school level of education (43.3%), followed by degree and above (31.7%) and higher secondary (25%) level of education, whereas majority of the farmers undertaking e-marketing

had degree and above level of education (58.4%), followed by higher secondary (33.3%) and high school level of education (8.3%).

3. Majority of the farmers undertaking conventional marketing had marginal holdings (31.7%), followed by small (23.3%), semi-medium (23.3%) and medium holdings (20%), whereas majority of the farmers undertaking e-marketing had medium holdings (35%), followed by semi-medium (33.3%), small (21.7%) and only 6.7 per cent of the respondents had marginal holdings under cardamom cultivation.

4. Majority of the farmers undertaking conventional marketing (55%) and e-marketing (45%) had medium level experience in cardamom cultivation, followed by low and high level of experience.

5. Majority of the farmers undertaking conventional marketing had low production (43.3%), followed by medium (41.7%) and high (15%), whereas majority of the farmers undertaking e-marketing had medium production (48.3%), followed by low (26.7%) and high (25%).

6. Most of the farmers undertaking conventional marketing realized price of 1000 to 1200 rupees per kilogram (73.3%), followed by less than 1000 rupees per kilogram (21.7%), whereas most of the farmers undertaking e-marketing received price between 1000 to 1200 rupees per kilogram (36.7%), followed by greater than 1400 rupees per kilogram (28.3%). Respondents who received higher price (more than 1200 rupees per kilogram) were more in e-marketing (51.6%) compared to conventional marketing (5%).

7. It was evident that majority of the farmers undertaking conventional marketing belonged to medium level of extension contact (51.7%), followed by low (31.7%) and high (16.7%) level of extension contact, whereas majority of the farmers undertaking e-marketing belonged to medium (51.7%), followed by high (26.7%) and low (21.7%) level of extension contact.

8. It was found that majority of the farmers undertaking conventional marketing had negative attitude towards e-marketing (55%), followed by neutral attitude (45%), whereas majority of the farmers undertaking e-marketing had neutral attitude towards e-marketing (61.7%), followed by positive (35%) and negative (3.3%).

9. It was observed that majority of the farmers undertaking conventional marketing (66.7%) and e-marketing (75%) had medium level awareness on digital tools, followed by low level awareness on digital tools and least per cent of respondents had high level awareness on digital tools.

10. It was evident that the majority of the farmers undertaking conventional marketing had medium level adoption of digital tools (45%), followed by low (40%) and high (15%) level adoption of digital tools, whereas majority of the farmers undertaking e-marketing had medium (56.7%), followed by high (23.3%) and low (20%) level adoption of digital tools.

11. Majority of the farmers undertaking conventional marketing adopted marketing channel with 6 parties (41.7%) and 5 parties (41.7%), followed by marketing channel with 4 parties (15%), whereas majority of the farmers undertaking e-marketing adopted marketing channel with 5 parties (63.4%), followed by marketing channel with 2 parties (20%).

12. Most of the farmers undertaking conventional marketing (73.4%) and e-marketing (55%) had a marketing cost between 6000 to 8000 rupees per quintal of cardamom, followed by marketing cost between 4000 to 6000 rupees per quintal of cardamom in conventional (13.3%) and e-marketing (23.3%).

13. Majority of the farmers undertaking conventional marketing belonged to price spread between 300 to 400 rupees (28.3%), followed by price spread between 500 to 600 (20%), whereas majority of the farmers undertaking e-marketing belonged to price spread between 500 to 600 rupees (21.7%), followed by price spread between 600 to 700 (20%) and less than 200 (20%).

14. Majority of the farmers undertaking conventional marketing had producer's share in consumer's rupee between 70 to 75 percentage (30%), followed by producer's share in consumer's rupee between 60 to 65 (20%), whereas majority of the farmers undertaking e-marketing had producer's share in consumer's rupee greater than 80 percentage (30%), followed by less than 60 (21.7%) and between 65 to 70 (21.7%).

15. It was evident that majority of the farmers undertaking conventional marketing (46.7%) and e-marketing (56.7%) had medium level market information utilization. Respondents who had high level of market information utilization were more among farmers undertaking e-marketing (28.3%) compared to farmers undertaking conventional marketing (13.3%).

16. It was found that majority of the farmers undertaking conventional marketing (48.3%) and e-marketing (68.4%) had appropriate timeliness of marketing. Majority of the respondents who undertook the best timely marketing of the produce were the farmers undertaking e-marketing (23.3%) compared to farmers undertaking conventional marketing (6.7%).

17. It was observed that the majority of the farmers undertaking conventional marketing had medium ease of marketing (53.3%), followed by low (45%) and high (1.7%) ease of marketing, whereas majority of the farmers undertaking e-marketing had medium ease of marketing (55%), followed by high (38.3%) and low (6.7%) ease of marketing.

18. It was revealed that majority of the farmers undertaking conventional marketing (46.7%) and e-marketing (53.4%) had medium level of marketing effectiveness. Respondents who had high level of marketing effectiveness were more among farmers undertaking e-marketing (38.4%) compared to farmers undertaking conventional marketing (11.6%).

19. It was evident from factor analysis that the seven components were reduced to two different factors which explained around 91.68 per cent of the total variance. The

components producer's share in consumer's rupee, price spread and marketing channel constitute the factor 1. The components ease of marketing, timeliness of marketing and market information utilization constitute the factor 2. Producer's share in consumer's rupee is the component explained maximum variance (96.54 %), followed by price spread (94.21), marketing channel (69.31%) and ease of marketing (65.11%).

20. It was concluded from the Z-test that all the components except price spread showed calculated Z-value greater than table value of 'Z'. The mean values of components such as marketing channel, market information utilization, timeliness of marketing and ease of marketing are having a highly significant mean difference at 1% level of significance between the farmers undertaking conventional and e-marketing. The mean values of components such as marketing cost and producer's share in consumer's rupee are having a significant mean difference at 5% level of significance between the two categories of farmers. The test result of the comparison between the mean values of Marketing Effectiveness Index scores of the farmers undertaking conventional marketing and e-marketing showed a highly significant mean difference at 1% level of significance.

21. It was revealed that out of ten independent variables, six variables were significantly correlated to marketing effectiveness, of which four variables namely, price received, extension contact, attitude towards e-marketing and adoption of digital tools were positively correlated at 0.1% level of significance. Whereas two variables namely education and awareness on digital tools were positively and significantly correlated at 1% level of significance.

22. The major benefit of e-marketing identified was availability of proper transaction details and bills. The other important benefits were assurance of timely delivery and prompt payment and absence of information asymmetry between buyers and sellers.

23. The major constraint of e-marketing identified was delay in payment up to 20-30 days after e-auction which resulting in financial inconvenience. The other important constraints identified were farmers are forced to take loan from the auctioning agencies at high rates of interest in order to make up for the delayed payment and hence being exploited in the process and effect of lot number in the e-auction on price offered, lots placed in the beginning and end of auction will not have competition in bidding.

24. The major suggestions perceived to overcome the constraints of e-marketing include mechanisms to ensure timely and prompt payment for the produce, separate e-auctions for farmers and traders, ensuring remunerative base prices for cardamom, regulation and monitoring of the e-auction system by the Spices Board to reduce unhealthy practices, approval of registration of the cardamom lands by the Government, minimization of the formalities in credit disbursal by the banks, extending support to the farmer producer organizations (FPOs) to undertake value addition in cardamom and expansion of extension services in the realm of e-marketing.

Suggestions for future research work

1. Scaling up the same study in other cardamom growing districts as well.
2. Comparative studies of the marketing effectiveness of cardamom growers in Kerala and other states.
3. Research studies on e-marketing of other crops.
4. Modification of Marketing Effectiveness Index (MEI) developed for measuring the marketing effectiveness of other crops.
5. Comparative study on effectiveness of conventional marketing and e-marketing in other crops.

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Appendices

APPENDIX I

KERALA AGRICULTURAL UNIVERSITY
COLLEGE OF AGRICULTURE
Department of Agricultural Extension
Vellayani - 695 522
Thiruvananthapuram

Dr. Gopika Somanath
Assistant Professor

Date: 16-03-2021

Sir/Madam,

I would like to bring to your kind notice that Ms. JEENA PAUL (Ad. No. 2019-11-040), post graduate scholar in the Department of Agricultural Extension, College of Agriculture, Vellayani is undertaking a research study titled **'Effectiveness of e-marketing of cardamom in Kerala – an exploratory analysis'**, as part of her post graduate programme. Variables supposed to have close association with the study have been identified after extensive review of literature.

Considering your vast experience and knowledge in the subject, I request you to kindly spare some of your valuable time for examining the variables critically as a judge to rate their relevance for the study. You may also suggest other variables relevant for the study and rate them. Kindly return the list duly filled in, at the earliest in the self-addressed stamped envelope enclosed with this letter.

Thanking you

Yours faithfully

(Dr. Gopika Somanath)

Effectiveness of e-marketing of cardamom in Kerala – an exploratory analysis

Objectives

Assessment and comparison of the effectiveness of e-marketing and conventional marketing of cardamom in Kerala, as well as the delineation of the farmers' perception on the benefits and constraints of e-marketing.

Personal, Social, Economic and Psychological variables identified for the study

The following independent variables have been identified for the study. Please (✓) mark the relevancy of the variables in the five point continuum provided as MoR – Most Relevant, MR – More Relevant, R – Relevant, LR – Less Relevant and LeR – Least Relevant, against the appropriate column.

Sl. No.	Variable	Operational definition	Relevancy rating (R - relevant)				
			MoR 5	MR 4	R 3	LR 2	LeR 1
1.	**Age**	Refers to number of chronological years completed by the farmers at the time of interview.					
2.	**Education**	It is operationalized as the number of years of formal education completed by the farmer.					
3.	**Annual income**	Refers to the total income, obtained annually by the family of farmer from agriculture and other sources.					
4.	**Area under cardamom cultivation**	It is defined as the extent of land under cardamom cultivation in acres.					
5.	**Experience in cardamom cultivation**	It is defined as the total number of years a farmer has been engaged in cardamom cultivation.					

6.	**Production of cardamom**	It is defined as the total quantity of cardamom produced in a crop season.					
7.	**Cost of cultivation**	It is defined as the expenses incurred by farmer in cultivating cardamom in unit area.					
8.	**Innovativeness**	It is operationalized as the earliness of the farmer in adoption of new ideas compared to other farmers.					
9.	**Cosmopoliteness**	It is defined as the frequency at which a farmer visits the social systems outside his/her own locality.					
10.	**Social participation**	Operationalized as the degree of involvement of the farmers in social organizations either as a member or as an office bearer in one or more organizations.					
11.	**Extension contact**	Operationalized as the degree to which farmer maintains contact with extension agencies or personnel for obtaining information on agriculture.					
12.	**Mass media exposure**	Operationalized as the extent of exposure of farmers to the mass media such as radio, television, newspaper, farm magazines, other information sources etc.					
13.	**Access to market information**	Operationalized as the availability of means for the farmers to obtain timely information on prices and					

		quantities of cardamom being marketed.					
14.	**Decision making ability**	Defined as the ability of the farmer to select the most effective means from available alternatives.					
15.	**Problem solving ability**	Defined as the ability of the farmer to identify the problem, find solutions, select the best alternative and apply in the field situation.					
16.	**Achievement motivation**	Operationalized as an urge that implants a desire for excellence in order for an individual to attain a sense of personal accomplishment.					
17.	**Economic motivation**	Degree to which farmer is oriented to maximize his profit by laying emphasis on the economic ends.					
18.	**Exposure to training**	Refers to the number of trainings undergone by the farmer in relation to cardamom cultivation.					
19.	**Self confidence**	Degree of faith a person has in his/her own powers, abilities and resourcefulness to perform an activity.					
20.	**Self – reliance**	Refers to the extent to which farmer relies on self for his/her own abilities in carrying out farm related activities.					

21.	**Risk orientation**	Operationalized as the degree to which the farmer is oriented towards encountering risks and uncertainties in adopting any new idea or innovation in agriculture.					
22.	**Scientific orientation**	Operationalized as the degree to which the farmer is oriented towards the scientific methods of farming.					
23.	**Credit orientation**	Operationalized as the degree to which the farmer is oriented towards identifying available credit facilities and using it for farm production.					
24.	**Market orientation**	Operationalized as the propensity of farmer to identify the needs or wants of the customers in the market and meeting them.					
25.	**Market perception**	Capacity of farmer to analyze the trends in market and understand the demand and supply forces existing in the market.					
26.	**Awareness on digital tools**	Extent to which the farmers are informed of various digital tools available for e-marketing.					
27.	**Adoption of digital tools**	Extent to which farmers are adopting the various digital services like computer, internet and other digital tools available for agricultural purposes.					

28.	**Attitude towards e-marketing**	Operationally defined as the positive or negative mental predisposition of the farmer towards e-marketing.					
29.	**Proficiency in using digital tools**	Proficiency is conceptualized as the expertise of the respondents in the use of various digital tools for e-marketing.					
30.	**Institutional support**	Assistance provided by various public, private institutions and other agencies in the use of digital tools in marketing.					
31.	**Marketing opportunities**	Operationalized as the relative scope for e-marketing and conventional marketing of farm produce.					
32.	**Complexity of marketing**	Operationalized as the relative difficulty in undertaking different activities in the marketing of a farm produce.					
33.	**Profitability**	Operationally defined as the degree of relative generation of net income per unit area of a farm enterprise.					
34.	**Price received**	Average price per unit received by farmer in a crop season for the produce.					
35.	**Marketing cost**	Actual expenses incurred by farmer in taking the produce to market including market fee, handling, assembling, and transportation charges.					

36.	**Marketing channels accessed**	Various distribution channels used by farmers to market cardamom.					
37.	**Involvement of middlemen**	Extent and nature of involvement of intermediaries in the marketing of produce.					
38.	**Transportation facilities**	Availability of means for transporting produce to the market.					
39.	**Storage facilities**	Availability of means for safe storage of the produce until farmer is ready to market it.					
40.	**Grading facilities**	Availability of means for sorting of cardamom into different lots before marketing.					
41.	**Others if any please specify**						

APPENDIX II

Development of a scale to measure marketing effectiveness of cardamom farmers

KERALA AGRICULTURAL UNIVERSITY
COLLEGE OF AGRICULTURE
Department of Agricultural Extension
Vellayani - 695 522
Thiruvananthapuram

Dr. Gopika Somanath

Assistant Professor

Date: 27-04-2021

Sir/Madam,

Ms. JEENA PAUL (Ad. No. 2019-11-040), a post graduate scholar in the Department of Agricultural Extension, College of Agriculture, Vellayani is undertaking a research study entitled **'Effectiveness of e-marketing of cardamom in Kerala – an exploratory analysis'** under my guidance, for her research work. As part of her research, she is **developing a scale** to measure the marketing effectiveness of cardamom farmers. Based on review of relevant literature and discussion with the domain experts, the various components of marketing effectiveness has been identified.

Considering your rich experience and expertise in the field, you have been identified as a judge for rating the relevance of the components identified for the study. Kindly rate the items by putting a tick (✓) mark against the appropriate column in the five-point continuum provided. Kindly add other components you feel would contribute to marketing effectiveness and rate them accordingly. I request you to spare some of your precious time for providing valuable inputs for the construction of the measurement instrument.

Thanking you

Yours faithfully

Gopika Somanath

Components to measure the marketing effectiveness of cardamom farmers

HR - Highly Relevant, R - Relevant, UD - Undecided, LR - Less Relevant, NR -Not Relevant

Sl. No.	Component	Operational definition	Relevancy rating				
			HR	R	UD	LR	NR
42.	**Marketing channels**	The chain of intermediaries through whom the cardamom passes in reaching the consumers from the producers.					
43.	**Marketing cost**	Actual expenses incurred by farmer in taking the produce to market including market fee, handling, assembling, and transportation charges.					
44.	**Marketing efficiency**	Movement of cardamom from producers to consumers at the lowest possible cost, consistent with the provision of the services desired by the consumer. Marketing efficiency is the ratio of market output (satisfaction) to marketing input (cost of resource).					
45.	**Price spread**	It is defined as the difference between the price paid by the consumers and the net price received by the producer for an equivalent quantity of cardamom.					

46.	**Marketing integration**	Expansion of the agri-business activities by consolidating additional marketing functions and activities under a single management.					
47.	**Government policies**	It is defined as the impact of government interventions on farmers by fixing the administrative prices of produce.					
48.	**Processing facilities**	Availability of means for cleaning and drying of cardamom before grading.					
49.	**Grading facilities**	Availability of means for sorting of cardamom into different lots before marketing.					
50.	**Storage facilities**	Availability of means for safe storage of the produce until farmer is ready to market it.					
51.	**Transportation facilities**	Availability of means for transporting the produce to the market.					
52.	**Others if any please specify**	1. 2. 3.					

APPENDIX III

Selection of items for the composite index through judge's relevancy rating

KERALA AGRICULTURAL UNIVERSITY
DEPARTMENT OF AGRICULTURAL EXTENSION
COLLEGE OF AGRICULTURE
Vellayani - 695 522
Thiruvananthapuram

28-07-2021

Dear Sir/Madam,

Ms. JEENA PAUL (Ad. No. 2019-11-040), the post graduate scholar in the Department of Agricultural Extension, College of Agriculture, Vellayani is undertaking a research study entitled **'Effectiveness of e-marketing of cardamom in Kerala – an exploratory analysis'** under my guidance for her research work. As part of her research she has to **develop a composite index** to measure the marketing effectiveness of cardamom farmers. On the basis of the review of relevant literature and discussion with the experts in the field, seven components were selected for the composite index, which includes four quantitative components and three qualitative (psychological) components.

1. Marketing channel
2. Marketing cost
3. Price spread
4. Producer's share in consumer's rupee
5. Market information utilization
6. Timeliness of market
7. Ease of marketing

Considering your rich experience in the field, you have been identified as a judge for rating the relevancy of the items identified under the qualitative components. Kindly rate the items by putting a tick (✓) mark against the appropriate column in the five-point continuum provided. Kindly add other items you feel appropriate under the dimensions and rate them accordingly. I request you to spare your valuable time for us.

Thanking you

Yours faithfully,

Gopika Somanath

Items to measure the qualitative components of marketing effectiveness

MoR – Most Relevant, MR – More Relevant, R – Relevant, LR – Less Relevant and LeR – Least Relevant

S.NO	Items	MoR	MR	R	LR	LeR
A	**MARKET INFORMATION UTILIZATION** Extent of use of timely information on prices and quantities of cardamom for decision making in marketing of the produce.					
1	I actively collect information on the prices of cardamom in the various e-marketing platforms as well as in the different nearby markets/collection centres to determine if the prices offered are reasonable and profitable.					
2	I keep track of the demand for and supply of cardamom in the various marketing platforms.					
3	I enquire about the prices and demand for cardamom with my fellow farmers.					
4	I collect information on the prices of cardamom from the newspapers, magazines, radio, social media etc.					
5	I collect information on the market prices occasionally, only when I need to sell my produce.					
6	I sell my produce at my convenience, irrespective of the marketing trends.					
7	I face difficulties in getting timely market information.					
8	I decide on where or to whom to sell my produce on the basis of the market information collected.					

9	Market information is sometimes not applicable to the real life situation of selling and buying.					
10	I decide on when to sell my produce on the basis of the market information collected.					
11	I make use of the market information collected from various sources to select the most appropriate marketing mechanism for my produce.					
	Others if any, please specify					
B	**TIMELINESS OF MARKETING** Scheduling the marketing of the produce for the most appropriate time, on the basis of market information, to fetch maximum profits.					
1	I market my produce immediately after harvest, at the prevailing market prices.					
2	I sell my produce when my fellow farmers are selling their produce.					
3	I store my produce and sell it only when remunerative prices prevail in the market.					
4	I sell my produce when the local market offers higher price.					
5	I sell my produce only during off-season of cardamom.					
6	I process and store the produce and sell them as and when the financial requirements arise.					
	Others if any, please specify					
C	**EASE OF MARKETING** The relative convenience of the farmer in marketing his produce with the marketing plan he adopts.					

1	Lack of sufficient transportation facilities makes the marketing of cardamom difficult.					
2	The prevailing transportation costs are high which eats upon the profits of the farmers.					
3	Long distance transportation of the produce is required for marketing the produce.					
4	Lack of grading facilities forces marketing of the produce as bulk mix.					
5	I find the online marketing of cardamom easy as compared to marketing the produce in the nearby markets or to the middlemen.					
6	Grading adds extra expenses towards marketing.					
7	Conventional marketing is more convenient and easy since it does not require the use of technology and new learning to market the produce.					
8	Grading is beneficial to only large farmers who have huge quantity of cardamom to sell at a time.					
9	The marketing costs involved in online marketing are less.					
10	Online marketing needs a time gap for payment to get credited in bank account.					
11	Conventional marketing is convenient for getting immediate payment.					
12	I feel that the online marketing of cardamom is hassle-free and more remunerative.					
13	Most of the local marketing middlemen do not give receipts, as they do it in black market to save tax it is not safe.					

14	The transportation problems are less in online marketing which makes it easier to market the produce.					
15	Online marketing agencies provide clear receipts and transaction details and follow legally correct procedures.					
16	The involvement of middlemen is less in e-marketing which ensures better prices for the farmers.					
	Others if any, please specify					

APPENDIX IV

EFFECTIVENESS OF E-MARKETING OF CARDAMOM IN KERALA – AN EXPLORATORY ANALYSIS

Date : Code:

INTERVIEW SCHEDULE

1. Name of Block :
2. Name of Panchayat :
3. Name and address of respondent :
4. Age :
5. Education : Illiterate/ primary school/ middle school/ high school/ higher secondary/ degree and above
6. Area under cardamom cultivation :
7. Experience in cardamom cultivation :
8. Production of cardamom per acre :
9. Price received for cardamom per kilogram :
10. Contact with extension agency

Sl.No.	Extension agency	Frequency of contact		
		Regularly	Occasionally	Never
1	Agricultural Officers			
2	Agricultural Assistants			
3	ADA / DDA			
4	Agricultural Scientist			
5	SMS of KVKs			
6	ATMA-resource persons			
7	Any others			

11. Attitude towards e-marketing
(Please give your opinion about the following statements)

Sl.No.	Statements	SA	A	UD	DA	SDA
1	E-marketing is the best marketing system to prevent the farmers' exploitation by the intermediaries.					
2	E-marketing is difficult to adopt without the necessary technical know-how and skills.					
3	In e-marketing the transactions are more reliable and receipts are prompt.					
4	Farmer cannot solely depend upon e-marketing method.					
5	E-marketing serves to reduce the susceptibility of the farmers to fall prey to the pressures created by the traders and middlemen.					
6	Demand of product in e-marketing mode is not consistent.					
7	Deferred payment of money in e-marketing prompts me to sell my cardamom to the local traders which ensures quick payment.					
8	I prefer e-marketing to conventional marketing in cardamom.					

12. Awareness on digital tools

Sl.No.	Digital tool	Aware	Not aware
1	Television		

2	Mobile phone		
3	Computer		
4	Internet		
5	Social media		
6	Information kiosk		
7	E mail		
8	Search Engine		
9	Agricultural websites and web portals		
10	Video conferencing		
11	Agricultural expert systems		
12	Mobile agricultural applications		
13	E newspaper		

13. Adoption of digital tools

Sl.No.	Digital tool	Yes	No
1	Television		
2	Mobile phone		
3	Computer		
4	Internet		
5	Social media		
6	Information kiosk		
7	E mail		

8	Search Engine		
9	Agricultural websites and web portals		
10	Video conferencing		
11	Agricultural expert systems		
12	Mobile agricultural applications		
13	E newspaper		

14. Marketing channel used for cardamom
    a. Farmer ----- Consumer
    b. Farmer -----Retailer / Village trader ----- Consumer
    c. Farmer ----- Wholesaler ----- Retailer ----- Consumer
    d. Farmer -----Village trader ----- Wholesaler ----- Retailer ----- Consumer
    e. Farmers ----- Processors ----- Retailers ----- Consumers
    f. Farmer ----- Co-operative Marketing Society ----- Retailer ----- Consumer
    g. Farmer ----- e - Auction Centre ----- Wholesaler ----- Retailer ----- Consumer
    h. Farmer ----- e - Auction Centre ----- Retailer ----- Consumer
    i. Farmer ----- Social Media Platform ----- Consumer
    j. Farmer -----Marketing agents ----- Website / Online Stores ----- Consumer
    k. Farmer ----- Website / Online Stores ----- Consumer
    l. Any other
15. Marketing cost for cardamom per quintal in rupees

    Processing –

    Grading –

    Storage –

    Preparation and packaging –

    Handling –

    Transportation –

    Losses –

Fees, commissions and unofficial payments –

Advertising –

Promotion –

16. Price paid by the final consumer in the marketing channel of cardamom per kilogram :

17. Market information utilization

(Please give your opinion about the following statements)

Sl. No.	Statements	Always	Very often	Often	Occasionally	Never
1	I actively collect information on the prices of cardamom in the various e-marketing platforms as well as in the different nearby markets/collection centers to determine if the prices offered are reasonable and profitable					
2	I keep track of the demand for and supply of cardamom in the various marketing platforms					
3	I enquire about the prices and demand for cardamom with my fellow farmers					
4	I collect information on the prices of cardamom from the newspapers, magazines, radio, social media etc.					
5	I decide on where or to whom to sell my produce on the basis of the market information collected					
6	I decide on when to sell my produce on the basis of the market information collected.					

7	I make use of the market information collected from various sources to select the most appropriate marketing mechanism for my produce					

18. Timeliness of marketing
(Please give your opinion about the following statements)

Sl. No.	Statements	Always	Very often	Often	Occasionally	Never
1	I market my produce immediately after harvest, at the prevailing market prices					
2	I store my produce and sell it only when remunerative prices prevail in the market					

19. Ease of marketing
(Please give your opinion about the following statements)

Sl. No.	Statements	Very much	Somewhat	Undecided	Not really	Not at all
1	Lack of drying facilities and higher drying cost for cardamom processing increases marketing cost					
2	Lack of sufficient transportation facilities makes the marketing of cardamom difficult					
3	The prevailing transportation costs are high which eats upon the profits of the farmers					

4	Long distance transportation of the produce is required for marketing the produce					
5	Lack of grading facilities forces marketing of the produce as bulk mix					
6	Lack of storage facilities forces immediate marketing of the produce					
7	Marketing is hassle-free because of simple procedures and requirements					
8	Chance for better price discovery gives more choices for marketing					
9	Delayed payment in marketing creates inconveniences					
10	The marketing mechanism followed ensures remunerative price					
11	Provides clear receipts and follow legally correct procedures					

20. Perceived benefits and constraints of e-marketing

Benefits : 1.

2.

3.

Constraints : 1.

2.

3.

Abstract

EFFECTIVENESS OF E-MARKETING OF CARDAMOM IN KERALA- AN EXPLORATORY ANALYSIS

by

JEENA PAUL

(2019-11-040)

ABSTRACT

Submitted in partial fulfillment of the

requirements for the degree of

MASTER OF SCIENCE IN AGRICULTURE

Faculty of Agriculture

Kerala Agricultural University

DEPARTMENT OF AGRICULTURAL EXTENSION

COLLEGE OF AGRICULTURE

VELLAYANI, THIRUVANANTHAPURAM-695522

KERALA, INDIA

2021

ABSTRACT

The study entitled 'Effectiveness of e-marketing of cardamom in Kerala– an exploratory analysis' was conducted in Idukki district of Kerala during the year 2019-21 among the cardamom farmers undertaking conventional marketing as well as e-marketing of cardamom. The objective of the research was comparative assessment of the effectiveness of e-marketing and conventional marketing of cardamom as well as delineation of farmers' perception on benefits and constraints of e-marketing. Six farmers undertaking conventional marketing and six farmers undertaking e-marketing of cardamom each were randomly selected from ten panchayats, totaling the sample size to 120. The independent variables in the study selected through judges rating were age, education, area under cardamom cultivation, experience in cardamom cultivation, production of cardamom, price received, extension contact, attitude towards e-marketing, awareness on digital tools and adoption of digital tools, and dependent variable marketing effectiveness was measured using the index developed for the study.

On analysis it was found that majority of the farmers undertaking conventional marketing (51.7%) and e-marketing (40%) belonged to middle age category. Majority (43.3%) of the farmers undertaking conventional marketing had high school level education and 58.4 per cent of the farmers undertaking e-marketing had degree and above level of education. Majority of the farmers undertaking conventional marketing were marginal farmers (31.7%) and farmers undertaking e-marketing had medium area (4-10 ha) under cardamom cultivation (35%). Majority of the farmers undertaking conventional marketing (55%) and e-marketing (45%) had medium level of experience (6-20 years) in cardamom cultivation. Majority of the farmers undertaking conventional marketing (43.3%) had low production of cardamom and farmers undertaking e-marketing (48.3%) had medium production of cardamom. Majority of the farmers undertaking conventional marketing (73.3%) and e-marketing (36.7%) received a price between ₹1000-1200 per kilogram of cardamom. More than half of the farmers undertaking conventional (51.6%) and e-marketing (51.6%) had medium level of extension contact. More than half of the

farmers undertaking conventional marketing (55%) had negative attitude towards e-marketing and more than half of the farmers undertaking e-marketing (61.7%) had neutral attitude towards e-marketing. More than half of the farmers undertaking conventional (66.7%) and e-marketing (75%) had medium awareness on digital tools. Majority of the farmers undertaking conventional marketing (45%) and e-marketing (56.7%) had medium level of adoption of digital tools.

Marketing effectiveness has been measured under seven components, four quantitative variables, *viz.*, marketing channel, marketing cost, price spread and producer's share in consumer's rupee and three qualitative variables, *viz.*, market information utilization, timeliness of marketing and ease of marketing. Based on factor analysis, the components were grouped into two factors contributing to a cumulative variance of 91.68 per cent. The factor loadings of variables showed that producer's share in consumer's rupee (96.4%) and price spread (94.2%) explained more than 90 per cent variance. Majority of the farmers undertaking conventional marketing had medium (46.7%) followed by low (41.7%) marketing effectiveness and farmers undertaking e-marketing had medium (53.4%) followed by high (38.4%) marketing effectiveness. The comparison between the marketing effectiveness of conventional marketing and e-marketing using z-test showed that there exists significant mean difference between the six components of marketing effectiveness for the two categories of respondents and their marketing effectiveness index scores.

The results of Karl Pearson correlation analysis revealed that out of 10 independent variables selected for the study, six variables were significantly related to the dependent variable marketing effectiveness. The variables, *viz.*, price received, extension contact, attitude towards e-marketing and adoption of digital tools were significant at 0.1 % level of significance and education and awareness on digital tools were significant at 1 % level of significance.

Majority of the farmers undertaking conventional marketing adopted marketing channel with five (41.7%) and six parties (41.7%) and farmers undertaking e-marketing

adopted marketing channel with five parties (63.4%). Farmers undertaking e-marketing received higher price (₹1265.75) for their produce as compared to the farmers undertaking conventional marketing (₹1083.75). Majority (71.7%) of the farmers undertaking e-marketing store their produce and sells only at remunerative prices, whereas only 28.3 per cent of the farmers undertaking conventional marketing store their produce and wait for better price. Marketing effectiveness index scores of farmers undertaking e-marketing (67.6) was found to be higher than that of the farmers undertaking conventional marketing (53.9). Among the e-marketing platforms, social media (89.4) and websites (72.4) showed higher marketing effectiveness index score than e-auction (61).

The major benefits of e-marketing as perceived by farmers were availability of proper transaction details and bills (83.3%) and assurance of timely delivery and prompt payment (80%). The major constraints of e-marketing as perceived by farmers were delay in payment up to 20-30 days after e-auction (66.7%) and distress procurement of credit by the farmers from the auctioning agency to compensate for the delayed payment (60%).

Mechanisms to ensure timely and prompt payment for the produce, separate e-auctions for farmers and traders, ensuring remunerative base prices for cardamom, regulation and monitoring of the e-auction system by the Spices Board to reduce unhealthy practices, approval of registration of the cardamom lands by the Government, minimization of the formalities in credit disbursal by the banks, extending support to the farmer producer organizations (FPOs) to undertake value addition in cardamom and expansion of extension services in the realm of e-marketing are the key strategies to overcome the constraints in e-marketing.

It could be concluded that the e-auction mechanism was introduced by the Spices Board for the benefit of both the farmers and traders by promoting healthy competition among bidders and monitoring the auction price electronically. But presently farmers are not completely satisfied with the system due to lack of remunerative prices and delayed payment. The scope of the other e-marketing platforms such as social media and websites need to be more popularized among the cardamom farmers.

സംഗ്രഹം

ഏലം പരമ്പരാഗത വിപണനവും ഇ-വിപണനവും ഏറ്റെടുക്കുന്ന ഏലം കർഷകർക്കിടയിൽ 2019-21 വർഷത്തിൽ കേരളത്തിലെ ഇടുക്കി ജില്ലയിൽ "ഏലക്കയുടെ ഇ-മാർക്കറ്റിംഗിന്റെ ഫലപ്രാപ്തി-ഒരു പര്യവേക്ഷണ വിശകലനം" എന്ന തലക്കെട്ടിൽ പഠനം നടത്തി. ഏലത്തിന്റെ ഇ-മാർക്കറ്റിംഗിന്റെയും പരമ്പരാഗത വിപണനത്തിന്റെയും ഫലപ്രാപ്തിയുടെ താരതമ്യ വിലയിരുത്തലും ഇ-വിപണനത്തിന്റെ നേട്ടങ്ങളെയും പരിമിതികളെയും കുറിച്ചുള്ള കർഷകരുടെ ധാരണയുടെ നിർവചനവും ഗവേഷണത്തിന്റെ ലക്ഷ്യം. പരമ്പരാഗത വിപണനം ഏറ്റെടുക്കുന്ന ആറ് കർഷകരും ഏലം ഇ-വിപണനം നടത്തുന്ന ആറ് കർഷകരും പത്ത് പഞ്ചായത്തുകളിൽ നിന്ന് ക്രമരഹിതമായി തിരഞ്ഞെടുത്തു, മൊത്തം സാമ്പിൾ വലുപ്പം 120 ആയി. ജഡ്ജസിന്റെ റേറ്റിംഗിലൂടെ തിരഞ്ഞെടുത്ത പഠനത്തിലെ സ്വതന്ത്ര വേരിയബിളുകൾ പ്രായം, വിദ്യാഭ്യാസം, ഏലം കൃഷി ചെയ്യുന്ന സ്ഥലം, ഏലം കൃഷി പരിചയം, ഏലം ഉത്പാദനം, ലഭിച്ച വില, വിപുലീകരണ ബന്ധം, ഇ-മാർക്കറ്റിംഗോടുള്ള മനോഭാവം, ഡിജിറ്റൽ ടൂളുകളെക്കുറിച്ചുള്ള അവബോധം, ഡിജിറ്റൽ ടൂളുകൾ സ്വീകരിക്കൽ എന്നിവയാണ്, ആശ്രിത വേരിയബിൾ മാർക്കറ്റിംഗ് ഫലപ്രാപ്തി പഠനത്തിനായി വികസിപ്പിച്ച സൂചിക ഉപയോഗിച്ച് അളക്കുന്നു.

പരമ്പരാഗത വിപണനവും (51.7%) ഇ-മാർക്കറ്റിംഗും (40%) ഏറ്റെടുക്കുന്ന കർഷകരിൽ ഭൂരിഭാഗവും മധ്യവയസ്കരാണെന്ന് വിശകലനത്തിൽ കണ്ടെത്തി. പരമ്പരാഗത വിപണനം നടത്തുന്ന കർഷകരിൽ ഭൂരിഭാഗവും (43.3%) ഹൈസ്കൂൾ തല വിദ്യാഭ്യാസവും ഇ-മാർക്കറ്റിംഗ് ഏറ്റെടുക്കുന്ന കർഷകരിൽ 58.4 ശതമാനം പേരും ബിരുദവും അതിനു മുകളിലുള്ള വിദ്യാഭ്യാസവും നേടിയവരാണ്. പരമ്പരാഗത വിപണനം നടത്തുന്ന കർഷകരിൽ ഭൂരിഭാഗവും നാമമാത്ര കർഷകരും (31.7%) ഇ-മാർക്കറ്റിംഗ് ഏറ്റെടുക്കുന്ന കർഷകരും ഇടത്തരം (4-10 ഹെക്ടർ)

ഏലം കൃഷി ചെയ്യുവരാണ് (35%). പരമ്പരാഗത വിപണനവും (55%) ഇ-മാർക്കറ്റിംഗും (45%) ഏറ്റെടുക്കുന്ന ഭൂരിഭാഗം കർഷകർക്കും ഏലം കൃഷിയിൽ ഇടത്തരം (6-20 വർഷം) പരിചയമുണ്ടായിരുന്നു. പരമ്പരാഗത വിപണനം നടത്തുന്ന ഭൂരിഭാഗം കർഷകർക്കും (43.3%) ഏലത്തിന്റെ ഉൽപ്പാദനം കുറവായിരുന്നു, ഇ-മാർക്കറ്റിംഗ് നടത്തുന്ന കർഷകർ (48.3%) ഇടത്തരം ഏലം ഉൽപ്പാദനം നടത്തി. പരമ്പരാഗത വിപണനവും (73.3%) ഇ-മാർക്കറ്റിംഗും (36.7%) ഏറ്റെടുക്കുന്ന ഭൂരിഭാഗം കർഷകർക്കും ഒരു കിലോഗ്രാം ഏലത്തിന് 1000-1200 രൂപയ്ക്കിടയിലാണ് വില ലഭിച്ചത്. പരമ്പരാഗത (51.6%), ഇ-മാർക്കറ്റിംഗും (51.6%) ഏറ്റെടുക്കുന്ന കർഷകരിൽ പകുതിയിലധികം പേർക്കും ഇടത്തരം വിപുലീകരണ സമ്പർക്കം ഉണ്ടായിരുന്നു. പരമ്പരാഗത വിപണനം ഏറ്റെടുക്കുന്ന കർഷകരിൽ പകുതിയിലധികം പേർക്കും (55%) ഇ-മാർക്കറ്റിംഗിനോട് നിഷേധാത്മക മനോഭാവവും ഇ-മാർക്കറ്റിംഗ് ഏറ്റെടുക്കുന്ന പകുതിയിലധികം കർഷകരും (61.7%) ഇ-വിപണനത്തോട് നിഷ്പക്ഷ നിലപാടുള്ളവരുമാണ്. പരമ്പരാഗത (66.7%), ഇ-മാർക്കറ്റിംഗും (75%) ഏറ്റെടുക്കുന്ന കർഷകരിൽ പകുതിയിലധികം പേർക്കും ഡിജിറ്റൽ ഉപകരണങ്ങളിൽ ഇടത്തരം അവബോധം ഉണ്ടായിരുന്നു. പരമ്പരാഗത വിപണനവും (45%) ഇ-മാർക്കറ്റിംഗും (56.7%) ഏറ്റെടുക്കുന്ന ഭൂരിഭാഗം കർഷകരും ഡിജിറ്റൽ ടൂളുകൾ സ്വീകരിക്കുന്നതിൽ ഇടത്തരം നിലയിലായിരുന്നു.

മാർക്കറ്റിംഗ് ചാനൽ, വിപണന ചെലവ്, വില വ്യാപനം, ഉപഭോക്താവിന്റെ രൂപയിലെ നിർമ്മാതാവിന്റെ വിഹിതം എന്നിങ്ങനെ ഏഴ് ഘടകങ്ങൾക്ക് കീഴിലാണ് മാർക്കറ്റിംഗ് ഫലപ്രാപ്തി അളക്കുന്നത്. ഫാക്ടർ വിശകലനത്തെ അടിസ്ഥാനമാക്കി, ഘടകങ്ങളെ രണ്ട് ഘടകങ്ങളായി തരംതിരിച്ചിട്ടുണ്ട്, ഇത് 91.68 ശതമാനത്തിന്റെ സഞ്ചിത വ്യതിയാനത്തിന് കാരണമാകുന്നു. ഉപഭോക്താവിന്റെ രൂപയിലും (96.4%), വില വ്യാപനത്തിലും (94.2%) നിർമ്മാതാവിന്റെ വിഹിതം 90 ശതമാനത്തിലധികം വ്യത്യാസം വിശദീകരിക്കുന്നതായി

വേരിയബിളുകളുടെ ഫാക്ടർ ലോഡിംഗ് കാണിക്കുന്നു. പരമ്പരാഗത വിപണനം നടത്തുന്ന ഭൂരിഭാഗം കർഷകർക്കും ഇടത്തരം (46.7%) വിപണന ഫലപ്രാപ്തിയും കുറഞ്ഞ (41.7%) വിപണന ഫലപ്രാപ്തിയും ഇ-മാർക്കറ്റിംഗ് ഏറ്റെടുക്കുന്ന കർഷകർക്ക് ഇടത്തരം (53.4%) ഉയർന്ന (38.4%) വിപണന ഫലപ്രാപ്തിയും ഉണ്ടായിരുന്നു. Z-ടെസ്റ്റ് ഉപയോഗിച്ചുള്ള പരമ്പരാഗത വിപണനത്തിന്റെയും ഇ-മാർക്കറ്റിംഗിന്റെയും മാർക്കറ്റിംഗ് ഫലപ്രാപ്തി തമ്മിലുള്ള താരതമ്യം, പ്രതികരിച്ചവരിൽ രണ്ട് വിഭാഗങ്ങൾക്കുള്ള മാർക്കറ്റിംഗ് ഫലപ്രാപ്തിയുടെ ആറ് ഘടകങ്ങളും അവരുടെ മാർക്കറ്റിംഗ് ഫലപ്രാപ്തി സൂചിക സ്കോറുകളും തമ്മിൽ കാര്യമായ ശരാശരി വ്യത്യാസമുണ്ടെന്ന് കാണിക്കുന്നു.

പഠനത്തിനായി തിരഞ്ഞെടുത്ത 10 സ്വതന്ത്ര വേരിയബിളുകളിൽ ആറ് വേരിയബിളുകൾ ആശ്രിത വേരിയബിൾ മാർക്കറ്റിംഗ് ഫലപ്രാപ്തിയുമായി കാര്യമായി ബന്ധപ്പെട്ടിരിക്കുന്നുവെന്ന് കാൾ പിയേഴ്സൺ പരസ്പര ബന്ധ വിശകലനത്തിന്റെ ഫലങ്ങൾ വെളിപ്പെടുത്തി. വേരിയബിളുകൾ, അതായത്, ലഭിച്ച വില, വിപുലീകരണ കോൺടാക്റ്റ്, ഇ-മാർക്കറ്റിംഗിനോടുള്ള മനോഭാവം, ഡിജിറ്റൽ ടൂളുകൾ സ്വീകരിക്കൽ എന്നിവ 0.1% പ്രാധാന്യത്തിന്റെ തലത്തിൽ പ്രാധാന്യമർഹിക്കുന്നു, കൂടാതെ വിദ്യാഭ്യാസവും ഡിജിറ്റൽ ടൂളുകളെക്കുറിച്ചുള്ള അവബോധവും 1% പ്രാധാന്യത്തിന്റെ തലത്തിൽ പ്രാധാന്യമർഹിക്കുന്നു.

പരമ്പരാഗത വിപണനം ഏറ്റെടുക്കുന്ന ഭൂരിഭാഗം കർഷകരും അഞ്ച് (41.7%), ആറ് കക്ഷികൾ (41.7%) വിപണന ചാനൽ സ്വീകരിച്ചു, ഇ-മാർക്കറ്റിംഗ് ഏറ്റെടുക്കുന്ന കർഷകർ അഞ്ച് കക്ഷികളുമായി (63.4%) മാർക്കറ്റിംഗ് ചാനൽ സ്വീകരിച്ചു. പരമ്പരാഗത വിപണനം നടത്തുന്ന കർഷകരെ അപേക്ഷിച്ച് (₹1083.75) ഇ-മാർക്കറ്റിംഗ് നടത്തുന്ന കർഷകർക്ക് അവരുടെ ഉൽപ്പന്നങ്ങൾക്ക് ഉയർന്ന വില (₹1265.75) ലഭിച്ചു. ഇ-മാർക്കറ്റിംഗ് ഏറ്റെടുക്കുന്ന ഭൂരിഭാഗം കർഷകരും (71.7%) അവരുടെ ഉൽപ്പന്നങ്ങൾ

സംഭരിക്കുകയും ലാഭകരമായ വിലയ്ക്ക് വിൽക്കുകയും ചെയ്യുന്നു, അതേസമയം പരമ്പരാഗത വിപണനം ഏറ്റെടുക്കുന്ന കർഷകരിൽ 28.3 ശതമാനം മാത്രമാണ് തങ്ങളുടെ ഉൽപ്പന്നങ്ങൾ സംഭരിച്ച് മികച്ച വിലയ്ക്കായി കാത്തിരിക്കുന്നത്. ഇ-മാർക്കറ്റിംഗ് ഏറ്റെടുക്കുന്ന കർഷകരുടെ മാർക്കറ്റിംഗ് ഫലപ്രാപ്തി സൂചിക സ്കോറുകൾ (67.6) പരമ്പരാഗത വിപണനം നടത്തുന്ന കർഷകരേക്കാൾ (53.9) കൂടുതലാണെന്ന് കണ്ടെത്തി. ഇ-മാർക്കറ്റിംഗ് പ്ലാറ്റ്ഫോമുകളിൽ, സോഷ്യൽ മീഡിയയും (89.4) വെബ്സൈറ്റുകളും (72.4) ഇ-ലേലത്തേക്കാൾ (61) ഉയർന്ന മാർക്കറ്റിംഗ് ഫലപ്രാപ്തി സൂചിക സ്കോർ കാണിച്ചു.

ശരിയായ ഇടപാട് വിശദാംശങ്ങളുടെയും ബില്ലുകളുടെയും ലഭ്യതയും (83.3%) കൃത്യസമയത്ത് ഡെലിവറി ഉറപ്പാക്കലും വേഗത്തിലുള്ള പണമടയ്ക്കലും (80%) കർഷകർ മനസ്സിലാക്കുന്ന ഇ-മാർക്കറ്റിംഗിന്റെ പ്രധാന നേട്ടങ്ങൾ. ഇ-ലേലം കഴിഞ്ഞ് 20-30 ദിവസം വരെ പണമടയ്ക്കുന്നതിലെ കാലതാമസവും (66.7%) കർഷകർ ലേല ഏജൻസിയിൽ നിന്ന് കടം വാങ്ങാൻ വൈകിയതും (60%) നഷ്ടപരിഹാരം നൽകുന്നതിന് കർഷകർ മനസ്സിലാക്കിയ ഇ-വിപണനത്തിന്റെ പ്രധാന പരിമിതികൾ.

ഉൽപന്നങ്ങൾക്ക് കൃത്യസമയത്തും വേഗത്തിലും പണമടയ്ക്കൽ, കർഷകർക്കും വ്യാപാരികൾക്കും വെവ്വേറെ ഇ-ലേലം ഉറപ്പാക്കുന്നതിനുള്ള സംവിധാനങ്ങൾ, ഏലത്തിന് ആദായകരമായ അടിസ്ഥാന വില ഉറപ്പാക്കൽ, അനാരോഗ്യകരമായ പ്രവർത്തനങ്ങൾ കുറയ്ക്കുന്നതിന് സ്പൈസസ് ബോർഡിന്റെ ഇ-ലേല സംവിധാനത്തിന്റെ നിയന്ത്രണവും നിരീക്ഷണവും, രജിസ്ട്രേഷന്റെ അംഗീകാരം. സർക്കാരിന്റെ ഏലം ഭൂമി, ബാങ്കുകളുടെ വായ്പാ വിതരണത്തിലെ ഔപചാരികത കുറയ്ക്കുക, ഏലത്തിന്റെ മൂല്യവർദ്ധനവ് ഏറ്റെടുക്കുന്നതിന് കർഷക ഉൽപാദക സംഘടനകൾക്ക് (എഫ്പിഒ) പിന്തുണ നൽകുക, ഇ-വിപണനരംഗത്ത് വിപുലീകരണ

സേവനങ്ങൾ വിപുലീകരിക്കുക എന്നിവയാണ് പ്രധാന തന്ത്രങ്ങൾ. ഇ-മാർക്കറ്റിംഗിലെ നിയന്ത്രണങ്ങൾ മറികടക്കുക.

ലേലക്കാർക്കിടയിൽ ആരോഗ്യകരമായ മത്സരം പ്രോത്സാഹിപ്പിക്കുകയും ലേല വില ഇലക്ട്രോണിക് രീതിയിൽ നിരീക്ഷിക്കുകയും ചെയ്തുകൊണ്ട് കർഷകരുടെയും വ്യാപാരികളുടെയും പ്രയോജനത്തിനായി സ്പൈസസ് ബോർഡ് ഇ-ലേല സംവിധാനം ഏർപ്പെടുത്തിയതായി നിഗമനം ചെയ്യാം. എന്നാൽ ലാഭകരമായ വിലയുടെ അഭാവവും പണമടയ്ക്കാൻ കാലതാമസവും കാരണം നിലവിൽ കർഷകർ ഈ സംവിധാനത്തിൽ പൂർണ തൃപ്തരല്ല. മറ്റ് ഇ-മാർക്കറ്റിംഗ് പ്ലാറ്റ്ഫോമുകളായ സോഷ്യൽ മീഡിയ, വെബ്സൈറ്റുകൾ എന്നിവയുടെ വ്യാപ്തി ഏലം കർഷകർക്കിടയിൽ കൂടുതൽ ജനകീയമാക്കേണ്ടതുണ്ട്.

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