Sustainable Agriculture and Farmers' Empowerment

Edited by
Dr. Santhosh. P. Thampi

"*Sustainable Agriculture and Farmers' Empowerment* explores the facets of sustainable agriculture and its effects on empowerment of farmers. Sustainable Agriculture aims at achieving food security as well as enhancing the standard of living of farmers, in addition to conservation of natural resources. The book presents the concepts of agribusiness incubation; ICT in agricultural entrepreneurship; sustainable development; plant defense enhancement methods; green consumption; organic farming; biomass energy; ornamental nursery business; empowerment of farmers through sustainable farming; farm tourism and livelihood of women farmers; and improved methods of agricultural production. It also tries to present advanced technologies and innovations in the field of sustainable organic agriculture and the avenues available for empowerment of farmers through Agribusiness. This book is published as part of JAIVAM sponsored project of Mahatma Gandhi University. It is valuable for researchers, graduate students, post doctoral fellows and for all those who seek to understand the different dimensions of sustainable agriculture and empowerment of farmers."

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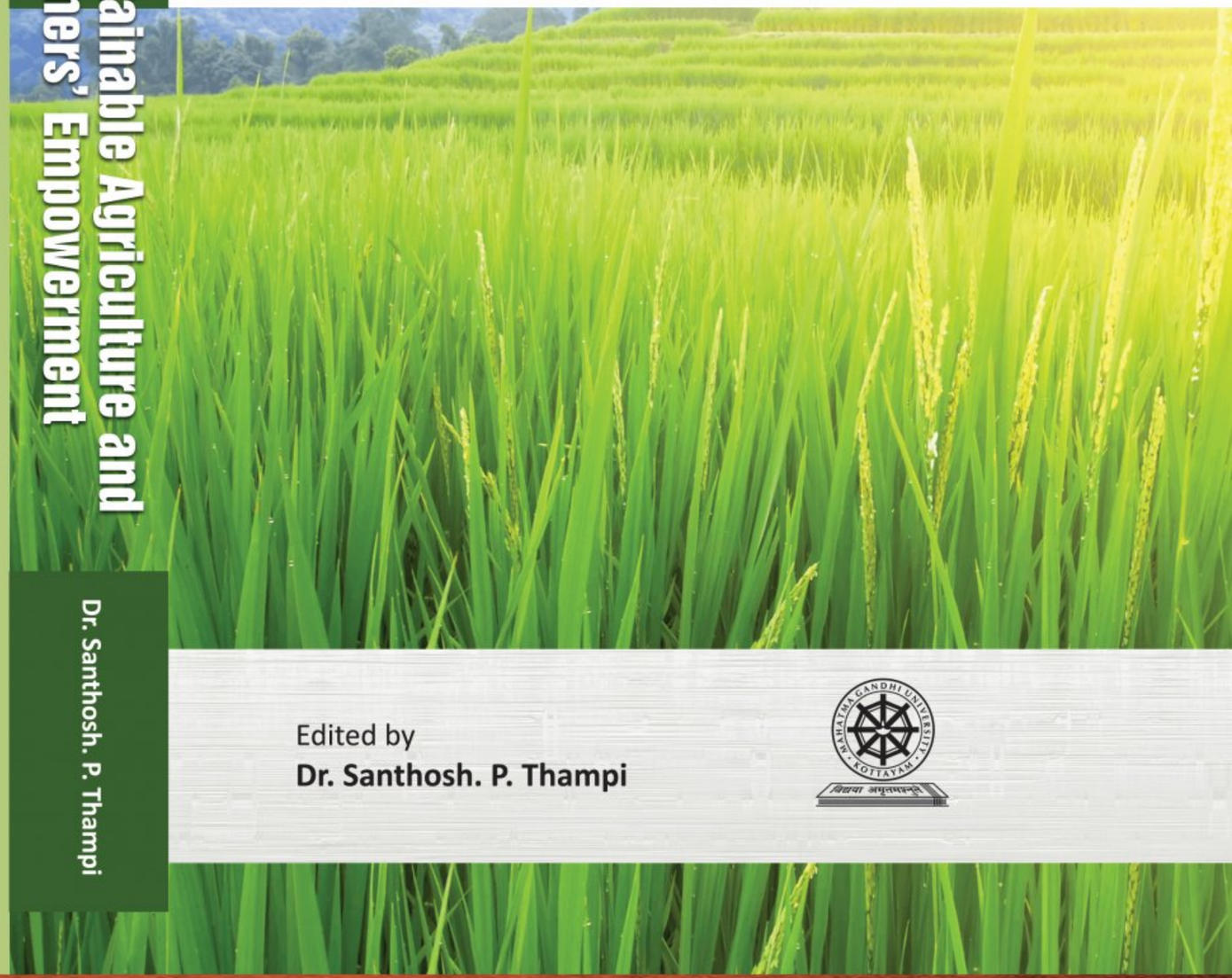

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Preface

Sustainable agriculture aims at food security and upgrading living standards of farmers along with conservation of natural resources. Farmers in India have to be more aware about organic farming and its advantages over conventional farming methods. Use of bio-fertilizers, biofuels, beneficial waste management etc. requires awareness and willingness on the part of farming community. In addition, advanced technologies are being introduced in the field that enable organic agriculture easier as well as economically viable. Moreover, increasing demand for organic food, fibre and by-products would certainly open up a new outlook in agribusiness sector. Organic agriculture aims at sustainable production and management of the farm while contributing to food security and biodiversity conservation. The smallholder farmers recognized organic agriculture as a cost-efficient means of crop and animal production that would address food insecurity and alleviate poverty given the continuous and rapid growth in the demand for organic produce. Smallholder organic farming becomes highly relevant to income generation if farmers become market-oriented and transform themselves into innovative and forward-looking entrepreneurs.

This book presents the concepts of agribusiness incubation; ICT in agricultural entrepreneurship; sustainable development; plant defence enhancement methods; green consumption; organic farming; biomass energy; ornamental nursery business; empowerment of farmers through sustainable farming; farm tourism and livelihood of women farmers; and improved methods of agricultural production. It brings together diverse research outputs pertaining to various aspects of sustainable agriculture. It also tries to present advanced technologies and innovations in the field of sustainable organic agriculture and the avenues available for empowerment of farmers through Agribusiness.

This book is published as part of JAIVAM sponsored project of Mahatma Gandhi University. Hope this book will be helpful for researchers, graduate students, and post doctoral fellows and for all those who seek to understand the different dimensions of sustainable agriculture and empowerment of farmers.

Dr. Santhosh. P. Thampi

CONTENTS

Chapter 6

Information and Communication Technology (ICT) and Attitude of Youth towards Agriculture Entrepreneurship - An Evidence from Kerala

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6.1 Introduction

It is estimated that twenty percentage of the total world population is youth, and by 2050 the number of young people is expected to reach two billion [1]. Registrar General & Census Commissioner in a survey have identified that nineteen percentage of the total population of India constitutes youth. One million Indians are turning 18 years old each month [2]. Agriculture sector is one of the very important sectors in development. It is considered as the world's largest job provider, engaging more than 40% of the global workforce. Engaging the youth in agriculture can create great impact in the economy. Re organization of the current workforce in the field of agriculture is important. This can lead to more productive and sustainable transformation of agriculture sector. There is a high potential for involvement of youth in agricultural sector. There exists an untapped entrepreneurial talent of the youth in agriculture. It is found that entrepreneurial intentions are shown by youth more than that by adults worldwide. Efficient and effective use of communication technologies in agriculture can make the youth more connected to agriculture and thereby providing opportunities in agri-

entrepreneurship [3]. Okello et al. in their study revealed that communication and internet technologies have the potential for improving efficiency of the youth by enhancing the entire value chain of agri business [4]. Information and Communication Technology (ICT) tools like mobile phones, internet and social media usage by youth can be connected to agri business for sourcing new information. Usage of ICTs in agriculture is an advantage for the youth since they have the interest and excitement to try new things, and they are always alert and knowledgeable about the new ICT updates. There are several studies giving evidence that use of ICT can help to eradicate poverty [5]. Uses of ICT in agriculture have been empirically studied by several researchers like Ogutu et al and Nyaga [6][7]. Similarly, youth and their participation in agriculture have been evidently studied by Issa et al. and Akpan et al. [8][9]. But there is dearth of studies which empirically analyses the use of ICT among youth and agri entrepreneurship. This study therefore examined the use of ICT tools in agriculture by youth and the relationship with attitude towards agri entrepreneurship.

Information and Communication Technology consists of software or hardware tools used to process data to generate information. Communication technologies are also included in ICT which are used to transfer data from one source to another [10]. Mobile phones, television, telephone, and radio which use analog data are also considered as ICT tools [11]. These tools can help to process and disseminate information for the sake of agro-based entrepreneurs [12]. An entrepreneur is referred to as a person who is engaged in any industrial activity. Farmers can also be considered as entrepreneurs. The entrepreneurship committed by farmers or any general public related to farming business is called agri- entrepreneurship. The use of ICT can further enhance the efficiency of agri entrepreneurship. The purpose of this paper is to explain how Information and Communication Technology affects the attitude of youth towards agriculture entrepreneurship, especially in the state of Kerala.

6.2 Literature Review

A review of earlier literatures was done with the purpose of getting better understanding of ICT and the attitude of youth towards Agricultural Entrepreneurship. The youth participation in agri business has to be increased. Modern farming with the use if ICT is not embraced much by aged farmers [13]. Young generation is well versed with the use of information and communication technologies [14]. If this knowledge is used in favour of agri business, they may become more interested towards it and this can increase their participation which in turn would improve efficiency of agri entrepreneurship. ICT in agripreneurship is an area which was studied by lot of researchers [15][16]. ICTs are used in agriculture entrepreneurship in almost all countries nowadays and the usage of ICT in agriculture make agripreneurship more attractive to the youth [17][18]. Use of ICTs in agriculture does not necessarily need tech- savvy youth but those who can think out-of-the-box with creativity. Two main functions that can increase the attractiveness of ICT in agriculture are that ICTs can be used to engage youth in agriculture and can change their current perception about it [19]. This can also be used for the automation of agricultural activities [20]. Lack of use of technological advancement may lead to decrease in the productivity in this sector [21].

ICT has helped people to communicate and improve access to information in this digital era. In agricultural sector also ICT has paved ways to enhance and improve entrepreneurial practices. To attract youth to get involved in agriculture, it is required to make the agricultural profession ICT-based and a knowledge-intensive sector. Entrepreneurial and innovative efficiency of youth can create better opportunities to revitalize and enhance local agriculture entrepreneurship. To make youth generation more involved and engaged in agriculture entrepreneurship they must be actively encouraged. Training and education, financial support, family support, institutions, ICT tools etc can attract them towards agriculture entrepreneurship. New and innovative agricultural practices are now

being implemented using Information and communication technologies around the world. Young generation is now mastering these technologies and are trying to apply them to agriculture to increase productivity and solve challenges. At the same time, these technologies can help demonstrate to youth that agriculture can be a viable and profitable business opportunity, increasing the desirability of agriculture entrepreneurship.

ICT in agriculture entrepreneurship is a new field which involves application of innovative technologies in agricultural activities. The advancements in ICT are often utilized for providing accurate, timely, relevant information and services to the farmers, thereby facilitating an environment for more remunerative agriculture. But there is a requirement to know about how far the ICT initiatives are ready to address the farmers need in order that better solutions are often developed to address those unmet needs [22]. A documentation of innovative agriculture entrepreneurship technologies used in agriculture projects is done in the study of Saravanan [23] and also in the Indian case studies by Saravanan et al. [24].

ICT can change agriculture in a number of ways and many a times, these changes come from unexpected quarters. Agriculture and its allied sectors are continuously being benefited from the technological innovations. The Facebook is one such platform that has empowered the turmeric growers of India and contributed to solve their problems. Mobile phones do wonders in every sphere and with the innovative ideas-turned-into-reality by youths, agriculture sector will be benefited in a big way.

A review of earlier literatures was done with the purpose of getting better understanding of effect of ICT and the attitude of youth towards Agricultural Entrepreneurship.

There is a distress in youth participation towards agri business, this can lead to decreased productivity and modern farming with the use if ICT is not embraced much by aged farmers [13]. Young generation is now-a-days well versed with the use of information and communication

technologies [14]. If this knowledge is used in favour of agri business they may become more interested towards it and this can increase their participation and in-turn improve efficiency of agripreneurship. ICT in agripreneurship is an area which was studied by lot of researchers [15,16]. ICTs are used in agriculture entrepreneurship in almost all countries nowadays and the usage of ICT in agriculture make agripreneurship more attractive to the youth [17,18]. Use of ICTs in agriculture does not necessarily need tech- savvy youth but those who can think out-of-the-box with a dash of creativity. Two main functions that can increase the attractiveness of ICT in agriculture are that ICTs can be used to engage youth in agriculture and can change their current perception about it [19], it can also be used for the automation of agricultural activities [20]. Missing out the use of technological advancement can decrease the productivity and harness the sector [21].

ICT has helped people to communicate and improve access to information and data in this digital era. In agricultural sector also ICT has paved a way to enhance entrepreneurial practices and improve the current system and needs. To attract youth to get involved in agriculture, we need to make the agricultural profession ICT-based and a knowledge-intensive sector. Entrepreneurial and innovative efficiency of youth can create better opportunities to revitalize and enhance local agriculture entrepreneurship. To make youth generation more involved and engaged in agriculture entrepreneurship they must be actively encouraged. Training and education, financial support, family support, institutions, ICT tools etc can bring them towards agriculture entrepreneurship. New and innovative agricultural practices are now being implemented using Information and communication technologies around the world. Youth generation are now mastering these technologies and are trying to apply them to agriculture to increase productivity and solve challenges. At the same time, these technologies can help demonstrate to youth that agriculture can be a viable and profitable business opportunity, increasing the desirability of agriculture entrepreneurship.

ICT in agriculture entrepreneurship is a new field which involves application of innovative technologies in agricultural activities. The advancements in ICT are often utilized for providing accurate, timely, relevant information and services to the farmers, thereby facilitating an environment for more remunerative agriculture. But there's a requirement to know on how far the ICT initiatives are ready to address the farmers need in order that better solutions are often developed to address those unmet needs [22]. A documentation of innovative agriculture entrepreneurship technologies used in agriculture projects is done in the study of Saravanan, 2010 [23] and also Indian case studies by Saravanan et al., 2011 [24].

ICTs can change agriculture in a number of ways and many a times, these changes come from unexpected quarters. Agriculture and its allied sectors are continuously being benefited from the technological innovations brought into the world and albeit the numbers are few, the youth has been fixing examples everywhere the planet. The Facebook is one such platform that has empowered the turmeric growers of India and done quite solving their problems. Mobile phones do wonders in every sphere and with the innovative ideas-turned-into-reality by youths, agriculture is additionally benefited. J. K., Schmidt, F.L., & Keyes, C.L. (2002). Well-Being in the Workplace and its Relationship to Business Outcomes: A Review of the Gallup Studies. In C.L. Keyes & J. Haidt (Eds.), Flourishing: The Positive Person and the Good Life (pp. 205-224). Washington D.C.: American Psychological Association.

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6.3 Research Gap

Several researchers have revealed that the use of Information and Communication Technology can provide a scope for improvement in the development of agricultural entrepreneurship in India. But the role of

youth and agricultural entrepreneurship has yet to be documented particularly in the state of Kerala. This study tries to explain how Information and Communication Technology affects the attitude of youth towards agriculture entrepreneurship, especially in the state of Kerala.

6.4 Objectives of the study

Based on the research gap identified from the existing literature, this study focuses on analyse the attitude of youth having ICT skills towards agricultural entrepreneurship in the state of Kerala.

Following are the specific objectives of the study:

i) To study about the participation of youth in agricultural entrepreneurship.

ii) To examine relationship between respondents' demographic characteristics and attitude towards agricultural entrepreneurship.

iii) To study about the attitude of youth having ICT skills towards agricultural entrepreneurship

6.5 Hypotheses

H1: There is a significant positive relationship between respondents' demographic characteristics and attitude towards agricultural entrepreneurship.

H2: There is a significant positive relationship between ICT skills of youth and their attitude towards agricultural entrepreneurship.

6.6 Research Methodology

Sample selection and data collection

The study is descriptive in nature. It was conducted by collecting data from youth located in the districts of Thiruvananthapuram, Kollam and Ernakulam of Kerala state. Fifty-five respondents were selected from each of these districts. Hence a total of 165 respondents from the three districts were included in the study. Primary data on demographic characteristics, use of ICT and attitude towards agri-entrepreneurship were collected by using a well-structured

questionnaire. Attitude of youth towards agriculture entrepreneurship was measured by using the adapted version of the scale developed by G. Shivacharan [25].

6.7 Results

Descriptive statistics

The respondents demographic profile is presented in the Table 1 below.

Table 6.1 Demographic characteristics

Variable	Percentage
Age	
(15-20)	54.5
(21-24)	37
(24-29)	8.5
Gender	
(male)	53.5
(female)	45.5
Education	
(SSLC)	45.5
(defree)	48.5
(PG)	6.1
Marital Status	
(married)	74.5
(unmarried)	24.5
Family occupation	
(agriculture sector)	19.4
(non-agri sector)	80.6
Family size	
(small)	52.7
(medium)	40.6
(large)	6.7
Status of the respondant	
(student)	67.3
(farming)	7.9
(employed)	10.3
(unemployed)	14.5

Figure 6.1 Percentage analysis of youth participation in agricultural enterprises

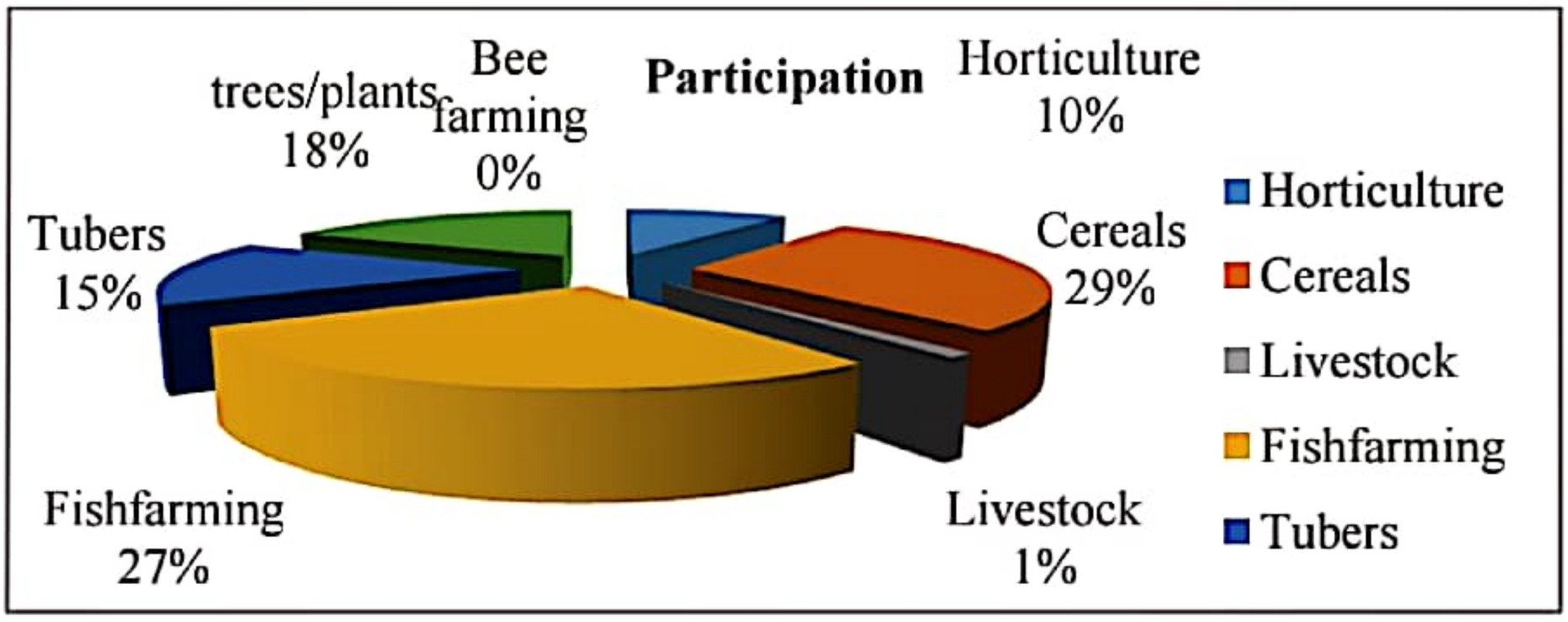
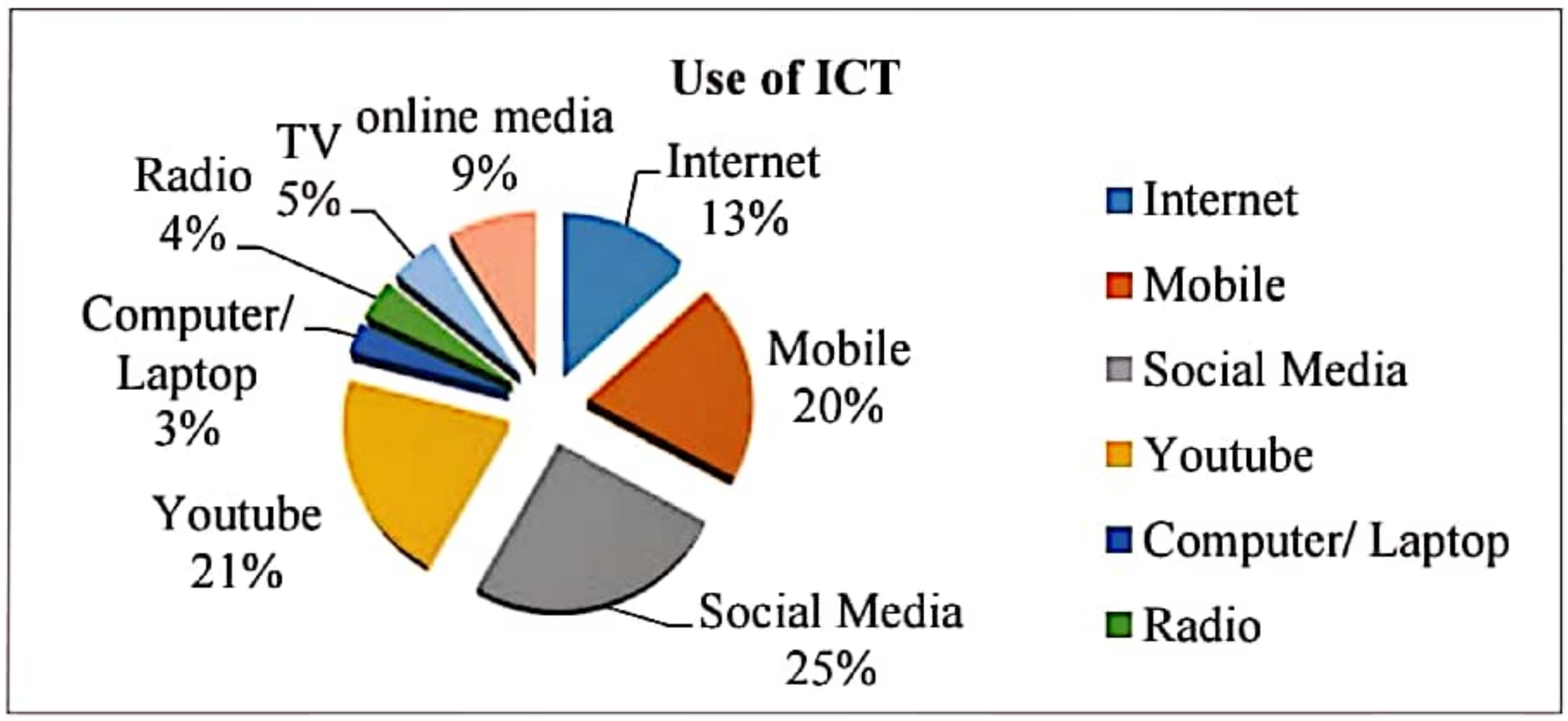
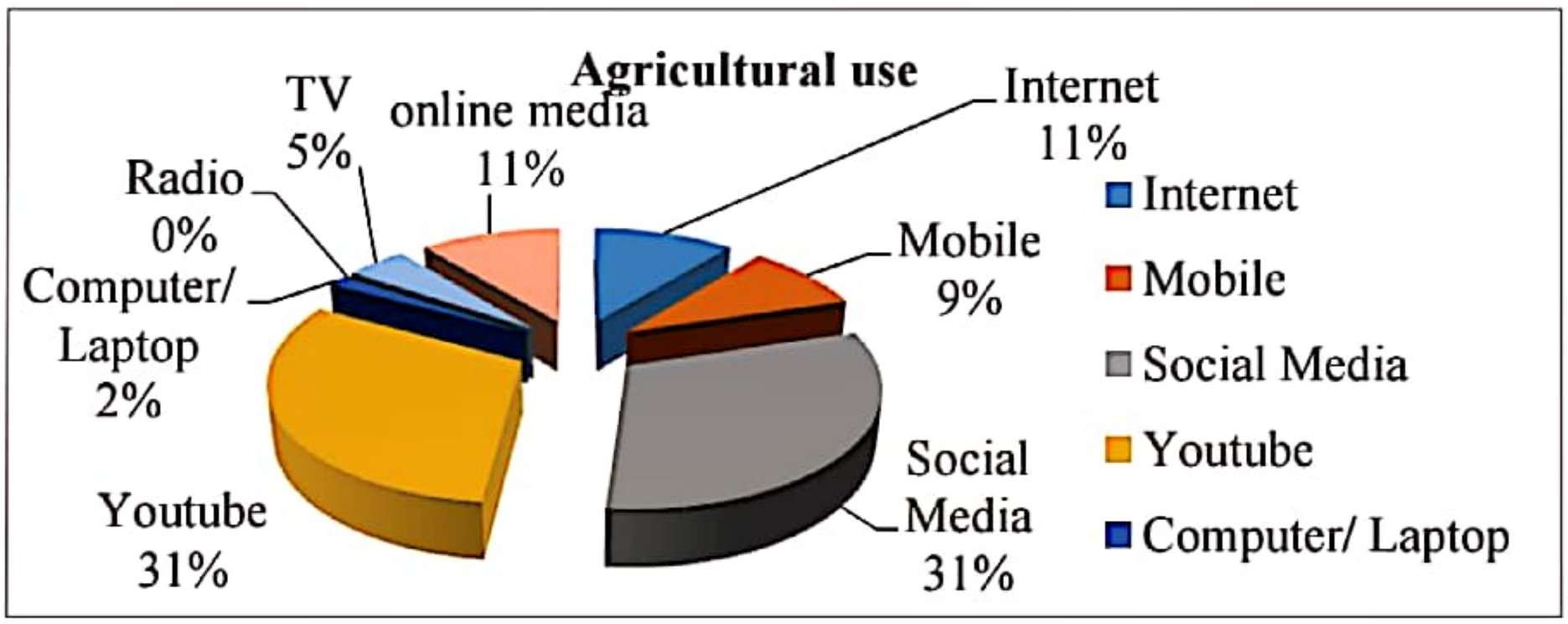


Figure 6.2 Percentage analysis of use of ICT in general and for agricultural entrepreneurship activities





Reliability analysis

Kolmogorov-Smirnov test was done to identify the statistical normality of the data. The significance level was found to be less than .05 and thus the data was analyzed as normal data. The reliability was assessed by examining reliability coefficients. The data passed the internal consistency and reliability test as the Cronbach's alpha values were all greater than 0.89.

Correlation analysis

Correlation analysis was conducted on the data to find whether a significant relation exist between the variables. The findings of the analysis are given below. The analysis shows that there exists a positive significant relationship of 0.649 with p value less than 0.05 between youth having ICT and their attitude towards agricultural entrepreneurship.

Table 6.2 Correlations

		ICT	AF
ICT	Pearson Correlation	1	.649**
	Sig. (2-tailed)		.000
	N	165	165
AF	Pearson Correlation	.649**	1
	Sig. (2-tailed)	.000	
	N	165	165
**. Correlation is significant at the 0.01 level (2-tailed).			

Regression analysis

Multiple regression analysis was used to analyse the significance of the variables. The analysis revealed that possessing ICT sills has a significant positive relationship with their attitude towards agricultural entrepreneurship. The overall regression model was significant for the predictor variable (ICT), the significance level

<0.05 and R^2 as 0.42. The result indicates that ICT skills explain 42% of the variance in attitude towards agricultural entrepreneurship.

Table 6.3 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.649[a]	.421	.418	7.67581
a. Predictors: (Constant), ICT				

Table 6.4 ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6993.356	1	6993.356	118.696	.000[b]
	Residual	9603.638	163	58.918		
	Total	16596.994	164			
a. Dependent Variable: AF						
b. Predictors: (Constant), ICT						

Table 6.5 Relationship of demographic characteristics and Attitude towards Agriculture Entrepreneurship

Characteristics	Attitude towards Agriculture Entrepreneurship (p-value)
Age	.466
Gender	.649
Education	.009
Maritalstatus	.816
FamilyOccupation	.003
Familysize	.938
Status	.016

Relationship between demographic characteristics of respondents and their attitude towards Agriculture Entrepreneurship was examined by using regression analysis. The results of p value of each demographic variable on attitude towards agriculture Entrepreneurship was analyzed and the results revealed that age, gender, marital status, family size have no significant correlation with attitude towards agricultural entrepreneurship. But factors such as education, family occupation and status of the respondents have a significant relationship with attitude towards agricultural entrepreneurship.

6.8 Conclusion

The results of the study revealed that possessing ICT skills has a significant positive impact on the attitude towards agricultural entrepreneurship among youth respondents. Age, gender, marital status, family size has no significant correlation with attitude towards agricultural entrepreneurship. Factors such as education, family occupation and status of the respondents have a significant relationship with attitude towards agricultural entrepreneurship. The study gives insights to the fact that usage of ICT tools can enhance and give more encouragement to the young generation in engaging themselves in agriculture entrepreneurship. It is suggested that efforts are to be taken to attract, train and encourage youth to effectively use ICT based tools for developing more favorable attitude towards agriculture entrepreneurship. It can be concluded that, if effectively used, ICT skills can help to create a positive attitude towards agricultural entrepreneurship which in turn may bring many changes in the agriculture sector.

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