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Study on usage patterns of information and communication technologies by farmers

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Abstract
The study was conducted in the English districts of Madhya Pradesh, with the aim of learning the patterns of use of information technology and communication with farmers. A total of 5 villages taken from Singrauli, Madhya Pradesh. ICT real data for different types of strategies, weather forecasts, and market volatility. 17% of India's economy is devoted to agriculture but even after that the agricultural sector has not improved much due to issues such as technological delays, market prices and a lack of proper ICT knowledge for farmers. Agricultural experts are developing better technology for finding different types of soil, agro climates, different types of pests and diseases. This study was conducted to obtain farmers' information on information about ICT. M.P. farmers do not know about ICT. Farmers used their knowledge and the local people helped to alleviate the problems of the field as well as less contact with agricultural organizations. The result of this whole study is that farmers need more information about technology and ICT and should start working with government. Strategies to improve agriculture and yield. Now, the use of ICT has ensured that with a few clicks, farmers can connect with a global network of farmers, agronomists, businesses, and other service providers to stay informed. - date of the latest cropping procedures. For policy makers, the advantage of adopting ICT in agriculture is that sharing information enables them to better understand the situation at a lower level, which will contribute to the formulation and implementation of agricultural and rural development policies that benefit farmers. Extensive access to ICT even in the most remote areas can help them deal with the problems of bias, women's empowerment, and other socio-economic concerns.

Keywords: ICT, farmers, agriculture

Introduction
In this age of information and communication technology (ICT in agriculture), also known as e-Agriculture. Creates hope for the dissemination of the latest information to the farming community, through inter-racial interactions it is possible to overcome issues such as distance, socio-economic status, gender etc. This technology is essential for increasing productivity in modern agriculture. It is a term currently used to describe a variety of services and technologies using different types of equipment and software.

Many ICT agricultural or agricultural initiatives have been developed and tried worldwide to assist farmers to improve their livelihoods by increasing agricultural productivity and profitability or reducing risk. The World Bank's e-sourcebook for ICT in agriculture - connecting emerging farmers with networks, information, and institutions is a great place to start learning about e-agricultural in practice. Use of ICT in Integrated Price Chains ICT is used to create inclusive value chains. Numerous cases of ICT use in agriculture have been reported on success stories in agricultural information and communication technology and rural development.

Agriculture and Information Technology: The Role of ICT
When discussing current agricultural technologies, it is important to recognize the importance of information and communication technology as a decision-making tool for farmers. Farmers can keep up-to-date with all the latest information with the help of ICT. This includes agricultural knowledge, climate and new and more advanced ways to improve crop quality and yield.

ICTs have dramatically changed the way people, governments, and businesses, large and small, work in today's world. About 60% of the world's population has an internet connection, and mobile internet is now the most widely used internet access method worldwide.

Due to the increasing use of ICT, it is now possible to improve communication and ensure the delivery of services and information to people who do not have access to this.
Following the introduction of new, advanced technologies, the global agricultural sector has been able to accelerate and adapt to the way farmers cultivate, harvest and distribute agricultural inputs. The adoption of novel methods to improve existing knowledge and communication systems has accelerated the development of agriculture and rural areas in India through technology. It has transformed the agricultural life of farms in various sectors of the economy, helping to solve many of the problems related to traditional agriculture.
Through the establishment of wealthy communities and support for livelihoods, ICTs may play a key role in eradicating rural and urban poverty and promoting sustainable development. If ICTs are used effectively and see differences in needs between urban and rural populations, they can be powerful economic, social, and political tools.

Personal, Socio-Economic and Psychological characteristics of farmers

A study was done to describe the group of farmers in terms of their personal and socio-psychological characteristics. The data based on these characteristics have been presented below-
Age - maximum number of farmers are in the age group of 40- 60, that is 72% and 24% falls in the age group of 20-40 and at last for 60 – 80 age group, we have just 4% of farmers.
Education qualification – 56% of the farmers are illiterate, 36% are having primary education and both matriculation and graduate are just having 4%.
Caste - 68% of farmers come from general caste, 12% from both schedule tribe and OBC and just 8% from schedule caste.
Economic status – most number of farmers come under BPL that is 64% and just 36% of them in APL.
Family type - a large majority of farmers are having a nuclear family that is 72% and just 25% of them are living as a joint family.
Family size – 56% of the farmers are having 4 to 8 members, and about 28% are having 8-12 members and only 16% of them are having 4 or less members.
Land holdings - most of the farmers are coming under marginal category (upto 2.5) that is 84% and 12% of them are landless and just 4% are falling under small scale farming (2.5-5). But there are no famers in medium or large scale.
Housing pattern - 44% of farmers are having mixed type of house, 36% of them are having pucca house and 20% are living in kuchha house. And 0% of them are living in huts.
Occupation - 48% and 44% of farmers are also engaged in labour and dairy respectively. And about 8% of them are involved in business too.

Material possession

Material possession can be divided into 3 parts

1. **Farm power:** The highest frequency is seen in bullock that is 23 farmers out of 25, then comes electric motor which is used by 2 farmers and then tractor and pumping set which is used by just 1 farmer. None of the farmers are using power tiller.
2. **Agricultural implements:** All the farmers are utilizing sprayer, shavel and kudal and only one farmer is having cultivator, leveler and pata. The farmers are generally not having disc plough, thresher, seed drill, winnower, duster and cane crusher.
3. **Transportation facility:** We can state that a certain number of vehicles are unavailable with any of the farmers i.e., truck, bus, jeep, car, tempo, rickshaw and tanga, whereas transportation facilities like bullock cart, motor cycle and cycle are beholded by most number of farmers but vehicles like scooter and car was owned by a single individual.

Extent of contact –We can categorize extent of contact into 3 different groups such as

1. **Formal sources:** In this category we can see that none of the farmers were having any contact with the above mentioned formal sources i.e. BDO, SDAEO, ADO, VDO, gram Pradhan, cooperative society and agricultural school/college.
2. **Informal sources:** We can summarize from the above graph that all the farmers were in contact of family members, neighbor's, friends and relatives but on the other hand none of them were in contact with local leader and progressive farmers.
3. **Mass media:** As shown in the graph above, just 4 farmers were in contact with the radio whereas 19 farmers were in contact with the television, 17 with the newspaper and 0 farmers were in contact with the other mentioned mass media sources.

Accessibility of ICT tools

Tools	Yes	No
Mobile	25	0
T.V.	25	0
Mobile Camera	25	0
F.M./Radio	25	0
Internet	25	0
Whatsapp	25	0
Facebook	25	0
Youtube	25	0
E-Mail	25	0
Computer	25	0
E-Books	0	25
CD/DVD	25	0

In the above chart we can see a lot of variations in the accessibility of various ICT tools. Mobile is the only tool owned by all the farmers, then comes mobile camera which is owned by 21 farmers, equal number of farmers are using t.v. and internet i.e. 19, 14 of them are using whatsapp, 12 of them use CD/DVD and just a handful of them are in access of FM radio, facebook, youtube, email and computer. Ebook is the only one used by none of the farmers.

Frequency of ICT usage

Tools	Very Frequently	Frequently	Occasionally	Rarely
Mobile	24	1	0	0
T.V.	19	0	0	6
Mobile Camera	7	3	11	4
F.M./Radio	1	2	1	21
Internet	12	7	0	6
Whatsapp	9	5	0	11
Facebook	4	0	5	16
Youtube	1	0	3	21
Email	0	0	1	24
Computer	0	0	1	24
E-Books	0	0	0	25
CD/DVD	0	0	6	19

From the above graph we can con conclude that 23 farmers used mobile very frequently and 2 of them used it frequently. T.V, was used very frequently by 19 and 6 of them rarely used it. Mobile camera was used very frequently by 7, 3 used it frequently, 11 used it occasionally and 4 of them used it rarely. Similarly in FM radio, 1 used it very frequently, 2 frequently, 1 occasionally and 21 of them rarely. Internet was used very frequently by 12, 7 used it frequently and 6 of them used it rarely. WhatsApp and Facebook was used frequently by just a few farmers as most of them rarely used it. In the case of email and computer just 1 of them used it occasionally, others rarely even used it. EBooks were rarely used by any of the farmers and in CD/DVD just 6 of them used it occasionally rest 19 of them rarely used it.

Usage pattern of ICT for agricultural purpose

Area of Information	Always	Sometimes	Never
Variety	0	0	25
Schedule of Water Supply	0	0	25
Preparation of Seedling	0	0	25
Land Preparation and Sowing	0	0	25
Fertilizer Management	0	0	25
Weed Management	0	0	25
Irrigation Management	0	0	25
Plant Protection Measures	0	0	25
Harvesting and Post Harvesting Technology	0	0	25
Marketing	0	0	25
Supportive Facts	0	0	25

Even though farmers had few of the ICT tools, but still none of the farmers were using it for agricultural practices as shown in the above graph.

Usage pattern of ICT for animal husbandry -None of the farmers were using ICT tools for animal husbandry practices.

Nearby agricultural govt. entity

	Yes	No
ICAR Institute	0	25
Govt. Agriculture Institute	0	25
KVK	25	0
Kissan Call Centre	0	25

The only government entity present in the district related to agriculture was KVK.

Use of solar power in agriculture - None of the farmers were using solar power for agriculture.

Knowledge of govt. Scheme or subsidy related to ICT - There were 0 farmers who had any knowledge about the government schemes or subsidy related to ICT

Trials on land - Only 1 farmer was involved in insecticide trial and no other farmer was involved in any type of trials.

Identification of disease – All the farmers were having previous knowledge about the diseases or either used to contact someone for the identification of the diseases. None of the farmers used apps or visited any agricultural body for the disease identification.

Financial support - When in need of financial assistance, all the farmers have asked for help from their personal contacts, a few have even contacted to money lenders and only a handful of them preferred going to banks.

Use of any ICT initiatives - Not even a single farmer was taking the advantages of any of the ICT initiatives provided.

Use of ICT tool to check weather - None of the farmers used GIS or RS, but on the other hand a few of them used their mobile phones to check weather.

Conclusion

From the survey we collected data about the farmer's personal information, their material possession and the access and usage patterns of ICT tools.

In personal information, we can conclude the following –

- Maximum farmers were in the age group of 40-60 and the least in 60-80
- More than 50% of the farmers are illiterate and some are having just primary education
- Most of the farmers were of general category, just a handful of them were from other castes
- Farmers falling in BPL category were more when compared to APL
- Majority of farmers were having nuclear family, and just a few having joint
- We saw that maximum farmers were having 4-8 members in their family
- A large section of farmers belonged to the marginal category, i.e. having land upto 2.5 acres
- Most of the farmers were living in mixed type or pucca house
- Almost equal number of farmers were engaged in labour and dairy plus agriculture
- None of the farmers were involved in any type of social organization

In material possession, we found that

- Bullock was the most common farm power available among most of the farmers
- Among agricultural implements- sprayer, shavel and kudal were the ones found among all the farmers
- Cycle, motor cycle and bullock carts were the most common transportation facilities

In access and usage pattern of ICT tools, we concluded that

- In extent of contact, farmers were mostly in contact with the informal sources, few were in contact with mass media and none with any of the formal sources
- All the ICT tools mentioned in our questionnaire were available in the area
- In accessibility, all the farmers were having access to mobile, none were having access to ebooks and in the other tools we found a lot variations
- In the frequency, all the farmers had different usage pattern and therefore having a lot of variations in frequencies
- None of the farmers were using any type of ICT tools for agricultural or animal husbandry practices
- KVK was the only agricultural entity present in the area but still they weren't having any contacts with them
- None of the farmers were using solar power for agriculture
- Farmers are having zero knowledge about the government scheme or subsidy related to ICT
- There was just one farmer who was involved in insecticide trials
- For disease identification, all the farmers preferred consulting someone or have previous self-knowledge
- All the farmers preferred seeking help from their

personal contacts, just a few took help from money lenders or banks
- None of the farmers have benefited from any of the ICT initiatives
- Mobile was the only ICT tool used for checking weather

So we summarized from the above study that the farmers are having one or the other ICT tools but still they aren't using them for any of the agricultural practices. The major drawbacks are financial constraints not having any extension officers in the district who could convey them with the required knowledge on ICT.

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