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A study on the extent of utilization of Information And Communication Technology (ICT) advisory services in terms of frequency of usage by farmers in Dindigul District of Tamil Nadu

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Abstract
Background: The study was conducted in Dindigul district of Tamil Nadu as the research scholar hails from Dindigul district.
Objective: The study attempted to analyse the extent of utilization of ICT advisory services by the farmers in terms of frequency of usage.
Method: Data were obtained from a sample of 300 farmers who attended online training during the COVID-19 lockdown under KVK and ATMA and were purposively selected from six blocks namely, Dindigul, Natham, Sanarpatti, Vadamadurai, Nilakottai, and Ottanchatram.
Findings: The result of the study reported that the majority of the respondents frequently used WhatsApp (38.67 per cent) and YouTube (19.00 per cent) followed by occasionally of WhatsApp (47.33 per cent), uzhavan app (30.67 per cent) and the TNAU agritech portal (29.33 per cent), rarely of Google meet (68.67 per cent), Zoom app (65.67 per cent), Farmers Call Centre (Kisan Call Centre) (67.33 per cent) and YouTube (36.00 per cent) and cent per cent of the respondents never used m-Kisan, BigHaat Smart Farming App and Krishi-e Farm Management App. It might be due to the lack of awareness and e-skill to perform among the respondents for the attainment of ICT agro-advisories. Extension personnel have a chance to influence the farmers about ICT opportunities and their importance after the COVID-19 pandemic period. The result shows that the respondents experiencing a positive impact towards modern ICT tools so it's time for the State Department of Agriculture and KVK to provide awareness for farmers and endure online-based training for involvement in ICTs.
Novelty: The study will give immense help to the farmers in the discipline of the utilization of advisory services through ICT-based modern technology. It will investigate the importance of the usage of ICT during COVID-19 in the field of agriculture and improve the utilization of ICT by recommending suggestions among extension personnel and farmers in the study area.

Keywords: ICT, Frequency, Utilization, Advisories, Mobil, COVID-19

Introduction
Indian Government emphasizes on "Digital India" program as every Indian citizen gets engaged in internet-based performances for the acquisition of their needs and requirements. Farmers are the backbone of our country, so it is time for them to engage in e-activities. The pluralistic innovative networks of extension functionaries including public, private sector, nongovernmental organizations (NGOs), farmer producer organizations (FPOs), farmer groups and commodity interest groups (CIGs) etc., with the help of digital media tools has proven very instrumental for the central and state governments as well as for rural agrarian communities during and after the pandemic in bridging the information gap from and to the field [1]. The COVID-19 pandemic increased the importance of mobile phones as a tool for agricultural extension and advisory services in most developing countries. In India, mobile phones became the only means farmers accessed information from agricultural extension workers during the lockdown [2]. Agricultural extension and advisory personnel should complement traditional face-to-face interactions with online or virtual activities when possible [3]. During the COVID-19 pandemic spread extension personnel and the State Department of Agriculture improved the method of disseminating agro-advisories like weather reports, market information, crop advisories, pest and disease management, seed

availability livestock services, training details, government schemes and agriculture news through video conferences, audio conference call, SMS, chats, recorded audio, and video in replacement of extension service to ICT advisory service which paves way for the farmers to involve in ICT platforms for the acquisition of advisories. In Tamil Nadu, there were many mobile applications and websites related to agriculture but only a few specific applications are being used by the farmers viz., Uzhavan app, Vivasayam-Nithra, TNAU agritech portal, agrisnet portal, Plantix App, and e-NAM and some social media mobile application. Social media in recent times has become synonymous with social networking sites such as Facebook, WhatsApp, Telegram, Instagram, Blogs, etc. The installation of these apps is free of cost to download and available in the Android Google play store. Some of the agriculture mobile apps and websites are helpful for some specific information while others are multiple informants for farmers.

Information and Communication Technology (ICT) performs a significant role in the advancing technological world. Analysing ICT and its advisory services are essential for the development of the farming community. Accordingly based on these reasons the study was intended to investigate the extent of utilization of ICT advisory services by farmers in terms of frequency of usage.

Methodology

The study was conducted in the Dindigul district of Tamil Nadu during the year 2021. An ex-post facto research design was used for the study. The sample was selected based on the online training list obtained from KVK and SDA conducted from April 2020 to August 2021. Thus, a total of 300 farmers were purposively selected as respondents. The sample was selected from six blocks viz., Dindigul, Natham, Sanarpatti, Vadamadurai, Nilakottai, and Ottanchatram which belong to five taluks of Dindigul, Natham, Vedasendur, Nilakottai, and Ottanchatram. Primary data were collected from the respondents with the help of a pre-tested structured interview schedule by the personal interview method. Data were analyzed with help of suitable statistical tools. For evaluating the frequency of extent of utilization of ICT advisory services, the scale, four-point continuum viz., frequently, occasionally, rarely and never with scores of 4, 3, 2, and 1 was used respectively.

Result and Discussion

Frequency of usage of ICT advisory service

The result in table 1 depicts that 34 agriculture mobile applications, websites/web portals, telephony and social media applications are either used frequently, occasionally, rarely or never by the respondents.

Table 1: Frequency of usage of ICT advisory service by the farmers (n=300)

S. No.	Category	Frequently		Occasionally		Rarely		Never	
		No.	%	No.	%	No.	%	No.	%
I. Websites / Web Portals									
1	https://www.tn.gov.in/department/2 Agriculture and Farmers Welfare Department	3	1.00	18	6.00	17	5.67	262	87.33
2	https://www.tnagrisnet.tn.gov.in Agrisnet	28	9.33	40	13.33	62	20.67	170	56.67
3	https://aed.tn.gov.in/ Department of Agricultural Engineering	-	-	-	-	6	2.00	294	98.00
4	https://www.agrimark.tn.gov.in/ Department of Agricultural Marketing & Agri Business	-	-	13	4.33	19	6.33	249	83.00
5	https://agmarknet.gov.in/ AGMARKNET	6	2.00	8	2.67	17	5.67	269	89.67
6	https://agritech.tnau.ac.in/ TNAU agritech portal	54	18.00	88	29.33	105	35.00	53	17.67
7	https://agricoop.nic.in/ Department of Agriculture and Farmers Welfare	-	-	-	-	12	4.00	288	96.00
8	https://farmer.gov.in/ Farmer portal	-	-	-	-	3	1.00	297	99.00
9	https://www.iffcobazar.in/ta IFFCO BAZAR	2	0.67	2	0.67	5	1.67	291	97.00
10	https://apeda.gov.in/APEDA	-	-	3	1.00	6	2.00	288	96.00
11	https://mkisan.gov.in/ m-Kisan	-	-	-	-	-	-	300	100.00
II. Agriculture Mobile Apps									
1	Uzhavan App	45	15.00	92	30.67	116	38.67	47	15.67
2	KVK App	10	3.33	47	15.67	68	22.67	175	58.33
3	Agri App	-	-	-	-	13	4.33	287	95.67
4	Plantix App	9	3.00	30	10.00	65	21.67	196	65.33
5	e-NAM	3	1.00	12	4.00	15	3.33	270	90.00
6	IFFCO Kisan App	-	-	8	2.67	20	6.67	272	90.67
7	BigHaat Smart Farming App	-	-	-	-	-	-	300	100.00
8	Krishi-e Farm Management App	-	-	-	-	-	-	300	100.00
9	PM-KISAN GOI	-	-	6	2.00	94	16.33	200	73.33
10	Kisan Rath	-	-	24	8.00	18	6.00	258	86.00
11	Kisan Suvidha	1	0.33	8	2.67	10	3.33	281	93.67
11	Crop Insurance App	-	-	13	4.33	101	33.67	186	62.00
12	(Nithra) Vivasayam	18	6.00	20	6.67	48	16.00	206	68.67
13	(TNAU) Coconut expert system	-	-	12	4.00	33	11.00	255	85.00
14	(TNAU) Cattle expert system	-	-	7	2.33	10	3.33	283	94.33
III. Telephony									
1	Village Knowledge Centre (VKC) - MSSRF	40	13.33	22	7.33	77	25.67	161	53.67

2	Farmers Call Centre (Kisan Call Centre)	05	1.67	51	17.00	202	67.33	42	14.00
IV. Social media mobile apps									
1	Facebook	11	3.67	30	10.00	85	28.33	174	58.00
2	WhatsApp	116	38.67	142	47.33	30	10.00	12	4.00
3	Instagram	7	2.33	18	6.00	15	5.00	260	86.67
4	Telegram	15	5.00	26	8.67	33	11.00	226	75.33
5	YouTube	57	19.00	60	20.00	108	36.00	75	25.00
6	Google Meet	4	1.33	32	10.67	206	68.67	58	19.33
7	Zoom app	-	-	30	10.00	197	65.67	73	24.33

Table 1 shows that in the frequency of usage of ICT advisory services frequently used by the respondents are WhatsApp (38.67 per cent), YouTube (19.00 per cent), TNAU agritech portal (18.00 per cent), uzhavan app (15.00 per cent), Village Knowledge Centre (VKC) - MSSRF (13.33 per cent), agrisnet (9.33 per cent) and (Nithra) Vivasayam (6.00 per cent).

Some of the respondents occasionally utilized the ICT advisory services namely WhatsApp (47.33 per cent), uzhavan app (30.67 per cent), TNAU agritech portal (29.33 per cent), YouTube (20.00 per cent), Farmers Call Centre (Kisan Call Centre) (17.00 per cent), agrisnet (13.33 per cent), KVK app (15.67 per cent), Plantix app (10.00 per cent) and Facebook (10.00 per cent).

Mobile applications and websites rarely used by the respondents were Farmers Call Centre (Kisan Call Centre) (67.33 per cent), YouTube (36.00 per cent), TNAU agritech portal (35.00 per cent), Google meet (68.67 per cent), Uzhavan app (38.67 per cent), Zoom app (65.67 per cent), Facebook (28.33 per cent), KVK app (22.67 per cent), Plantix app (21.67 per cent), Village Knowledge Centre (VKC) - MSSRF (25.67 per cent), PM-KISAN GOI (16.33 per cent), crop insurance app (33.67 per cent), Nithra Vivasayam (16.00 per cent), (TNAU) Coconut expert system (11.00 per cent), telegram (11.00 per cent) and WhatsApp (10.00 per cent).

From above table 1, it is understood that cent per cent of the respondents never used m-Kisan, BigHaat Smart Farming App and Krishi-e Farm Management App. The remaining websites and mobile applications are the Department of Agriculture and Farmers Welfare (96.00 per cent), Department of Agricultural Engineering (98.00 per cent), Farmer portal (99.00 per cent), IFFCO BAZAR (97.00 per cent), APEDA (96.00 per cent), Agriapp (95.67 per cent), IFFCO Kisan app (90.67 per cent), TNAU Cattle expert system (94.33 per cent), Kisan suvidha (93.67 per cent), e-NAM (90.00 per cent), AGMARKNET (89.67 per cent), Agriculture and Farmers Welfare Department (87.33 per cent), Instagram (86.67 per cent), Kisan Rath (86.00 per cent), (TNAU) Coconut expert system (85.00 per cent), Department of Agricultural Marketing & Agri Business (83.00 per cent), Telegram (75.33 per cent), PM-KISAN GOI (73.33 per cent), Village Knowledge Centre (VKC) - MSSRF (53.67 per cent), Crop Insurance App (62.00 per cent) and e Nithra Vivasayam (68.67 per cent) respectively.

Websites/ Webportals

The end result in table 1 reveals that around twenty per cent of the respondents frequently used the TNAU agritech portal (18.00 per cent) followed by (29.33 per cent) of the respondents who occasionally used it and the majority of the respondents used it rarely (35.00 per cent) and around eighteen per cent of them have never used the portal for the utilization of ICT advisory service. The portal which is available in regional languages and advisories rendered is applicable to the study area, so the farmers felt easy to use the portal. The resulting frequency of usage was from frequent to occasionally (47.33 per cent) which means that the respondents at least once a week and month were using the application.

For agrisnet portal, only 9.33 per cent of the respondents used it frequently followed by occasionally used at 13.33 per cent, rarely used at 20.67 per cent and nearly sixty per cent of the respondents never used it (56.67 per cent) the portal. More than ninety-five per cent of the respondents having a higher level of awareness of agrisnet websites however the frequency of usage is minimum. The website was not accessed frequently because the identified factors are less interest, lack of knowledge and ability to use.

Hence, it could be concluded that the result expounds that respondents were not spending the websites and preferred to use regional websites or web portals to utilise ICT advisories. The possibility of the result might be due to the lack of awareness among them about the websites/web portals.

Agriculture Mobile Applications

Table 1 represents that only 15.00 per cent of the respondents used the uzhavan app frequently for utilization of ICT advisories. Around thirty per cent of them occasionally (30.67 per cent) used the app followed by the majority of the respondents 38.67 per cent occasionally used the uzhavan app and 15.67 per cent never used it for any purpose. The respondents found it easy to use as the app provides its advisory service in the local language and the content available is reliable and applicable which would allow the farmers to spend time for utilizing the various services. In addition to that, some specific ICT advisory services like information on seed and fertilizer availability in Government, Private and Cooperative outlets nearer to their residence, information on the Customer Hiring Center for hiring farm Machinery, information on prevailing market prices in regulated markets, weather forecast advisories to take up appropriate cultivation plan, information on extension officer's visit to their villages and plant protection measures where the respondents can take pictures of any pest infestation reports and submit them through the app for investigation. The programme then offers suggestions for remedies. Uzhavan app has created various chances and custom services to use it regularly at least once a week or a month (45.67 per cent).

Furthermore, only a meagre per cent of the respondents frequently used nithra vivasayam (6.00 per cent) because the advisories are accessible in the local language. The app is aiming to reach a large audience but the awareness among farmers is not greater so it might be the reason for the result.

It could be predicted from table 1 that occasionally and rarely used mobile application are the KVK app used by (15.67 per cent) and (22.67 per cent) of the respondents apart from the advisory service the upcoming training

details are uploaded on the app either the Farmer Friend (FF) or farmers had online training in once a month or three-month gap period. The respondents may use the mobile app less frequently than usual 3.33 per cent and followed by plantix app rarely by (21.67 per cent). Currently, the plantix app is the emerging agriculture mobile app especially proposed for the plant protection advisory service of discussion with the experts. Hence it is the emerging mobile applications there is a medium level of awareness evoked among the farmers during the pandemic time thus it leads to the result of minimum use.

Furthermore, table 1 reveals that cent per cent of the respondents never used BigHaat Smart Farming App and Krishi-e Farm Management App. It is quite reliable were the respondents had no awareness about these mobile applications.

e-NAM app is never used (90.00 per cent) by the respondents. One part of the selected respondents are registered members of the Ottanchatram market who are known to conventional people in the import and export of agricultural produces, so they set to follow the usual process and not tried to use the e-NAM app.

Telephony

The result in table 1 elucidates that Farmers Call Centre (Kisan Call Centre) were frequently used by a meagre proportion (1.67 per cent) of the respondents followed by 17.00 per cent of those who were using KCC. It was rarely used by three-forth (67.33 per cent) of the respondents and never used by (14.00 per cent). As the result, the respondents were using KCC but not consistently which means an interval in the utilization of advisory services. Though the respondents were aware of the KCC services provided through mobile phones, some of them are not fully satisfied with those advisory services, which may have had more impact. Despite this, in comparison of audio to the visual medium of communication farmers prefer to obtain advisories in visual formats.

Village Knowledge Centre (VKC) - MSSRF was frequently used by 13.33 per cent occasionally used by 7.33 per cent, rarely used by (25.67 per cent) and 53.67 per cent of the respondents never used the centre and its services. The centre continuously sends SMS advisories of weather reports, crop information and training details.

Social Media Mobile Applications

It could be understood from table 1 that WhatsApp social media mobile application were frequently (38.67 per cent) used by the respondents followed by nearly half the proportion 47.33 per cent of the respondents using it occasionally and a meagre per cent of them were used rarely and only 4.00 per cent of the respondents never using WhatsApp. It is the preferred social media mobile application among the respondents.

WhatsApp is a kind of social media that allows farmers to interact with fellow farmers, scientists, extension personnel and other communications to converse, exchange information, and discuss. It is approachable social media used by many farmers. It is an information-rich platform as advisories can be sent in multiple formats, i.e., text messages, audio messages, images, multimedia, video messages and web links. For farmers using a smartphone has surpassed all other forms of communication. These are the reasons for the high per cent of using the WhatsApp mobile application for utilizing advisory services.

Likewise, YouTube applications are preferably used by the respondents in a frequent means of about 19.00 per cent and occasionally by 20.00 per cent. It means that nearly forty per cent (39.00 per cent) of them use a mobile application at least once a week or month. A little more than one-third of the respondents (36.00 per cent) were using rarely and one-fourth per cent of them (25.00 per cent) never used YouTube for utilizing ICT advisory services. YouTube is an audio-visual medium and the respondents found it simple to operate and search the information by typing or voice recording. The advisories available are practicable in a way, so the farmers found it a significant social media application following WhatsApp. However, telegram is an Indian mobile application which is similar to WhatsApp as one can chat, and exchange information etc., the result shows that one-fourth per cent of the respondents never used this mobile application. It shows less familiarity with the application among the respondents.

Further, Google Meet and Zoom App are rarely used by 68.67 per cent and 65.67 per cent of the respondents. During the COVID-19 lockdown period, the respondents get less chance in attending online training once a month or once in three months from KVK and SDA.

Conclusion

Social media and ICT tools have become India's dominant means for the exchange of ideas, communication, and benefits platforms. Hence it could be concluded that the majority of the respondents had a moderate level of extent of utilization of ICT advisory services, farmers found it challenging to utilize advisories through websites/web portals, mobile phones and the internet due to the lack of technical knowledge, awareness, and resources. More training can be given which with update the latest technologies in agriculture through ICT.

From the study, it is strongly recommended that

- The Government should develop proper ICT infrastructure for farmers.
- The extension personnel and scientists combined with the executive support should provide an awareness program on a regular interval for the utilization of various agriculture advisories through ICT.
- The extension personnel should build interest among farmers through lectures, presentations and demonstrations of ICT tools around prevailing trends in agriculture and on e-tools with mobile-based dissemination of improved agriculture technologies and utilization of advisories directly in a paced manner.

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