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Digital India: Opportunities and challenges of farmers

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Abstract

Digital India was launched by Prime Minister Sri Narendra Modi on 1st July 2015 with an objective of connecting rural areas with high-speed Internet networks and improving digital literacy. The vision of Digital India programme is inclusive growth in areas of electronic services, products, manufacturing and job opportunities etc. and it is centered on three key areas – Digital Infrastructure as a Utility to Every Citizen, Governance & Services on Demand and Digital Empowerment of Citizens.

Agriculture plays a vital role in Indian economy and the role of farmer in Indian economy is very high. Even to this day, after so many advancements in various fields India is identified as an agrarian economy. Over 70% of rural households depend on agriculture. Agriculture contributes about 17% to total GDP and provides employment to over 60% of the population. Sustainable agriculture and use of technology for socio-economic development is the topic of focus. The potential for knowledge sharing among small and marginal farmers and its impact in terms of increased productivity and well-being of the community has become crucial in present conditions. The Government of India under Bharat Broadband Network Limited (BBNL) is concentrating to connect 250,000 villages and is planning to create 28,000 seats of BPOs in various states and set up at least one Common Service Centre in each of the gram panchayats in the state. It has planned to connect 550 farmer markets in the country through the use of technology. There are 245,000 villages across 36 states and union territories of India. Phase-I, which connected 100,000 villages, was completed in December 2017. Remaining villages will be connected under Phase-II by December 2018. Though there are many plans formulated at strategic level, the practical implementations are not short of certain limitations.

Hence, in view of the government initiative to make India digitalized, the present study is undertaken to investigate the opportunities, limitations and challenges of farmers to adopt themselves to Digital India Programme in Rayalaseema region. The study revealed the challenges, problems and limitations faced by farmers. Lack of education, reliable market information, initiation from their own children, ignorance still persist as the major challenges that are to be addressed by the co-ordinated efforts of farmers themselves and government authorities. The other major challenges faced by Indian farmers are: lack of technical support from Government authorities, timely finance from Banks and Financial Institutions, prompt availability of quality seed/pests, inadequate insurance facilities, lack of support prices by Government for many agricultural products, improper marketing facilities, improper and untimely distribution of subsidies to needy farmers, lack of support from NGO's and Government., etc. This study contributes factual information with a critical analysis of the issues involved in the implementation of Digital India Programme.

Keywords: digital India, farmers, opportunities, challenges

1. Introduction

Digital India was launched with an objective of connecting rural areas with high-speed Internet networks and improving digital literacy. The Government of India specifically targets 9-pillars viz., Broadband Highway, Universal Access to Mobile Connectivity, Public Internet Access Programme, E-Governance, reforming government through Technology, E-Kranti, electronic delivery of services, Information for all, Electronics manufacturing, IT for jobs and Early Harvest Programmes. There are some other New Digital Services by Government of India like- Digital Locker, e-Education, e-Health, e-Sign and National Scholarship Portal. There are both Front-end Government Online Services and Back-end digitization processes. The vision of Digital India programme is inclusive growth in areas of electronic services, products, manufacturing and job opportunities etc and it is centered on three key areas – Digital Infrastructure as a Utility to Every Citizen, Governance & Services on Demand and Digital Empowerment of Citizens.

There are facilities to digitally empower citizens and especially to farming community like Digital Locker-that will help farmers to store important personal documents. E-Sampark, a vernacular e-mail service where e-mail services are provided in vernacular language is among the many. On the training front- PM Gramin Digital Saksharata Abhiyan launched with an

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outlay of Rs.68 crores with an objective of making 6 crores households digitally literate by March 2019.

The role of farmer in Indian economy is very high. Even to this day, after so many advancements in various fields India is identified as an agrarian economy. Sustainable agriculture and use of technology for socio-economic development is the topic of focus. The potential for knowledge sharing among small-scale farmers and its impact in terms of increased productivity and well-being of the community has become crucial in present conditions. The Government of India under Bharat Broadband Network Limited (BBNL) is concentrating to connect 250,000 villages and is planning to create 28,000 seats of BPOs in various states and set up at least one Common Service Centre in each of the gram panchayats in the state towards Digital India. It has planned to connect 550 farmer markets in the country through the use of technology. Though there are many plans formulated at strategic level, the practical implementations are not short of certain limitations. Hence, in view of the government initiative to make India digitalized, the present study is undertaken to investigate the opportunities, limitations and challenges of farmers to adopt themselves to Digital India Programme in Rayalaseema region. The study revealed the problems and limitations faced by farmers. Lack of education, inaccessibility of resources, information, low initiation, ignorance still persist as the major challenges that are to be addressed by the co-ordinated efforts of farmers themselves and government authorities. This study contributes factual information regarding the critical issues involved in the implementation of Digital India Programme.

Digital India program and farming

Digital India" project was launched to empower citizens with e-access to government services and livelihood related services, among others. The project has three core components, viz. digital infrastructure, digital services and digital literacy. Mobile phone is the preferred delivery medium with focus on m-Governance and m-Services. The m-Agriculture and m-Gram Bazar, out of the seven components covered under m-Services, directly impact agricultural extension and marketing services. A very proactive action plans are being taken by the government to promote farming activities with the support of Digital India Program.

The main objectives of digital India program and farming in brief are listed below;

1. To create a virtual agriculture market
2. To ensure more farmers get access to crop insurance scheme
3. To encourage use of modern technology and equipment
4. To increase reach of Soil Health Card Scheme
5. To set up irrigation projects in rural areas
6. Early Harvest Programmes

The farmers benefit through Digital India in many ways such as agriculture consultation, digital green, online agriculture markets to trade across the nation. Without much paper work the government services are rendered to farmers through Digital India Program. By 2019, it is assumed that the two way platform will be created between Farmers and Buyers.

- Farmers will have more options to sell their produce.
- Span of market will also increase
- Tax reduction benefits can be availed by the farmers.
- Selling through online makes it easier for the farmers to sell their produce.

- Eradication of the mediators which will increase the profit margin of farmers and it will also benefit the end product customer also.
- This online trade will be free of cost which impacts the producers income.
- A support of agency would be there to monitor the smooth functioning in online trading, and also look after the transportation facilities after the online purchase/sell.

The farmer has to have a minimum understanding and awareness of the technology, he need support to understand the technology and its benefits to the farming activities. There are various factors which act as hindrance in the successful implementation of Digital India Program. Taking in to account the above mentioned problems and challenges that may be encountered by the farmers to reap the advantages of Digital India Program a small survey is conducted. This survey is a bird view taken up in Rayalaseema region. Few farmers randomly have been picked as the respondents for the study and to draw conclusions.

1.1 Objectives of the study

1. To assess the impact of demographic factors of the farmers on their level of awareness on Digital India (technology).
2. To analyze the influence of demographic factors of the farmers on their approach and practices in fostering practices under Digital India Program.
3. To find the association between the farmers level of satisfaction on the authorities approach towards the implementation of Digital India Program.
4. To find out the impact of experience and age of farmers awareness and knowledge on digital India initiatives.
5. To create a sense of awareness regarding Digital India and its benefits to the farmers.

2. Review of Literature

Krishna Reddy. P and R. Ankaiah (2005) in a survey stated that the Indian farming community is facing multitude problems to maximize crop productivity. One of them is that expert/scientific advice regarding crop cultivation is not reaching the farming community in a timely manner. Though India has valuable agricultural knowledge and expertise, a wide information gap exists between research and practice.

Annemie Maertens, Christopher B Barrett (2012) in a study referred that technological improvements, perhaps especially in agriculture, drive sustainable advances in labour productivity, incomes, food security and general economic growth. More recently, economists have started to explore how social networks affect farmers' learning about and uptake of new technologies.

Robert Chambers (1987) discussed the transfer-of-technology (TOT) model of agriculture research in which scientists largely determine research priorities, develop technologies in controlled conditions, and hand them over to agricultural extension to transfer to farmers.

3. Methodology

This section deals with the methodology adopted for the study. It includes, research approach, design for the study, sample and sampling technique, tools to assess awareness and approach of the farmers towards Digital India Program, pilot study, data collection procedure and data analysis.

3.1 Research approach

Survey method is adopted to determine the awareness and level of satisfaction of farmers in understanding and adopting technology in farming activities.

3.2 Study area and Population

The area of study is the Southern Zone of Andhra Pradesh which covers three districts viz., Chittoor, YSR Kadapa and SPSR Nellore.

3.3 Sampling frame

This is an exploratory study and a casual research with cross sectional data that involves farmers for whom the Digital India is going to benefit.

3.4 Study tool

A structured tool with four point Likert scale (Strongly agree-SA, Agree-A, Disagree-D Strongly disagree-SD) and is drafted to find out the awareness and level of satisfaction of farmers in learning technology to impact farming practices and also their socio demographic information.

3.5 Sampling Technique and Sample Size

A Stratified Random Sampling technique has been used to collect data from three districts of Southern Zone of Andhra Pradesh in such a way that 100 sample from each district, hence the total sample became 300 farmers.

3.6 Statistical Analysis

Collected data is analysed using appropriate Statistical tools like Frequency tables, Cross tabulations, Percentages, Chi-square tests, and diagrammatic representations using SPSS version 20. Obtained results are properly concluded at respective levels of significance.

4. Results and Discussion

Digital India Program to enhance the efficiency of farming activities has quite number of challenges. The challenges and problems faced by the receiver i.e. the farmer should integrate his activities with the program to bring forward the expected positive outcomes. The following analysis brings forth the practical and factual information regarding the challenges and opportunities of the farmers in Rayalaseema region of Andhra Pradesh. An analysis is made to find the level of knowledge and confidence of farmers regarding Digital India Program. A special focus is also made to assess the level of satisfaction of farmers on the authorities' response in supporting them to do well in farming.

4.1 Profile of the respondents

Table 4.1: Profile of the Farmers

Gender	N	%	Farming Experience	N	%
Male	120	60.0	Below 10 years	44	22.0
Female	80	40.0	11-30years	60	30.0
Age			Above 30 years	96	48.0
Below 30 years	52	26.0	Income		
30-50 years	66	33.0	Below 20,000	104	52.0
More than 50 years	82	41.0	21,000 - 50,000	54	27.0
Education			51000 - 100, 000	24	12.0
Primary education	83	41.5	Above 100,000	18	9.0
Secondary education	72	36.0	Education of family		
Intermediate and Graduation	45	22.5	Only 1 person	94	47.0
			Two persons	78	39.0
			Three and more	28	14.0
			Total	200	100.0

The table 4.1 displays the socio-demographic factors of the farmers of Rayalaseema region. Among the farmers taken up for the study, 60 per cent of the farmers are male and 40 per cent belong to female gender. 41 per cent of the farmers are more than 50 years of age, 33 per cent belong to the age group of 30 -50 years and 26 per cent are below 30 years of age. Among the farmers, farmers with primary education are of 42 per cent, secondary education is 36 per cent and farmers with intermediate and graduation are 23 per cent. When the experience is considered, it is identified that 22 per cent of the farmers have below 10 years of experience in farming, 30 per cent have 11-30 years of experience and 48 per cent have above 30 years of experience. The income levels of the farmers are also classified and are noticed that 52 per cent of the farmers have below Rs.20,000 income levels, 27 per cent of the farmers have income levels ranging from Rs.21,000 to Rs.50,000, 12 per cent have income ranging from Rs.51,000 to Rs.1,00,000 and only 9 per cent of the farmers have above Rs.1,00,000 income levels. It is also imperative to take into account the education of the farmers' family members. In 47 per cent of the farmers families' only one person is educated, 39 per cent of the farmers have two educated persons in their families, 14 per cent of the farmers' family have three and more educated members in their families.

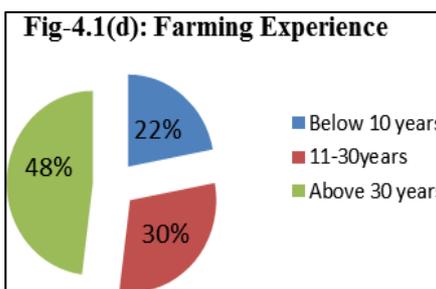
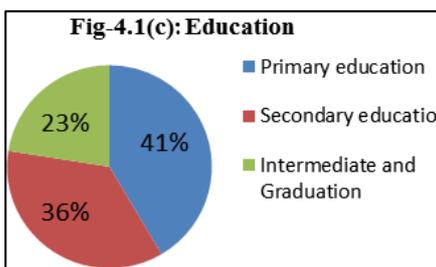
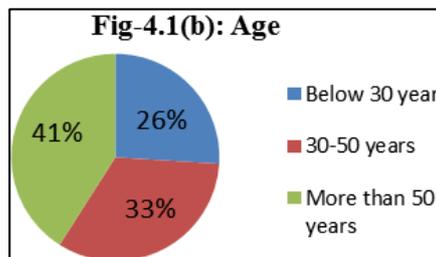
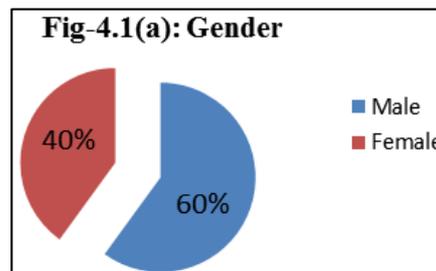


Fig 4.1: Profile of the Farmers

The above figure 4.1 exhibits the socio-demographic profiles such as age, gender, education, level of income, education, etc. of the farmers.

4.2 Influence of gender on farmers’ opinion on digital India

Gender is considered to be one of the significant factors

Table 4.2: Farmers’ level of awareness on digital India by gender

Chi-square value	p-value	Level of Awareness on Digital India				Total		
		Highly aware	Moderately Aware	Moderately unaware	Highly unaware			
5.858	0.119	Male	16	46	8	50	120	
			13.30%	38.30%	6.70%	41.70%	100.00%	
		Female	16	32	10	22	80	
			20.00%	40.00%	12.50%	27.50%	100.00%	
		Total		32	78	18	72	200
				16.00%	39.00%	9.00%	36.00%	100.00%

The gender impact on the level of awareness of the farmers on Digital India is presented in table 4.2 where it clearly indicates that gender has no impact on the level of awareness of the farmers. The application of chi-square test clearly states that there is no significant impact of gender on the level of awareness of the farmers on Digital India. Both male and female genders are equal with their level of awareness on Digital India as it can be noticed that 38 per cent of the male farmers and 40 per cent of the female farmers are moderately aware.

which impact the opinions of the individuals as they share distinct social, economical, physical and emotional features. Hence, an analysis is carried out to assess the influence of gender on the level of awareness, knowledge and interests among the farmers with regard to Digital India.

Gender does impact the knowledge levels of the individuals. The same is assessed to find its impact with regard to technology also. It is evident from the above table that the gender has an impact on the level of knowledge of the farmers. Male farmers (41 per cent) have low level of knowledge and female farmers (58 per cent) have low level of knowledge on technology. The same is proved by the application of chi-square test at 5% level of significance. Refer fig4.3 for clear evidence.

Table 4.3: Farmers’ Level of Knowledge on technology by gender

Chi-square value	p-value	Level of Knowledge on technology			Total		
		Low	Medium	High			
5.524*	0.043	Male	49	49	22	120	
			40.80%	40.80%	18.30%	100.00%	
		Female	46	22	12	80	
			57.50%	27.50%	15.00%	100.00%	
		Total		95	71	34	200
				47.50%	35.50%	17.00%	100.00%

*significant at 5% level

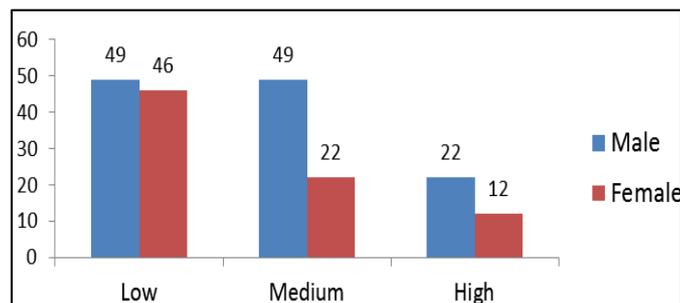


Fig 4.3: Farmers’ Level of Knowledge on technology by gender

Table 4.4: Farmers’ Interest in learning about technology by gender

Chi-square value	p-value	Having Interest in learning about technology				Total		
		Highly interested	Interested	Somewhat interested	Not interested			
10.621*	0.014	Male	52	60	2	6	120	
			43.30%	50.00%	1.70%	5.00%	100.00%	
		Female	46	24	6	4	80	
			57.50%	30.00%	7.50%	5.00%	100.00%	
		Total		98	84	8	10	200
				49.00%	42.00%	4.00%	5.00%	100.00%

*significant at 5% level

The learning process takes place for an individual if there is an inherent interest in him or her. Hence an analysis is made to find out the farmers interest to learn about technology and further a classification is made on gender basis. The results from the above table 4.4 demonstrate that gender has a significant influence on farmers’ interest in learning about the technology. Application of the chi-square test shows that 43 per cent of the male farmers are highly interested where as 58 per cent of the female farmers is highly interested in learning about technology.

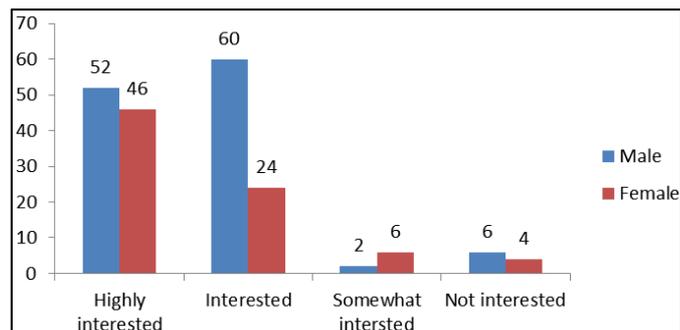


Fig 4.4: Farmers' interest in learning about technology by gender

Farmers’ interest in learning about technology by gender is depicted in the above fig-4.4 and it is clearly shown that male

farmers have more interest in learning technology compared to female farmers.

Table 4.5: Farmers' Satisfaction on the accessibility of the Authorities in need by gender

Chi-square value	p-value	Level of satisfaction on Govt. authorities help/support				Total
		Highly dissatisfied	Dissatisfied	Satisfied	Highly Satisfied	
10.442*	0.015	56	50	14	0	120
		46.70%	41.70%	11.70%	0.00%	100.00%
Gender	Male	32	36	6	6	80
	Female	40.00%	45.00%	7.50%	7.50%	100.00%
Total		88	86	20	6	200
		44.00%	43.00%	10.00%	3.00%	100.00%

*significant at 5% level

Farmers in order to have an understanding and awareness on technology and Digital India, they should have accessibility of the authorities. Authorities play a key role disseminating the information about the digital India. The above table 4.5 displays the level of satisfaction of the farmers on the accessibility of the authorities in the time of need and support by gender. It can be identified that the female farmers (7.5 per cent) are satisfied than the male farmers (11.7 per cent). Chi-square test results also indicate the same. The fig-4.5 exhibits evidently that male farmers’ are highly dissatisfied than female farmers.

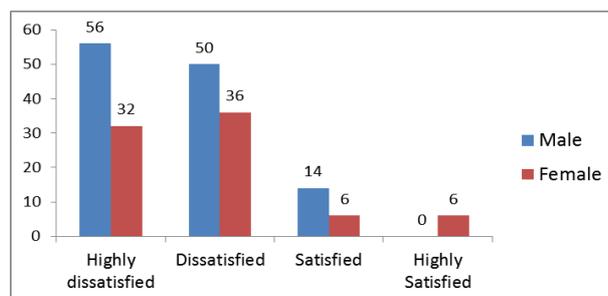


Fig 4.5: Farmers' satisfaction on Govt. authorities help/support by gender

Table 4.6: Farmers' Opinion with regard to reliability on technology by gender

Chi-square value	p-value	Opinion with regard to reliability on technology				Total
		Strongly disagree	Disagree	Agree	Strongly agree	
28.083**	0.000	20	12	48	40	120
		16.70%	10.00%	40.00%	33.30%	100.00%
Gender	Male	32	18	22	8	80
	Female	40.00%	22.50%	27.50%	10.00%	100.00%
Total		52	30	70	48	200
		26.00%	15.00%	35.00%	24.00%	100.00%

**significant at 1% level

The basic attitude on the usage and reliability of the farmers has more influence on the farmers’ opinion on the same. Hence an attempt is made to assess the farmers’ opinion with regard to the reliability on technology and it is identified that 33 per cent of the male farmers strongly agree where as 10 per cent of the female farmers strongly agree with regard to the

reliability what they can have on the technology used under Digital India. The application of the chi-square test proves that there is a significant impact of the gender on the opinion of the farmers with regard to the reliability of the technology. It is verified at 1% level of significance.

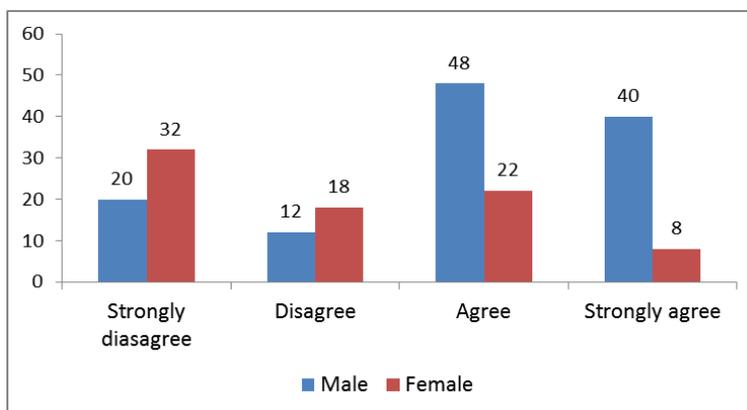


Fig 4.6: Farmers' Opinion with regard to the reliability on technology by gender

The farmers’ opinion with regard to the technology is manifested in the above fig-4.6 which shows that male farmers have strongly agreed upon reliability of technology

compared to female farmers.

4.3 Influence of Age on Farmers’ opinion on Digital India

Table 4.7: Farmers' Level of Awareness on Digital India by age

Chi-square value	p-value	Level of Awareness on Digital India				Total
		Highly aware	Moderately Aware	Moderately unaware	Highly unaware	
4.45	0.616	6	24	6	16	52
Age	Below 30 years	11.50%	46.20%	11.50%	30.80%	100.00%
		14	24	4	24	66
	30-50 years	21.20%	36.40%	6.10%	36.40%	100.00%
		12	30	8	32	82
	More than 50 years	14.60%	36.60%	9.80%	39.00%	100.00%
		32	78	18	72	200
Total		16.00%	39.00%	9.00%	36.00%	100.00%

The above table 4.7 displays the data relevant to the farmers' level of awareness on Digital India by age. Age is one of the important factors which impact the level of awareness of the individuals. The above interpretation shows that there is no significant impact of age on the level of awareness on digital

India. 12 per cent of the farmers below the age of 30 years are highly aware of the digital India where as 15 per cent of the farmers above the age of 50 years are aware of the digital India. The application of chi-square test also proves the same.

Table 4.8: Farmers' Level of Knowledge on technology by age

Chi-square value	p-value	Level of Knowledge on technology			Total
		Low	Medium	High	
10.208*	0.037	22	24	6	52
Age	Below 30 years	42.30%	46.20%	11.50%	100.00%
		26	28	12	66
	30-50 years	39.40%	42.40%	18.20%	100.00%
		47	19	16	82
	More than 50 years	57.30%	23.20%	19.50%	100.00%
		95	71	34	200
Total		47.50%	35.50%	17.00%	100.00%

*significant at 5% level

Age is one of the factors that impact the level of knowledge of the farmers. It is assumed that the level of knowledge on technology has more impact of age parameter. It is identified from the above analysis in table 4.8 that there is a significant impact of age on the level of knowledge of the farmers. The farmers below 30 years of age (12 per cent) have high level of knowledge on technology, farmers between 30 to 50 years of age (18 per cent) have high level of knowledge on technology and farmers who belong to the age of more than 50 years (20 per cent) have high level of knowledge. There by it can be stated that there is a significant impact of farmers' age on level of knowledge on technology. The application of chi-square presents the same.

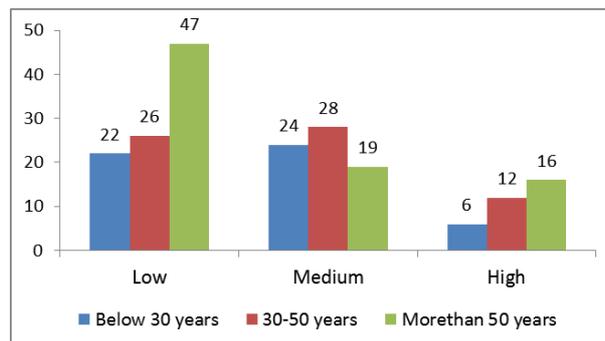


Fig 4.8: Represents clearly that farmers age has significant impact on the level of knowledge what they possess on technology

Table 4.9: Farmers' Interest in learning about technology by age

Chi-square value	p-value	Having Interest in learning about technology				Total
		Highly interested	Interested	Somewhat interested	Not interested	
9.226	0.161	24	20	2	6	52
Age	Below 30 years	46.20%	38.50%	3.80%	11.50%	100.00%
		32	32	2	0	66
	30-50 years	48.50%	48.50%	3.00%	0.00%	100.00%
		42	32	4	4	82
	More than 50 years	51.20%	39.00%	4.90%	4.90%	100.00%
		98	84	8	10	200
Total		49.00%	42.00%	4.00%	5.00%	100.00%

To learn anything there should be an inherent drive and interest in an individual. The same principle applies to the learning interest of individual towards technology. 12 per cent of farmers below the age group of 30 years are not interested

in learning about technology. 5 per cent of the farmers who are more than 50 years are not interested in learning about technology. This signifies that there is no correlation between farmers' age and their interest to learn about technology.

Table 4.10: Farmers’ satisfaction on the accessibility of the authorities in need by age

Chi-square value	p-value	Satisfaction on the accessibility of the Authorities in need				Total
		Highly satisfied	Satisfied	Somewhat satisfied	Not satisfied	
46.980**	0.000					
Age	Below 30 years	16	30	4	2	52
		30.80%	57.70%	7.70%	3.80%	100.00%
	30-50 years	52	4	4	6	66
		78.80%	6.10%	6.10%	9.10%	100.00%
	More than 50 years	54	22	6	0	82
		65.90%	26.80%	7.30%	0.00%	100.00%
Total		122	56	14	8	200
		61.00%	28.00%	7.00%	4.00%	100.00%

**significant at 1% level

To have awareness, understanding and adopting technology under digital India scheme, the farmers need to have the access of the authorities who can make it possible. Hence an assessment is done with regard to the satisfaction level of the farmers on the accessibility of the authorities by their age. 31 per cent of the farmers below the age of 30 years are highly satisfied with the accessibility of the authorities when they are

in need. 79 per cent of the farmers between the age group of 30-50 years are highly satisfied with the same and 66 per cent of the farmers who are more than 50 years of age are highly satisfied with the accessibility of the authorities when they need their assistance. Application of the chi-square test also proves the same.

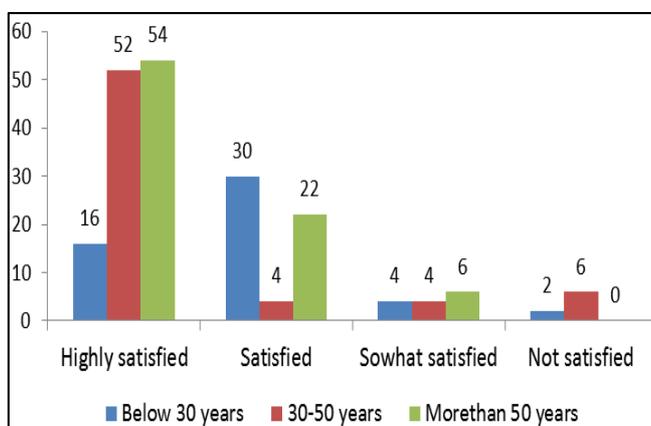


Fig 4.10: Farmers' Satisfaction on the accessibility of the Authorities in need by age

The fig 4.10 clearly shows that the farmers’ age and their level of satisfaction towards accessibility of the authorities when the farmers are in need are associated with each other

and there is high impact of age on the satisfaction level at 1% level of significance.

Table 4.11: Farmers’ Level of satisfaction on Govt. authorities’ help/support by age

Chi-square value	p-value	Level of satisfaction on Govt. authorities help/support				Total
		Highly dissatisfied	Dissatisfied	Satisfied	Highly Satisfied	
14.045*	0.029					
Age	Below 30 years	18	22	10	2	52
		34.60%	42.30%	19.20%	3.80%	100.00%
	30-50 years	32	24	6	4	66
		48.50%	36.40%	9.10%	6.10%	100.00%
	More than 50 years	38	40	4	0	82
		46.30%	48.80%	4.90%	0.00%	100.00%
Total		88	86	20	6	200
		44.00%	43.00%	10.00%	3.00%	100.00%

* significant at 5% level

The above table 4.11 manifests the relationship between the age and farmers level of satisfaction on government authorities and help. About 19 per cent of the farmers with below 3 years of age are satisfied with the authorities, 9 per cent of the farmers between 30 to 50 years of age are satisfied

with the same and there are no farmers with more than 50 years of age who are satisfied with the authorities. The same is proved by the application of chi-square test and results show at 5% level of significance.

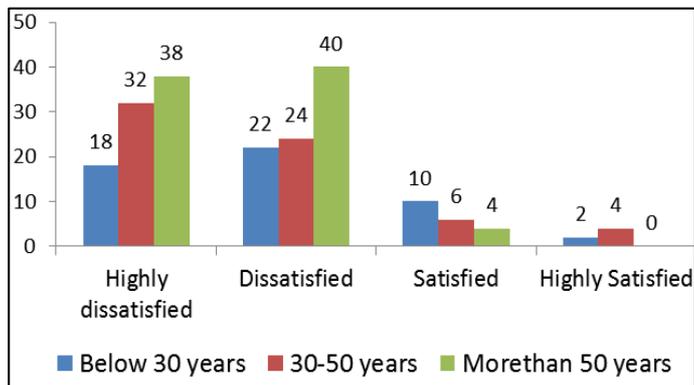


Fig 4.11: Farmers' level of satisfaction on Govt. authorities help/support by age

The above fig 4.11 indicates the association between the age and level of satisfaction on the government authorities. It is

clear from the figure that most of the farmers are dissatisfied with the government authorities' support.

Table 4.12: Farmers' level of confidence on technology by age

Chi-square value	p-value	Level of Confidence on Technology				Total	
		No confidence	Confident	Somewhat Confident	Highly confident		
21.611**	0.001	Age					
		Below 30 years	18	20	10	4	52
			34.60%	38.50%	19.20%	7.70%	100.00%
		30-50 years	10	38	18	0	66
		15.20%	57.60%	27.30%	0.00%	100.00%	
		More than 50 years	28	22	28	4	82
			34.10%	26.80%	34.10%	4.90%	100.00%
Total			56	80	56	8	200
			28.00%	40.00%	28.00%	4.00%	100.00%

**significant at 1% level

The table 4.12 above displays that there is a significant relationship between the age and the level of confidence on technology. Farmers with below 30 years of age (8 per cent) possess high confidence compared to farmers between 30-50 years (0.0 per cent) and above 50 years of age (5 per cent)

with regard to their level of confidence on technology. Application of chi-square test indicates the same at the level of 5% significance. Fig 4.12 apparently shows the relationship between the age of the farmer and his level of confidence on technology.

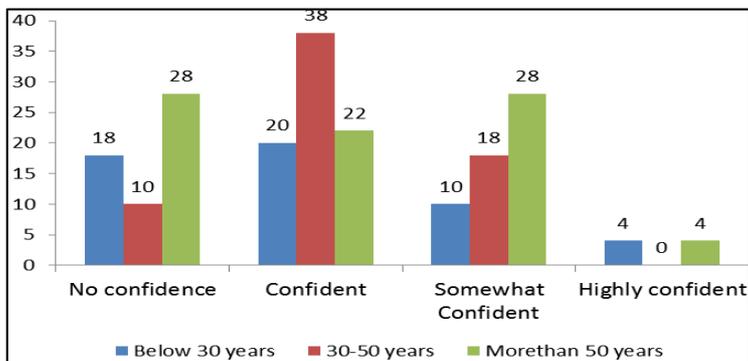


Fig 4.12: Farmers' Level of Confidence on Technology by age

Table 4.13: Farmers' Opinion on non-requirement of technology in farming by age

Chi-square value	p-value	Opinion on non-requirement of technology in farming				Total	
		Strongly agree	Agree	Disagree	Strongly disagree		
12.617*	0.043	Age					
		Below 30 years	32	20	0	0	52
			61.50%	38.50%	0.00%	0.00%	100.00%
		30-50 years	30	30	2	4	66
		45.50%	45.50%	3.00%	6.10%	100.00%	
		More than 50 years	40	32	8	2	82
			48.80%	39.00%	9.80%	2.40%	100.00%
Total			102	82	10	6	200
			51.00%	41.00%	5.00%	3.00%	100.00%

*significant at 5% level

Though technology plays a pivotal role in increasing the productivity of the farming sector there is a necessity to create

an opinion on the positivity of such aspect. This is assessed in the above table to find out the association between age and

the farmers opinion on the non-requirement of technology in farming. Table 4.13 shows that age has a significant influence on the opinion of farmers in this concern.62 per cent of the farmers below the age of 30 years strongly agree that there is non-requirement of technology in farming. 46 per cent

belonging to 30 to 50 years of age have strongly agreed to the same. 49 per cent of the farmers with more than 50 years strongly agree that there is no necessity of technology in farming processes. Hence, the application of the chi-square test also shows the same.

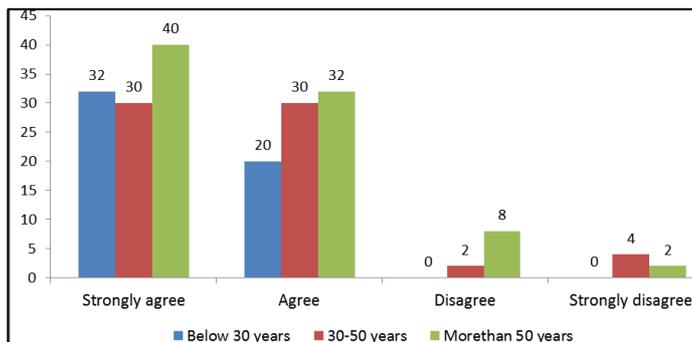


Fig 4.13: Farmers' Opinion on non-requirement of technology by age

The fig 4.13 clearly presents the opinion of farmers on non-requirement of technology in farming processes by age. It can

be understood that farmers need more awareness to understand the significance of technology usage in farming.

Table 4.14: Farmers' Opinion on non-reliability on technology by age

Chi-square value	p-value	Opinion on that non-reliability on technology				Total		
		Strongly disagree	Disagree	Agree	Strongly agree			
12.032*	0.041							
		Below 30 years	6	10	22	14	52	
			11.5%	19.2%	42.3%	26.9%	100.0%	
		30-50 years	18	12	18	18	66	
			27.3%	18.2%	27.3%	27.3%	100.0%	
		More than 50 years	28	8	30	16	82	
			34.1%	9.8%	36.6%	19.5%	100.0%	
		Total		52	30	70	48	200
				26.0%	15.0%	35.0%	24.0%	100.0%

* Significant at 5% level

When the opinion on reliability on technology is considered, there is also a necessity to assess the farmers’ opinion on non-reliability on technology in farming. Interestingly, it is found out that 27 per cent of the farmers below 30 years strongly agree that there is non-reliability of technology in farming. 27 per cent between the age group of 30-50 years opined the

same. 20 per cent have felt the non-reliability of technology in farming. Hence, it can be concluded that there is a significant impact of age on the opinion of farmers on non-reliability of technology in farming. The application of chi-square test also indicates the same outcomes.

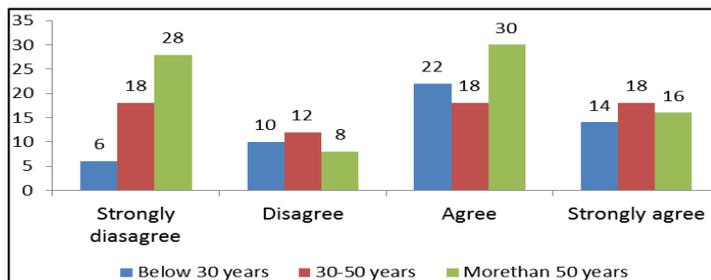


Fig 4.14: Farmers' Opinion on non-reliability of technology by age

The fig 4.14 states that age has significant impact on opinion of farmers on non-reliability if technology in farming.

Table 4.15: Farmers’ Opinion on that the Future is safe with technology by age

Chi-square value	p-value	Opinion on that the Future is safe with technology				Total		
		Strongly agree	Agree	Disagree	Strongly Disagree			
20.58**	0.002							
		Below 30 years	4	14	8	26	52	
			7.7%	26.9%	15.4%	50.0%	100.0%	
		30-50 years	4	4	34	24	66	
			6.1%	6.1%	51.5%	36.4%	100.0%	
		More than 50 years	4	12	32	34	82	
			4.9%	14.6%	39.0%	41.5%	100.0%	
		Total		12	30	74	84	200
				6.0%	15.0%	37.0%	42.0%	100.0%

** significant at 1% level

The opinion of farmers on the future safety of the technology is assessed based on the farmers’ age. The results through the application of chi-square test indicate clearly that there is a significant impact of age on the opinion of farmers on the future safety of technology with regard to farming issues.50

per cent of the farmers below the age of 30 years strongly agree on this aspect. 36 per cent of the farmers strongly agree that future is safe with technology and 42 per cent of the farmers above the age of 50 years opined that the future is safe with technology.

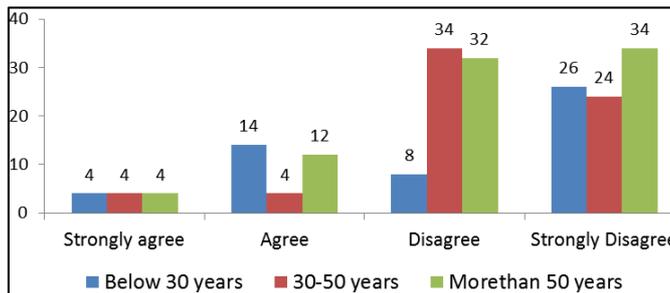


Fig-4.15: Farmers' Opinion on that the Future is safe with technology by age

Fig 4.15 projects the diagrammatic representation showing the association between the farmers’ age and their opinion on the safety of future with technology.

4.4 Influence of Farming Experience on Farmers’ opinion on Digital India

Table 4.16: Farmers' Interest in learning about technology by farming Experience

Chi-square value	p-value	Having Interest in learning about technology				Total
		Highly interested	Interested	Somewhat interested	Not interested	
8.088	0.232					
Farming Experience	Below 10 years	22	20	2	0	44
		50.0%	45.5%	4.5%	0.0%	100.0%
	11-30years	26	24	4	6	60
		43.3%	40.0%	6.7%	10.0%	100.0%
	Above 30 years	50	40	2	4	96
		52.1%	41.7%	2.1%	4.2%	100.0%
Total		98	84	8	10	200
		49.0%	42.0%	4.0%	5.0%	100.0%

The table 4.16 represents the data related to the farmers’ interest in learning about technology by farming experience. The data indicates that there is no significant relationship between the interest of farmers in learning about technology and their farming experience. It is basically the understanding and awareness of the farmers with regard to technology rather than experience in farming processes. The farmers below 10

years of farming experience not interested to learn about technology (0.0 per cent) and the farmers with above 30 years of farming experience are not interested in learning about technology (4 per cent). This evidently proves that there is no significant association between the farming experience and the farmers’ interest in learning about technology.

Table 4.17: Farmers' Level of Confidence on Technology by farming Experience

Chi-square value	p-value	Level of Confidence on Technology				Total
		No confidence	Confident	Somewhat Confident	Highly confident	
24.664**	0.000					
Farming Experience	Below 10 years	18	14	8	4	44
		40.9%	31.8%	18.2%	9.1%	100.0%
	11-30years	8	24	28	0	60
		13.3%	40.0%	46.7%	0.0%	100.0%
	Above 30 years	30	42	20	4	96
		31.3%	43.8%	20.8%	4.2%	100.0%
Total		56	80	56	8	200
		28.0%	40.0%	28.0%	4.0%	100.0%

**significant at 1% level

An analysis is made to find out the association between the farming experience of farmers and their level of confidence on technology. The data reveals that there is a significant relationship between both the variables. 41 per cent of the farmers below 10 years of experience have no confidence on

technology being used in farming. 13 per cent of the farmers with 30-50 years of farming experience have no confidence on technology and 31per cent of the farmers have no confidence with regard to technology.

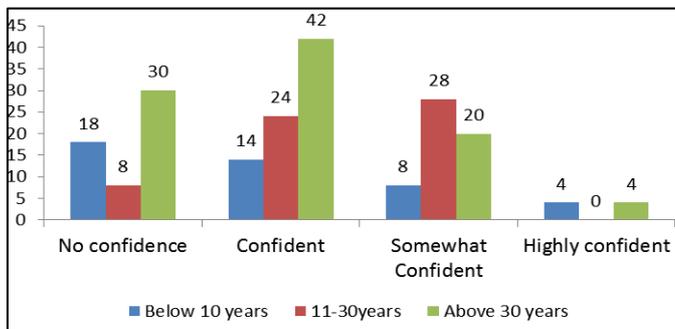


Fig 4.17: Farmers' Level of Confidence on Technology by farming experience

The illustrative fig 4.17 indicates that there is a significant impact of farming experience on farmers level of confidence on technology.

Table 4.18: Farmers' Opinion on reliability of technology by farming Experience

Chi-square value	p-value	Opinion onreliability of technology				Total	
		Strongly disagree	Disagree	Agree	Strongly agree		
16.127*	0.013	Below 10 years	4	6	24	10	44
		11-30 years	14	10	22	14	60
		Above 30 years	34	14	24	24	96
		Total	52	30	70	48	200
			26.0%	15.0%	35.0%	24.0%	100.0%

*significant at 5% level

An assessment is made to find out the association between the farming experience and opinion of farmers with regard to reliability on technology. It is evident from the above table 4.18 that there is a significant influence of farming experience on the opinion with regard to reliability of technology. 55 per cent of the farmers with farming experience being below 10 years agree on the reliability of technology, 37 per cent of the farmers between 11 to 30 years of farming experience agree on the same and 25 per cent of the farmers above 30 years of farming experience agree on the reliability of technology. The application of the chi-square test exhibits the same results.

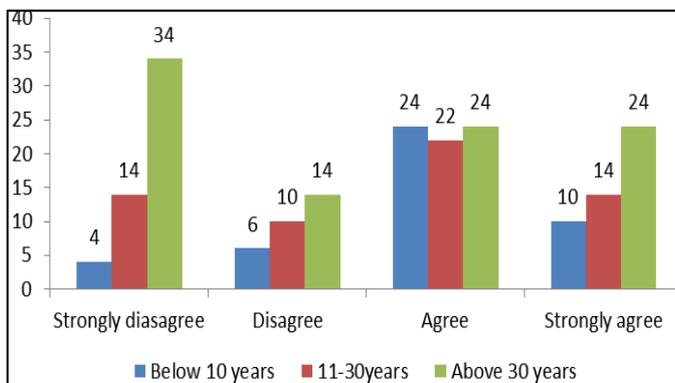


Fig 4.18: Farmers' Opinion on reliability of technology by farming Experience

The fig 4.18 demonstrates that there is a significant impact of farming experience on the opinion of farmers on the reliability of technology.

Table 4.19: Farmers' Opinion on that the Future is safe with technology by farming Experience

Chi-square value	p-value	Opinion on that the Future is safe with technology				Total	
		Strongly agree	Agree	Disagree	Strongly Disagree		
14.258*	0.027	Below 10 years	4	10	8	22	44
		11-30 years	2	12	26	20	60
		Above 30 years	6	8	40	42	96
		Total	12	30	74	84	200
		6.0%	15.0%	37.0%	42.0%	100.0%	

*significant at 5% level

The farmers' opinion on the future safety with technology is correlated with that of the farming experience of the farmers. It is found out that the farmers with below 10 years of farming experience 9 per cent strongly agree that future is safe with usage of technology where as farmers with 11-30 years of farming experience, only 3 per cent of them strongly agree on this aspect. About 6 per cent of the farmers who are above 30 years strongly agree on the safety of technology in future. The statistical analysis indicates that there is a significant impact of farming experience on the opinion of framers on future safety of technology. Application of chi-square test confirms the same at 5% level of significance.

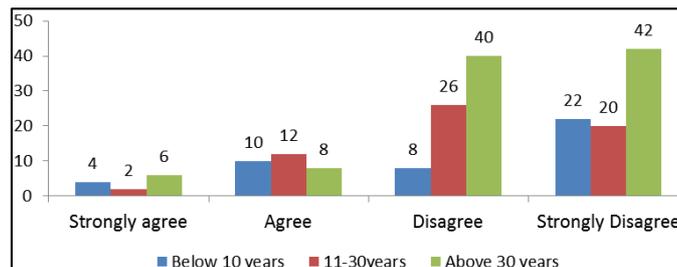


Fig 4.19: Farmers' Opinion on that the Future is safe with technology by farming Experience

Fig 4.19 exhibits that very less number of farmers agrees on the future safety of technology in farming aspects.

Table 4.20: Farmers' Opinion on that Reliable information can be received via technology by farming Experience

Chi-square value	p-value	Opinion on that Reliable information can be received via technology				Total	
		Strongly disagree	Disagree	Agree	Strongly agree		
16.947**	0.009	Below 10 years	10	26	8	0	44
		11-30 years	20	32	8	0	60
		Above 30 years	18	70	4	4	96
		Total	48	128	20	4	200
		24.0%	64.0%	10.0%	2.0%	100.0%	

**significant at 1% level

The farming experience of the farmers is one of the vital determinants to be considered under the study. In the above table 4.20an analysis is made to find out the association between the farming experience and the opinion of the farmers on the reliability of information through technology. The farmers with below 10 years of farming experience 18

per cent agree that they can rely on information provided through technology. About 13 per cent of the farmers between the age group of 11-30 years agree on the same and 4 per cent farmers who are above 30 years agree that information provided by the technology is reliable for the farmers. About 73 per cent of farmers disagree to the same. Application of the chi-square test indicates that there is a significant impact of farming experience on farmers' opinion on reliability of information through technology.

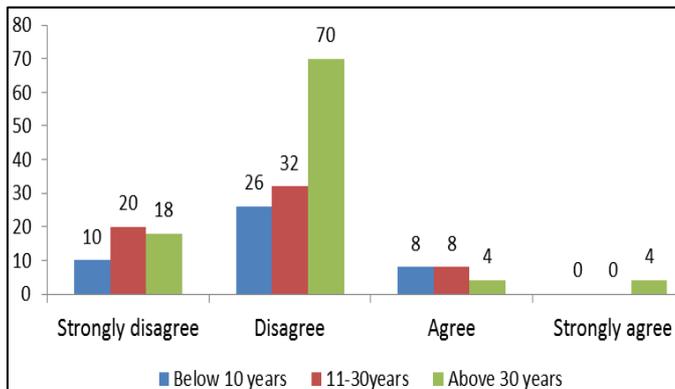


Fig-4.20: Farmers' Opinion on that Reliable information can be received via technology by farming experience

The fig 4.20 demonstrates the association between the farming experience of the farmers and the opinion on the reliability of the information provided by the technology.

4.5 Influence of Education of family on Farmers' opinion on Digital India

Table-4.21: Farmers' Level of Awareness on Digital India by family educational status

Chi-square value	P-value	Level of Awareness on Digital India				Total
		Highly aware	Moderately Aware	Moderately unaware	Highly unaware	
50.936**	0.000					
Family educational status	Only 1 person	14 14.9%	38 40.4%	8 8.5%	34 36.2%	94 100.0%
	Two persons	2 2.6%	34 43.6%	6 7.7%	36 46.2%	78 100.0%
	Three and more	16 57.1%	6 21.4%	4 14.3%	2 7.1%	28 100.0%
Total		32 16.0%	78 39.0%	18 9.0%	72 36.0%	200 100.0%

**significant at 1% level

Generally, it is assumed that education of the family members contributes to their level of awareness. The table demonstrates the association between the family educational status and the level of awareness on Digital India. It is found out that families with three or more persons educated are highly aware (57 per cent) of Digital India where as the families with one person educated are highly aware at 15 per cent of Digital India. It can be said that the more the educated people in the family there is a chance to have improved level of awareness on Digital India. The application of chi-square test indicates the same results. The results are significant at the level of 1%.

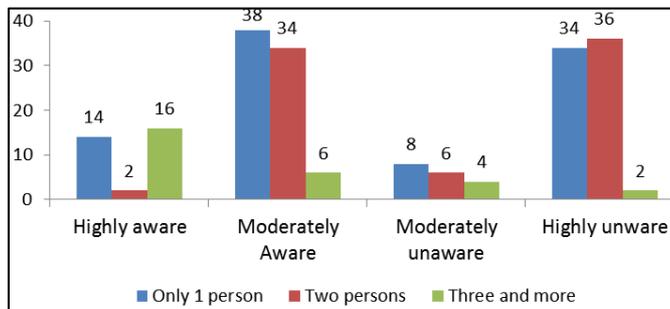


Fig 4.21: Farmers' Level of Awareness on Digital India by family educational status

Table 4.22: Farmers' Level of Knowledge on technology by family educational status

Chi-square value	p-value	Level of Knowledge on technology			Total
		Low	Medium	High	
17.696**	0.001				
Family educational status	Only 1 person	50 53.2%	30 31.9%	14 14.9%	94 100.0%
	Two persons	42 53.8%	24 30.8%	12 15.4%	78 100.0%
	Three and more	3 10.7%	17 60.7%	8 28.6%	28 100.0%
Total		95 47.5%	71 35.5%	34 17.0%	200 100.0%

**significant at 1% level

The table illustrates the association between the family educational status and the level of knowledge on technology. It is found out that families with three or more persons educated have 29 per cent high level of knowledge on technology while the families with one person educated have 15 per cent high level of knowledge on technology. It can be said that the more the educated people in the family there is a chance to have enhanced level of knowledge on technology among the family members. The application of chi-square test indicates the same results. The results are significant at the level of 1%.

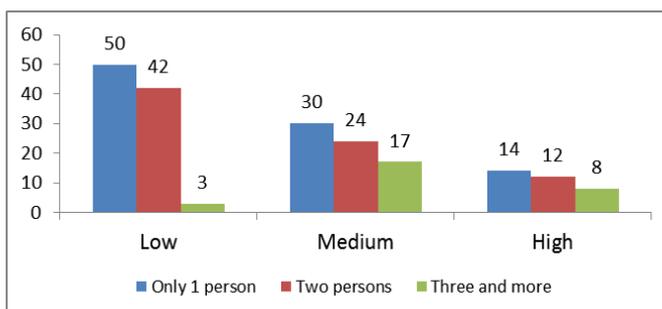


Fig 4.22: Farmers' Level of Knowledge on technology by family educational status

The fig-4.22 manifests that level of knowledge among families with more number of educated members have high knowledge on technology.

5. Major Findings and Conclusions

The study undertaken on the awareness and satisfaction of farmers on Digital India Program (technology) has put forward thought provoking aspects.

1. There is clear evidence that there is no significant impact of gender on the level of knowledge of technology. But the high level of awareness of the farmers is remarkably low at 16 percent.
2. There is a significant impact of gender on the level of knowledge on technology. Female farmers possess low knowledge compared to male farmers. This indicates the lower participation female farmers in agricultural sector and also the access of technology to them. It's interesting to note that female farmers have high interest to learn about technology than male farmers. Male farmers are more satisfied with the authorities support in learning about technology compared to female farmers.
3. The analysis shows that there is no significant association between the age and level of awareness on digital India. Male farmers are more confident compared to female farmers in this context. This may be due to the socialization skills of the male farmers.
4. The basic attitude of the farmers on the usage and reliability of the technology has been more influenced by gender.
5. Age is one of the factors that impact the level of knowledge of the farmers and it can be stated that there is a significant impact of farmers' age on level of knowledge on technology but no impact has been found on their level of awareness on Digital India.
6. Most of the farmers stated the non-requirement of technology in farming. This strongly indicates that there is lack of knowledge among the farmers with regard to digital India.
7. It is also found out that there is a significant impact of age on the opinion of farmers on non-reliability of technology in farming.
8. It is found out that the farmers with younger age strongly agree that future is safe with usage of technology. The younger generation have more information and awareness on the usage of technology in farming.
9. It is also evidently clear from the analysis that the more the educated members the more the knowledge of technology prevailed in farmers families.
10. It is noticeable from the results that the farmers' farming experience has not contributed anything towards their level of confidence regarding the Digital India support to farmers. The younger farmers who have access to technology are more familiar with the digital India initiatives.

Suggestions

Digital India Program initiative is intended to bring in many advantages and developments in the agriculture dominant economy like India. The present study found certain gaps in the implementation of the program due to factors relevant to farmers. Especially, the level of education, the level of awareness of technology and overall status of family's education of the farmers are few factors which hamper the affectivity of Digital India. The government has to consider few remedies for the successful implementation of Digital India Program.

The present study has laid down less significance to the factors which could possibly be considered as hindrances in successful implementation of the Digital India Program. It can also be suggested that the level of education may not be a challenge for the authorities or for the farmers in understanding and taking up technical support in farming activities. The farmers' age though has significant impact on

the usage of technology and receiving the technical support from authorities, the authorities with little initiation can *get all* the types of farmers under the umbrella of Digital India. Local agents are to be appointed by the government exclusively to monitor the Digital India assistance to all the marginal, small and big farmers. Easy access to the tutorials in local languages can be coordinated to bring impact on the services, vernacular e-mail services will help the Indian farmers to connect and communicate better. More could be done with effective planning and execution for the betterment of farmers lives in India.

There are certain other challenges that are encountered by the authorities and farmers. They are cyber crimes like phishing, spoofing, internet fraud, identity theft, and credit card account theft and so on. Proper guidance and awareness should be created to the farmers at all levels.

Conclusion

The Digital India initiative of the Government of India can be successfully implemented with the proactive approach and practical approach of the farmers, NGO's and government authorities working together. The challenges, threats and difficulties can conveniently be transformed as opportunities. Apart from creating a well-designed web portal, accessibility of technology and resourceful personnel always should be the criteria for the successful implementation of Digital India Program. Indian farmer has been a backbone to the development of the nation. Digital India is more for the poor and underprivileged, which aims to bridge the gap between the digital haves and have-nots by using technology for citizen. Farmer should be of priority for the progressive growth of Indian economy. Hence, the present status leaves a hope that Digital Platforms help the Indian farmers' dreams become true.

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