Original Research Article

Knowledge Level of Farmers on accessing Agricultural Information through Smartphone

ABSTRACT

The present study was conducted to assess the knowledge level of rice, millets, and cotton farmers on accessing agricultural information through smartphone. Ex Post Facto Research Design was followed in this study since it aimed to assess the knowledge level of farmers. The study was conducted during May and June 2022. It was decided to conduct the study on three types of crops representing wetland, dryland and commercial conditions, for comparison purposes. Based on maximum area under cultivation in the state, rice for wetland condition, millets for dryland condition and cotton for commercial farming were selected for the research. The study was conducted in three districts viz., Thanjavur, Salem and Virudhunagar, which were selected based on the highest area under rice, millets and cotton respectively. From each of the three districts, two blocks were selected and from the selected blocks, three villages from each block were selected for the study based on maximum area under the rice, millets, and cotton crop. Based on proportionate random sampling technique, 180 respondents were selected for the study. The responses of the respondents were subjected to frequency and percentage analysis. Most of the millet growers (90.00%), rice growers (86.67%), and cotton growers (85.00%) had low level of overall knowledge on accessing agricultural information through smartphone. Majority of the rice, millets, and cotton respondents had high level of knowledge on Uzhavan app, PM Kisan web portal, Google Pay, WhatsApp, and Google Play Store. The knowledge level could be enhanced by more promotional activities of extension workers by conducting awareness campaigns on important mobile apps and web portals related to agriculture, and by conducting trainings and demonstrations on utilizing smartphones for accessing agricultural information through browsing internet, mobile apps, and web portals.

Keywords: Knowledge, agricultural information, smartphone, mobile apps, web portals

1. INTRODUCTION

Agriculture is an important sector of the Indian economy. Indian agriculture has registered impressive growth over the last few decades. It is seen from Fourth Advance Estimates for 2020-21 that, total food grain production in the country is estimated at a record 308.65 million tonnes which is 11.15 million tonnes higher than that during 2019-20 [1]. In spite of this formidable growth, the huge challenges facing Indian agriculture is to further increase the production to keep pace with the ever increasing demand from growing population. The productivity is hampered due to non-availability of modern inputs, poor physical infrastructure and more so information on various issues in agriculture. Indian agrarian economy is characterised by low degree of market integration and connectivity, accessibility of reliable and timely information by the farmers on prices of commodities [2].

Unfortunately, the present ratio of extension workers to farmers, cannot meet the knowledge needs of agricultural communities. The optimum Extension professional to farmers' ratio was 1:800 but in the present situation it is 1:1037 [3] which leaves no other way than adopting ICT tools in disseminating agricultural information.

Greater increase in the internet penetration from 4.00 per cent during 2007 to 55.00 per cent in the year 2021, shows the opportunities for using internet services in agriculture to provide timely information [4]. ICT-enabled Extension services is recognized as an essential mechanism for delivering knowledge and advisory as an input for modern farming. Compared to other ICT tools, mobile phones have been widely spread to most of the agricultural communities due to their affordability and user-friendliness [5]

Farmers feel that mobile phone as easy, fast and convenient way to communicate agricultural information and get advisories related to seeds, pest and disease diagnosis, fertilizer application and purchase, market price of commodities, weather, etc. Mobile phones have saved energy and time of farmers and ultimately improved their income. This reduces travel costs and increases the productivity of agricultural communities living in remote areas.

In the light of this, research was conducted to study the knowledge level of farmers on accessing agricultural information through smartphones.

2. METHODOLOGY

It was decided to conduct the study on three types of crops representing wetland, dryland and commercial conditions, for comparison purposes. Based on maximum area under cultivation in the state, rice for wetland condition, millets for dryland condition and cotton for commercial farming were selected for the research and accordingly Thanjavur, Salem, and Virudhunagar districts were selected for the study.

From each district, two blocks having maximum area under the crop were purposively selected. From each block, three villages having highest area were selected based on purposive sampling. From each block 30 respondents were selected using Proportionate Random Sampling method.

In order to measure the knowledge possessed by a respondent, a Teacher Made Test was developed for the study based on discussions held with subject matter experts. The Test comprised 20 knowledge items with multiple choices, and categorised into five sub-topics as follows:

i. Crop Production and Crop Protection
ii. Animal Husbandry
iii. Agricultural Marketing
iv. Government Schemes
v. Mobile Apps

For each knowledge item, correct response was assigned a score of 2 and incorrect response was given score of 1. Individual scores were summed up to arrive at knowledge score of a respondent. The maximum and minimum scores that can be obtained was 40 and 20 respectively. Low knowledge refers to scores between 20-27, medium knowledge refers to scores between 28-34, and high means scores between 35-40.

3. RESULTS AND DISCUSSION

3.1. Overall knowledge on accessing agricultural information using smartphone

The findings in relation to overall knowledge of respondents on accessing agricultural information using smartphone is presented in Table 1.

It is inferred from Table 1 that more than three-fourth (86.67%) of the rice growers had low level of overall knowledge on accessing agricultural information using smartphone, and the remaining (13.33%) had medium level of overall knowledge.

With respect to millets, most (90.00%) of the respondents had low level of overall knowledge on accessing agricultural information using smartphone, and the rest (10.00%) of the respondents had medium level of overall knowledge.

In respect of cotton, more than three-fourth (85.00%) of the respondents had low level of overall knowledge on accessing agricultural information using smartphone, and the rest (15.00%) had medium level of overall knowledge.

As observed during the study that most of the rice, millets, and cotton respondents had low level of knowledge on accessing agricultural information thorough smartphone. The reason for this may be that most of the respondents were middle to old aged, had high farming experience, and had low level of awareness on mobile apps and web portals related to agriculture.

Table 1. Distribution of Respondents according to overall knowledge on accessing agricultural information using smartphone

S. No.	Categories	Rice (n=60)	Millets (n=60)	Cotton (n=60)
		f (%)	f (%)	f (%)
1.	Low	52 (86.67)	54 (90.00)	51 (85.00)
2.	Medium	8 (13.33)	6 (10.00)	9 (15.00)
3.	High	0 (0.00)	0 (0.00)	0 (0.00)
	Total	**60 (100.00)**	**60 (100.00)**	**60 (100.00)**

*Figures in parenthesis are percentage to total.

3.2. Item-wise knowledge level of Respondents on accessing agricultural information through smartphone

The results on item-wise knowledge of respondents on accessing agricultural information through smartphone is given in Table 2.

I. Crop Production and Crop Protection

From Table 2 it is seen that about two-third (63.33%) of the rice growers had knowledge on Uzhavan app, followed by Plantix (15.00%), TNAU Agritech Portal (13.33%), and TNAU AAS (5.00%).

In the case of millets, about two-third (61.67%) of the respondents had knowledge on Uzhavan app, followed by TNAU Agritech Portal (8.33%), Plantix (5.00%), and none of the respondents had knowledge on TNAU AAS app.

Two-third (66.67%) of cotton growers had knowledge on Uzhavan app, followed by Plantix (13.33%), TNAU Agritech Portal (10.00%), and TNAU AAS (1.67%).

II. Animal Husbandry

With respect to rice, only a meagre percentage (3.33%) of the respondents had knowledge on Sheep and Goat Farming mobile app of TANUVAS, followed by Kisan Suvidha, Feed Calculator of TANUVAS, and Artificial insemination app of IVRI (1.67%).

None of the millet growers had any knowledge on the mobile apps viz., Sheep and Goat Farming, Kisan Suvidha, Feed Calculator, Artificial Insemination.

With respect to cotton, only a meagre percentage (1.67%) of the respondents had knowledge on Kisan Suvidha mobile app, and Feed Calculator of TANUVAS. None of the respondents had knowledge on Artificial insemination app of IVRI, and Sheep and Goat Farming mobile app of TANUVAS.

III. Agricultural Marketing

A small percentage (6.67%) of rice growers had knowledge on AGMARKNET and BigHaat, followed by eNAM (3.33%), and none of the respondents had knowledge on Kisan Rath mobile app.

In the case of millets, a meagre percentage (3.33%) of the respondents had knowledge on AGMARKNET, and none of the respondents had knowledge on BigHaat, eNAM, and Kisan Rath app.

With respect to cotton, a small percentage (10.00%) of the respondents had knowledge on BigHaat, followed by AGMARKNET (6.67%), eNAM (1.67%), and none of the cotton growers had knowledge on Kisan Rath mobile app.

IV. Government Schemes

Most (93.33%) of the rice growers had knowledge on PM Kisan portal, followed by Uzhavan app (85.00%), Crop Insurance app (11.67%), and Kisan Suvidha (1.67%).

More than half (55.00%) of the millet growers had knowledge on Uzhavan app, followed by PM Kisan (31.67%), Crop Insurance app, (8.33%), and none of the respondents had knowledge on the mobile app Kisan Suvidha.

Almost all (98.33%) the cotton growers had knowledge on the online platform PM Kisan, followed by Uzhavan app (73.33%), Crop Insurance app (16.67%), and Kisan Suvidha (1.67%).

V. General Mobile Apps

More than three-fourth (88.33%) of the rice growers had knowledge on Google Pay, followed by New Group option in WhatsApp (65.00%), Google Play Store (63.33%), and Google is not a video conferencing platform (13.33%).

An overwhelming majority (85.00%) of the millet growers had knowledge on Google Pay, followed by Google Play Store (75.00%), New Group option in WhatsApp (66.67%), and Google is not a video conferencing platform (5.00%).

With respect to cotton growers, more than three-fourth (83.33%) of the respondents had knowledge on Google Pay, followed by New Group option in WhatsApp (50.00%), Google Play Store (48.33%), and Google is not a video conferencing platform (20.00%).

Most of the rice, millets, and cotton respondents had knowledge on Uzhavan app, PM Kisan web portal, Google Pay, WhatsApp and Google Play Store.

The reason for the high level of knowledge on Uzhavan app is may be due to that most of the farmers had awareness on Uzhavan app. Uzhavan app provides information related to Seed stock position, weather, subsidy schemes related to agriculture, horticulture and agricultural engineering, and Pest and Disease monitoring. Uzhavan app also allows the farmers to access the information related to crop insurance which helps the farmers to know the notified crops, places of insure, and insured details.

Most of the respondents had high knowledge on PM Kisan web portal, which may be due to the reason that most of the respondents were beneficiaries of PM Kisan Scheme which provides Rs. 6,000 per year to farmers as income support.

As observed from study that most of the respondents had knowledge on Google Pay, WhatsApp and Google Play Store. The reason may be due to that increasing smartphone usage among farmers and internet penetration rural areas.

Table 2. Distribution of Respondents according to item-wise knowledge on accessing agricultural information through smartphone

S. No.	Knowledge Items	Correct Response		
		Rice (n=60)	Millets (n=60)	Cotton (n=60)
		f (%)	f (%)	f (%)
I.	**Crop Production and Crop Protection**			
1.	Seed stock position related information is available in which mobile app? a) Kisan Rath b) Plantix c) Crop doctor **d) ***Uzhavan App	38 (63.33)	37 (61.67)	40 (66.67)
2.	Pest and disease identification is the major facility available in this mobile app: a) Agri App b) Kisan Rath **c) ***Plantix d) Crop Insurance	9 (15.00)	3 (5.00)	8 (13.33)
3.	TNAU provides crop production and crop protection related information and advisories through: **a) ***Agritech Portal b) e NAM c) AGMARKNET d) AGRISNET	8 (13.33)	5 (8.33)	6 (10.00)
4.	Through TNAU AAS what is the information can be accessed? a) Market Price **b) ***Weather c) Input Purchase d) Government Schemes	3(5.00)	0 (0.00)	1 (1.67)
II.	**Animal Husbandry**			
5.	Sheep and Goat Farming mobile app was developed by: **a) ***TANUVAS b) TNAU c) Animal Husbandry Department d) Agriculture Department	2 (3.33)	0 (0.00)	0 (0.00)
6.	Which mobile app provides vast information on animal husbandry? **a) ***Kisan Suvidha b. b) Uzhavan App c) AGMARKNET d) e NAM	1 (1.67)	0 (0.00)	1 (1.67)
7.	Mobile app developed by Tamil Nadu Veterinary and Animal Sciences University (TANUVAS) which helps in calculating the feed requirement for milch animals is called as: a) Calculator FCR **b) ***Feed Calculator c) e Feed d) Dairy Ration Feed Tool	1 (1.67)	0 (0.00)	1 (1.67)
8.	Artificial insemination app was developed by: **a) ***IVRI b) TNAU c) TANUVAS d) Animal Husbandry Department	1 (1.67)	0 (0.00)	0 (0.00)
III.	**Agricultural Marketing**			
9.	This web portal provides market related information: a) AGRISNET **b) ***AGMARKNET c) DACNET d) m Kisan	4 (6.67)	2 (3.33)	4 (6.67)
10.	Among the following which one is an agriculture E commerce platform? **a) ***BigHaat b)Myntra c) Snapdeal d) Quikr	4 (6.67)	0 (0.00)	6 (10.00)
11.	Which app can be used for marketing farmers produce? a) PMKisan b) Kisan Rath **c) ***e NAM d) Plantix	2 (3.33)	0 (0.00)	1 (1.67)

S. No.	Knowledge Items	Correct Response		
		Rice (n=60)	Millets (n=60)	Cotton (n=60)
		f (%)	f (%)	f (%)
12.	This mobile app helps farmers and traders for transportation of agricultural produce: a) Kisan Suvidha b) Uzhavan App **c) ***Kisan Rath d) e NAM	0 (0.00)	0 (0.00)	0 (0.00)
IV.	**Government Schemes**			
13.	This online platform provides information on the scheme which provides Rs. 6,000 per year to farmers as income support: a) AGMARKNET b) AGRISNET c) m Kisan **d) ***PM Kisan	56 (93.33)	19 (31.67)	59 (98.33)
14.	Through this mobile app, farmers can access information on subsidy schemes related to agriculture: **a) ***Uzhavan App b) Crop Insurance c) PM Kisan d) Kisan Rath	51 (85.00)	33 (55.00)	44 (73.33)
15.	Mobile app for Pradhan Mantri Fasal Bima Yojana (PMFBY) is: **a) ***Crop Insurance b) AGMARKNET c) Uzhavan App d) Kisan Suvidha	7 (11.67)	5 (8.33)	10 (16.67)
16.	Farmers can register for micro irrigation scheme through which mobile application? **a) ***Kisan Suvidha b) Uzha van App c) e NAM d) Kisan Rath	1 (1.67)	0 (0.00)	1 (1.67)
V.	**General Mobile Apps**			
17.	Through this mobile app, online money transaction is possible: a) Myntra b) Flipkart **c) ***Google Pay d) Snapdeal	53 (88.33)	51 (85.00)	50 (83.33)
18.	Farmers with mutual interest can be aggregated in WhatsApp using which option? **a) ***New Group b) New Team c) New Contacts d) New Settings	39 (65.00)	40 (66.67)	30 (50.00)
19.	Mobile apps can be downloaded using which platform? a) Instagram b) Android **c) ***Google Play Store d) Apple iOS	38 (63.33)	45 (75.00)	29 (48.33)
20.	Which one of the following is not a video conferencing platform? **a) ***Google b) WebEx c) Zoom d) MS TEAMS	8 (13.33)	3 (5.00)	12 (20.00)

*Figures in parentheses are percentage to total.

CONCLUSION

Most of the rice, millets, and cotton respondents had low level of overall knowledge on accessing agricultural information through smartphone. The knowledge level could be enhanced by more promotional activities of extension workers by conducting awareness campaigns on important mobile apps and web portals related to agriculture, and by conducting trainings and demonstrations on utilizing smartphones for accessing agricultural information through browsing internet, mobile apps, and web portals.

COMPETING INTERESTS DISCLAIMER:

Authors have declared that they have no known competing financial interests OR non-financial interests OR personal relationships that could have appeared to influence the work reported in this paper.

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