



Usage Pattern Of ICT Tools Of The Farmers In Haridwar District Of Uttarakhand

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ABSTRACT

This study was conducted to find out the impact of ICT tools on the agricultural development among farmers of Haridwar district of UP of India. A total of 120 farmers were randomly selected for the study during November 2022 to May 2023. The results showed that majority of the farmers owned mobile phones as well as television and radio. The most frequently used ICT was mobile phone. Mobile phones were widely used by the farmers for social communication, contacting middlemen for the marketing of produce and contacting experts on real time basis for getting agricultural advisories. The present study aims to study the agriculture development with the emergence of the new communication technology. The study is being undertaken to know how agriculture development is possible through an effective communication tool that is ICT (Information and Communication Technology). Major problems in the use of ICTs by the farmers were lack of confidence in operating ICTs, erratic power supply, low network connectivity and lack of awareness of the benefits of ICTs.

Keywords- ICT, Agriculture, Farmers, Impact, usage pattern

Introduction-

India is a growing economy with agriculture forming the backbone of the Indian economy. Despite the concentration of industrialization, agriculture remains in a place of pride. Agriculture in India has an extensive background which goes back to ten thousand years. At present, India holds the second position in the world in agricultural production. It also contributes a major share in the Gross Domestic Product (GDP) of the country. In addition, the sector recruits about 50% of the entire manpower. ICT make a significant contribution to economic growth of agrarian sector by empowering farmers with modern technologies and creating new employment opportunities. For the successful implementation of ICT services, government intervention is necessary to synchronize and govern the efforts of the private sector that make infrastructure and development investments. In short, Indian agriculture can improve dramatically by endorsing ICT. All farmers, including small and marginal, can be benefited. ICTs in agriculture have the potential to facilitate greater access to information that drive or support knowledge sharing. ICTs essentially facilitate the creation, management, storage, retrieval, and dissemination of any relevant data, knowledge, and information that may have been already been processed and adapted (Bachelor 2002; Chapman and Slay maker 2002; Rao 2007; Heeks 2002). ICTs have been a significant contributor to growth and socio-economic development in business sectors, countries and regions where they are well adopted and integrated. Nearly 40 percent of the global population has access to the Internet, and among the bottom fifth of the poor, out of 10 households have a mobile phone.1 The large adoption and integration of ICTs has reduced information and transaction costs, improved service delivery, created new jobs, generated new revenue streams and saved resources. Information and Communicational Technology (IT) has many roles to perform for agricultural development starting from decision support system to the trading of crops. ICT has a great role as decision support system to the farmers. Through ICT, farmers can be updated with the recent information about agriculture, weather, new varieties of crops and new ways to increase production and quality control. ICT has the great potential to widen marketing horizon of farmers directly to the customers or other appropriate users for maximum benefit. Farmers may

connect directly with many users and may get information about current prices for their commodities. They can get access to the market sitting at home. Further, it will curtail the middle profit also which will be beneficial for the farmers. ICT technologies can help for strengthening farming communities through wide networking and collaborations with various institutes, NGO's and private sectors. Further, farmers may enhance their own capacities through updated information and wide exposure to scientific, farming and trade community. Information and Communication Technology (ICT) can revolutionize Indian farming sector and can benefit all farmers including small landholders. Agriculture is the most important sector with the majority of the rural population in developing countries depending on it. The traditional approaches of agriculture being adapted, has numerous challenges in terms of production, marketing, profit etc. (Lokeswari 2016). The main objective of this study is to find the association between usage pattern of ICT tools with socio-economic characteristics of the respondents. The specific objectives were to ascertain the socio economic characteristics of the respondents and to find the association between socio economic characteristics and usage pattern of ICT tools.

Research Methodology

Descriptive research design was used for the current study. The study has been completed with collecting both primary as well as secondary data. The study area was Roorkee block of Haridwar district (Uttarakhand.). The secondary data has been collected through different source of materials, portals, websites and other exiting records. The other relevant data has been collected from various books, magazines, official records, research paper, internet, journals, news articles and other exiting sources of data. The primary data has been collected through two methods survey and observation. Through schedule, data has been collected from the farmers of selected villages Schedule has been prepared with both close ended and open-ended schedule. The size of the sample consists of 120 respondents The sample was drawn through stratified random sampling methods 12 farmers have been selected from each village, and 10 villages was selected. Data are analyzed in qualitative and quantitative methods. Data collected from both panchayats are average analyzed. To know the difference a comparative analysis has also been done. Statistical tools such as frequency, percentage, ranking technique, chi-square and Microsoft excel has been used for analysis of data.

Table I- Distribution of respondents according to their socio -economic characteristics-

S.no.	Variables	Category	Frequency (percentage)
1.	Age	Young (21-35)	19 (15.83)
		Middle (36-55)	68(56.66)
		Old (56 & above)	33(27.50)
2.	Education	Illiterate	27(22.50)
		Primary	21(17.50)
		Secondary	29(24.16)
		High school	12(10.00)
		Intermediate	23(19.17)
		Graduation & above	08(6.67)
3.	Occupation	Farming system	76(63.33)
		F.S.. + subsidiary	44(36.67)
4.	Annual income	Below 1 lac	17(14.17)
		1 lac- 2.5 lac	63(52.50)
		2.5 lac -5 lac	17(14.17)
		Above 5 lac	23(19.16)
5.	Family type	Nuclear	73(60.83)
		Joint	47(39.17)
6.	House type	Thatched house	17(14.17)
		Semi-cemented	58(48.33)
		Cemented	45(37.50)
7.	Land holding	Below 1 ha	21(17.50)
		1-4 ha	77(64.16)
		Above 4 ha	22(18.34)
8.	Extension contact	Low (4-6)	19(15.83)
		Medium(6-8)	69(57.50)
		High (8-10)	32(26.67)
9.	Mass media exposure	Low (6-11)	14(11.67)
		Medium (11-16)	72(60.00)
		High (16_21)	34(28.33)

In the above table, the data reveals that the majority (56.67%) of the farmers belonged to middle age group and 27.50 per cent were of old age and 15.83 per cent belonged to young age. In education, about 22.50 per cent of the respondents were illiterate and 17.50 per cent of the respondents had primary school level of education and 24.17 per cent respondents had secondary school education whereas 10 per cent had up to high school followed by 19.17 per cent of

respondents having intermediate level of education and 6.66 per cent respondents were graduate and above education respectively. 63.33% of the respondents are practicing farming (agriculture) as their major occupation followed by farming and subsidiary (36.67%) respectively. 52.50 percent of the respondents are coming to the category range of 1 lac- 2.5 lac followed by income of above 5 lac (19.16%) followed by 2.5lac-5 lac (14.17%) and 14.17 percent of the respondents have annual income below 1 lac. The above table shows that 60.83per cent of the respondents are in Nuclear family, followed by the joint family (39.17%) respectively.14.17 percent of respondents had thatched house whereas 48.33 percent respondents had semi-cemented house and remaining 37.50 percent had cemented house. The data regarding land holdings indicated that the majority (64.17%) of respondents belonged to the category of small farmers (1-4 hectare) followed by 18.33 per cent of respondents belongs to large farmers (above 4 hectare). While, only 17.50 per cent of respondents belongs to the category of medium & large farmers (below1 hectare). Majority (57.50%) of the respondents were having medium extension contact, 26.67 per cent had high, whereas 15.83 per cent of the respondents were found with high extension contact.

Table. I.(a) overall socio-economic characteristics of the respondents

S.no	Category	Frequency	Percentage
1.	Low (9-15)	24	20.00
2.	Medium (15-21)	59	49.17
3.	High (21-27)	37	30.83
4.	Total	120	100

From the above table I(a), we can analyze that the socio- economic characteristics of the respondents has been divided into three categories i.e. low, medium, high. The above table shows that 20.00 percent of respondents belongs to low category, 49.17 percent belongs to medium category & 30.83 percent of respondents belong to high category.

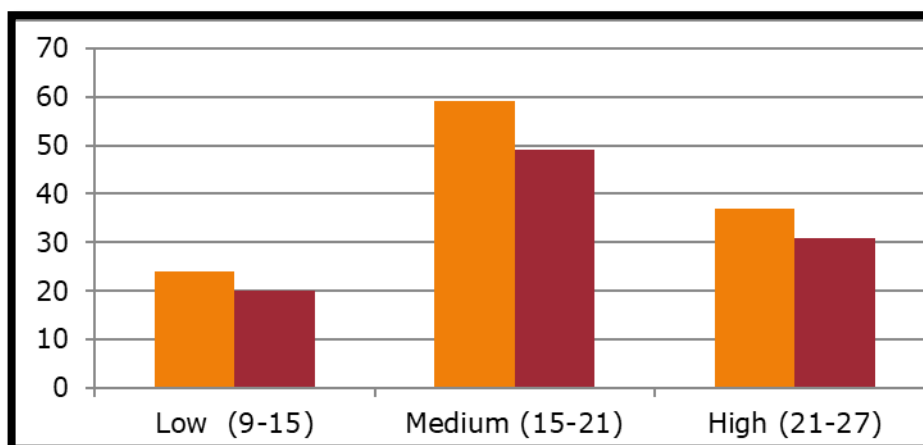


Table II. Usage pattern of ICT tools by the respondents for the information of farming system

S.No.	Area of information	Always		Sometimes		Never		Total	
		F	P%	F	P%	F	P%	F	P%
1.	Land preparation	07	5.83	79	65.83	34	28.34	120	100
2.	Selection of variety	21	17.50	66	55.00	33	27.50	120	100
3.	preparation of seedling	12	10.00	71	59.17	37	30.83	120	100
4.	Sowing	07	5.83	67	55.83	46	38.33	120	100
5.	Fertilizer management	33	27.50	61	50.83	26	21.66	120	100
6.	Weed management	09	7.50	69	57.50	42	35.00	120	100
7.	Irrigation management	11	9.17	70	58.33	39	32.50	120	100
8.	Plant protection measure	36	30.00	67	55.83	17	14.17	120	100
9.	Harvesting & PHT	28	23.33	63	52.50	29	24.17	120	100
10.	Marketing	19	15.83	71	59.17	30	25.00	120	100
11.	Supportive facts	22	18.33	64	53.33	34	28.34	120	100

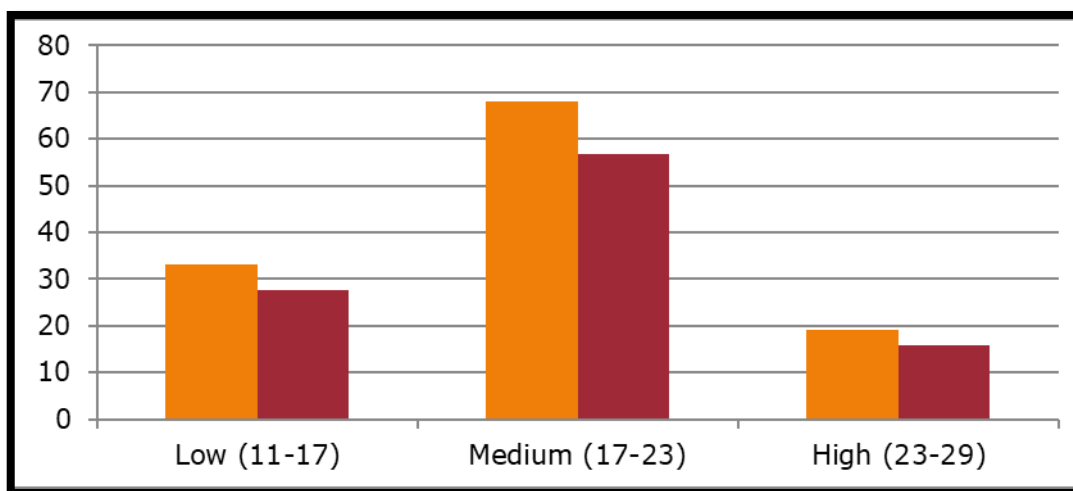
Table II shows the usage pattern of ICT tools by the respondents for the information of farming system, it is concluded that 5.83 percent of respondents always use ICT tools for land preparation information while 65.83 percent use it sometimes and 28.34 percent never use it. Similarly, for selection of variety information, 17.50, 55.00 27.50 percent of respondents use always, sometimes & never respectively. In taking information for seedling preparation, respondents use 10.00 percent always, 59.17 percent sometimes and 30.83 percent never. For sowing purpose percentage of always, sometimes and never are 5.83, 55.83 & 38.83 respectively. 27.50 percent of respondents always use ICT tool for

fertilizer management information, 50.83 percent use sometimes and 21.66 percent never use it. For weed management, 7.50 percent always take help from ICT tools while 57.50 take help sometimes and 35.00 never take help regarding information. For further practices, like irrigation management 9.17 percent respondents use always, 58.33 percent use sometimes, and 32.50 percent never use it. 30.00 percent respondents show positive attitude towards use of ICT tools regarding plant protection measure, 55.83 use it sometimes and 14.17 never use it. For harvesting & PHT 23.33 percent of respondents always use ICT tools for information whereas 52.50 and 24.17percent use it sometimes and never respectively. Similarly for marketing purposes 15. 83 and 59.17 percent use it always and sometimes respectively while only 25 percent never use it. Last statement related to supportive facts like, weather forecasting, subsidies, agricultural loans in which 18.33 percent of respondents always use ICT tools while 53.33 percent use it sometimes and 28.34 percent never use it.

Table II. (a) Overall table for usage pattern of ICT tools for the information of farming practices-

S.no	Category	Frequency	Percentage
1.	Low (11-17)	33	27.50
2.	Medium (17-23)	68	56.67
3.	High (23-29)	19	15.83
4.	Total	120	100

Table II.(a) shows that 56.67 percent of respondents have medium level of usage for the information of farming practices followed by 27.50 and 15.83 percent low and high usage respectively.



Analysis :

Chi square test-

Test to determine whether two attributes are independent by comparison of observed frequencies related to expected frequencies.

Table III. Association between independent variable and dependent variable (usage pattern) of respondents:

n=120

Category	Usage pattern (dependant variable)	S.E.S. (independant variable)	Row total
Low	33 (a) (28.50) = E _(a)	24 (b) (28.50) = E _(b)	55 R1 _(a+b)
Medium	68 (c) (63.50)=E _(c)	59 (d) (63.50)= E _(d)	126 R2 _(c+d)
High	19 (e) (28.00)= E _(e)	37 (f) (28.00)= E _(f)	59 R3 _(e+f)
Column total	120	120	240=N

E_(a)= expected value of a
(a)= observed value

Expected cell frequency = (row total) x (column total)
N

$$X^2 = \sum \frac{\sum (\text{observed value} - \text{expected value})^2}{\text{Expected value}} \quad \text{with d.f.} = (R-1)(C-1)$$

Where,

\sum = summation overall differences

R = no. of rows C = no. of columns

By calculating,

$X^2_{2(5\%)} = 5.99$ (tabulated value)

$X^2 = 7.82$ (calculated value)

Since, the calculated value of chi-square test is greater than the tabulated value of X^2 on 2 degree of freedom and at 5% probability level, so our null hypothesis will be rejected, therefore it can be concluded from above calculated data that there is significant association between socio economic condition & usage pattern of ICT tools.

As shown in Table III, education, household size, age and other given socio economic characteristics were found to be associated to the respondent's usage to ICT. Education plays a significant role in creating awareness and interest in innovations. It is also fundamental to the understanding of the usage, and functionalities of ICT.

Conclusion –

Socio-economic status (SES) is a broad concept that includes such factors as educational attainment, occupation, income, wealth, and other few factors. This study was embarked upon with a view to assessing the association between socio economic status & usage pattern of ICT tools among farmers of Haridwar district. Based on the findings of this study, it can be concluded that there is significant association between socio economic characteristics like age, education, income, mass media exposure etc. it can be concluded that by ICT tools helps in the upliftment of socio economic status of the farmer. Results also show that ICT can helpful to produce the productive knowledge of related to their farming system. Findings of the study suggested that more the availability and usage of ICT in agricultural sector, more the efficiency will increase in the production of agriculture. After analyzing all the results, we conclude that ICT brings a positive impact the upliftment of socio economic status of farmer.

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