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The utilization pattern of ICT projects by farmers of Tumkur district of Karnataka

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Abstract
Modern days of agriculture works a lot of differently than that of few decades past, it is primarily as a result of advancements in technology, together with new devices, improvised machines, and information technology. The study was carried out in Tumkur district of Karnataka State during the year 2018- 19. To know the utilization pattern of ICT projects, Kisan Call Center, Raita Mitra Kendras, Krishi Marata Vahini and e-Choupal projects were selected for the study. The total sample size was 100. The results revealed that majority of farmers 66.00% were utilizing services of Kisan Call Centre whenever needed, most farmers about 45.00% did not use the services of e-Choupal, nearly half of the respondents (50.00%) were utilizing Krishi Marata Vahini services whenever they needed and 24.00% were never used and 25.00% of farmers utilized whenever needed the Raith Mitra services. Utilization pattern of ICT projects for specific information indicated that most of the farmers (33.00%) were utilizing KCC for information regarding crop protection, 31.00% of the farmers used e-Choupal for information regarding cultivation practices, 78.00% utilize Krishi Marata Vahini services for regularly updated market prices, and in Raith Mitra Kendra majority of farmers (36.00%) use for cultivation practices. The adoptions of the improved technology by farmers are believed to be affected directly or indirectly by different socio economic factors. So, the ICT enabled extension systems are acting as a key agent for changes in the agricultural situation and the lives of farmers.

Keywords: ICT projects, utilization pattern, farmers, specific information, key agent

Introduction
Modern days of agriculture works a lot different than that of a few decades past, it is primarily as a result of advancements in technology, together with new devices, improvised machines, and information technology, Information Communication Technology (ICT's) helped businesses to be more profitable, efficient, safer, and more environmentally friendly.

Information and Communication Technology
ICT is any device, tool or application that allows the gathering, processing and storage or exchange of knowledge. Stevenson coined the term ICTs in 1997. ICT is an umbrella term that has the utilization of any device from mobile phones to ATMs. With the mobile revolution in India ICT affordability, accessibility and adaptableness have increased and resulted in their use even within impoverished rural homes counting on agriculture. Technical innovation, most prominently demonstrated in the green revolution, has been a key to improving agricultural markets within the developing world. Mobile phones, despite their recent entry into farming communities, are already serving those communities improve their agricultural activities.
The mobile phone, one of the modern information and communication tools (ICT), has helped in providing several new opportunities not only to connect people but also to improve service delivery and reduce transaction costs. The digital dividends for the agriculture sector from ICT are in terms of enhanced on-farm productivity by reducing the constraints of extension and information, facilitating market transparency, and improving logistics. About 58% of India's population primary source of living is agriculture. In recent days' agriculture became knowledge-intensive due to the availability of new farming methods, technologies, and inputs, the need for the latest agriculture-related information has also increased. The realization for the need for additional information increased with the observed changes in agriculture due to climate change. It is strongly believed and has been demonstrated that ICTs, primarily mobile phones, have the potential to reduce information asymmetry and can play a role in facilitating the adoption of technologies.

India is leading in mobile network penetration and has among the highest number of mobile users (Mittal., 2012) [7]. It is believed that mobile phone-enabled agro-advisory services have the potential to reduce knowledge gaps and generate awareness of improved technologies. Although farmers have the real need to access to market information, land records and services, accounting and farm management information, management of pests and diseases, rural development programmes and ICT could help accessing these services, ICT projects dealing such services are extremely limited (Meera *et al*., 2004) [5]. There are numerous ICT projects initiated by the government and private firms in the area of agriculture. ICT initiatives Kisan call center, Raita Mitra Kendras, Krishi Marata Vahini kiosks, e-Choupals and Krishi Vigyan Kendra are delivering information to the grass root stage and are extensively popular in Karnataka. The above-considered ICT projects provide farmers with information on crop management, crop production, weather forecasting, up to date market prices, precision farming, organic farming, proper input calculating ways and other improved new technologies in local languages and at the convenience of farmers. Information plays an important role in the field of agricultural development by informing the farmers about new techniques in agriculture. It helps to narrow the gap between the research result and its use by the farmers. Hence the study was planned to know the utilization pattern of these ICT projects by the farmers.

Methodology

The Karnataka region Tumkur district was deliberately selected for the study, because there are more ICT projects operating in this region as the district is covered by the RAWE Camp students of University of Agricultural Sciences, Bengaluru and the people in this villages have a good knowledge of ICT applications. The study was carried out in the two taluks of the Tumkur districts i.e., Tiptur and Tumkur taluks. In each taluk, five villages are considered for the study. These villages are purposively selected as farmers of this district are exposed to all ICT projects under the study. Total often villages selected by the random sampling method for the study. A total of 100 farmers form the sample of the study, which constitutes ten farmers, who are selected randomly from each of the ten selected villages. For this study the research design used was' Ex post-facto'. The data was collected from the respondents through personal interview method in an informal atmosphere by establishing a good rapport by convincing them the purpose and importance of the study. Frequency and percentage were used to interpret the data.

Results and Discussions

The results from the Table 1 depicts that 35.00% respondents of the villages in the Tumkur district were in the age group of 20-35 years in the present study and these farmers are classified as young age group farmers, it is followed by 44.00% of farmers under the age group of 35-50 years and 21.00% of farmers belong to the age group of 50-65 years. Similarly, these group people are classified as middle age group and old age group respectively. The results are in line with the findings of Meera *et al*., (2018) [6] that half of respondents belong to middle age category it clearly shows that farming could possibly under taken by the middle age farmers and probably the middle age farmers had zeal and enthusiasm towards farming.

The data in Table 1 explained that only 17.00% were illiterates among the farmers considered under study, whereas 23.00% of them had received primary education, 20.00% of correspondents had their high school education, about 28.00% of farmers completed their education up to intermediate (11th and 12th) and 12.00% of the farmers completed their education up to graduation and above respectively. Among these farmers, most of the illiterates come under the old age group people. The majority of middle age and young age group had good knowledge about the ICTs as well in comparison with old age group people.

The data in table 1 showed that 22.00% of the farmers had the farm experience of 0-5 years, which are classified under low group experienced farmers, these people constitute the young age group farmers. The Table also gives a picture of 35.00% of farmers with and medium experience of 5-10 years and 43.00% of farmers with more than 10 years of farm experience respectively. There are number of farmers comes under a high level of experience of more than ten years, this condition may be due to the relationship between the independent variable age with farming experience. The results are in line with findings of Meera *et al*., (2018) [6] that nearly half of the respondents had more than 10 years of farming experience since most of the farmers belong to young and middle aged categories accordingly their farming experiences are.

Table 1: Profile characteristics of farmers:

N=100

Sl. No.	Categories	Frequency	Percentage
Age			
1	20-35 years (Young age)	35	35.00
2	35-50 years (Middle age)	44	44.00
3	50-65 years (Old age)	21	21.00
Education			
1	Illiterate	17	17.00
2	Primary school (1st standard to 7th)	23	23.00
3	High school (8th standard to 10th)	20	20.00
4	PUC (11th and 12th class)	28	28.00
5	Degree	12	12.00
Farming Experience			
1	Low 0-5	22	22.00
2	Medium 5-10	35	35.00
3	High >10 years	43	43.00

Results from Table 2 showed that most farmers (33.00%) used the Kisan call center for crop protection information, followed by 18.00% for quality input, 17.00% for crop practice, 23.00% for livestock information and 27.00% for irrigation. Approximately 4.00% and 5.00% used KCC for alternative crops and information on post-harvest practices.

The reason for this pattern could be that, through KCC farmers can talk to the service operators directly and clarify their questions easily, farmers also trust ICT tools if they are supported with interacting platform. Farmers used KCC services on the telephone to replace extension officers. Farmers were particularly interested in knowledge about crop protection practices, quality inputs and growing practices.

In the e-Choupal case, the majority of farmers (31.00%) have used crop information services, 24.00% for crop protection 28.00% for information on market prices. e-Choupal was used for irrigation and post-harvest information respectively by around 9.00 and 4.00%.

The reasons for this may be as many farmers had low knowledge about this project, among the farmers who had

good knowledge of this interested in getting information with respect to regular updates like market prices and cultivation practices from e-Choupal.

The majority of farmers 78.00% utilize Krishi Marata Vahini Service for information on various products on various markets for regularly updated markets prices. It is the only service provided by the Krishi Marata Vahini web portal. The market prices were updated through this web portal on a daily basis.

Around 21.00% of farmers used crop protection services, followed by most farmers for cultivation, about 36.00%, and 12.00% for quality inputs information in the case of Raith Mitra Kendra. Raith Mitra's website has been accessible for irrigation, alternative crops and post-harvest information by roughly 13.00 percent, 21.00 percent and 5.00 percent respectively. The reason may be that farmers in the area of study were most interested in knowing of crops, quality inputs and farming practices.

The farmers also utilized KVK for knowing agricultural information, as the farmers thought KVK a relevant source of information, majority of farmers about 52.00% utilizing KVK for getting cultivation practices, 31.00% and 25.00% using KVK to know about quality inputs and crop protection respectively. About 27.00%, 21.00%, 19.00% and 11.00% of farmers utilized KVK for alternate crops, irrigation practices, post-harvest practices, and livestock information respectively. The results are consistent with Meena *et al*. (2018) [6] research findings, which showed that most farmers expect information on high yield varieties, plant protection methods and market information. The findings of the study regarding the utilization pattern of using ICT tools as perceived by the farmers were in conformity with the findings of Chandra, N. *et al*., (2018) [2]. He observed that majority of the farmers perceived that farm advice and weather information received through ICT tools were most useful followed by input information. Most of the farmers perceived that information regarding postharvest market information received through ICT tools were somewhat useful to them.

Table 2: Utilization Pattern of ICT projects for specific information:

N=100

Sl. No.	Information type	ICT projects									
		Kisan Call Center		Raith Mitra Kendra		Krishi Marata Vahini		e-Choupal		Krishi Vigyan Kendra (KVK)	
		F	Percent	f	Percent	f	Percent	f	Percent	f	Percent
1	Weather information	0	0	0	0	0	0	0	0	0	0
2	Quality inputs	18	18.00	12	12.00	0	0	0	0	25	25.00
3	Crop protection	33	33.00	21	21.00	0	0	24	24.00	31	31.00
4	Cultivation practices	17	17.00	36	36.00	0	0	31	31.00	52	52.00
5	Irrigation practices	27	27.00	13	13.00	0	0	9	9.00	21	21.00
6	Post- harvest practices	5	5.00	5	5.00	0	0	4	4.00	19	19.00
7	Market prices			0	0	78	78.00	28	28.00	0	0
8	Alternate crops	4	4.00	21	21.00	0	0	0	0	27	27.00
9	Live stock	23	23.00	0	0	0	0	0	0	11	11.00

*Multiple responses

Table 3 shows that 66.00% of farmers used Kisan Call Center services whenever they required, 9.00% of farmers used it on weekly once, 13.00% used the service once in a month and 12.00% did not use it at all. The moderate frequency of use is due to a lack of awareness, a preferred contact between certain farmers over the telephone and also a lack of area-specific information provided by the farm specialists.

From the Table 3 it is observed that most farmers about 45.00% did not use the services of e-Choupal, with only 2.00% of farmers using them once daily, 7.00% once a week, 11.00% once a month and 35.00% once every month when they needed it. Moderate operations were also due to the inconvenient opening timings of kiosks and Sanchalaks focused on other services such as procurement instead of consultation and the majority of farmers they are not fully familiar with this project and had low knowledge about the project.

Nearly half of the respondents (50.00%) were utilizing Krishi Marata Vahini services whenever they needed. Some 4.00% of farmers once a day used it, 9.00% once a week used it, 28.00% once a month, and 9.00% of farmers were never utilized services of Krishi Marata Vahini. Majority of farmers used whenever they needed because they needed to keep updated about prices updated in their nearby market.

In the case of Raith Mitra Kendra, 24.00% of farmers never used services, about 25.00% used farmers as needed and 19.00% used it once a week, 32.00% used it once and once each month. The farmers used this method, because they needed to keep their prices updated in their market. Low use is because the farmer is poorly aware and information kiosks at RSK are poorly maintained.

The farmers utilized KVK widely whenever they needed which included 63.00%. About 17.00% of farmers they never utilized services from KVK. This is followed by 9.00% and 11.00% of farmers they utilized KVK weekly and monthly respectively.

The above findings clearly explain that majority of the respondent's utilized ICT projects whenever they needed, this might be due to reason that farmers utilized these services more often during the crop season of a year, and during the non-crop season, farmers might not use these services. Lack of awareness, high cost and lack of skills in using ICT tools may also be the other reasons for the low usage of the services. These findings were in line with the research findings of Subhash singh *et al.* (2010) [9], who noticed most of the farmer's usage of ICTs was less. Hadiya, B. (2019) [3] revealed that ICT offer great scope for dissemination of agricultural technology and information up to the farmers and also indicated that advisory through ICT was needful and timely for majority of the farmers.

Farmers face a range of potential production technologies and practices to choose from, each of which may have different risk profiles and different suitability for a farmer's own plots. To make those decisions, farmers must have information that the technology exists; they must believe that the technology is beneficial; and they must know how to use it effectively (Bardhan and Mookherjee 2011) [1].

Table 3: Extent of Utilization Pattern of ICT projects for specific information:

N=100

Sl. No.	ICT Projects	The extent of utilization Pattern									
		Daily		Weekly		Monthly		Whenever needed		Never	
		f	Percent	f	Percent	f	Percent	f	Percent	f	Percent
1	Kisan call center	0	0	9	9.00	13	13.00	66	66.00	12	12.00
2	e-Choupal	2	2.00	7	7.00	11	11.00	35	35.00	45	45.00
3	Krishi Marata Vahini	4	4.00	9	9.00	28	28.00	50	50.00	9	9.00
4	Raita Mitra Kendra	0	0	19	19.00	32	32.00	25	25.00	24	24.00
5	KVK	0	0	9	9.00	11	11.00	63	63.00	17	17.00

Conclusion

Today is an era of Information and Communication Technology since morning till evening we gain and reciprocate according to information received. No work is possible without Information and Communication Technology. It has become part and parcel of our life. ICT has a key role in the development sector, especially in rural areas. Majority of the respondents utilized ICT projects whenever they needed. From many of the research findings, we can observe that most of the farmers utilizing ICTs for getting information on cultivation practices, to know about quality inputs, crop protection, and market prices. In spite of being aware of ICT projects, it was found that some farmers do not use them since they are not positive towards ICTs. This can be addressed by including in the promotion campaigns and success stories from beneficiary farmers.

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