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Constraints faced by rice growers in accessing agricultural information through smartphone

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Abstract

The present study conducted to elucidate the constraints faced by rice growers in accessing agricultural information through smartphone. The study was conducted during May and June 2022. Thanjavur district was purposively selected for the study based on the maximum area under rice crop. Two blocks having maximum area under the crop were purposively selected. Orathanadu and Ammapettai blocks were selected from Thanjavur district. 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 which constitutes the sample size of 60. The responses of the respondents were subjected to frequency and percentage analysis. The constraints were grouped into two categories viz., hardware constraints and software constraints. The suggestion was grouped in to three categories viz., hardware strategies, software strategies, and training needs. Most of the respondents reported that less knowledge and skill in using smartphone (3.82), high cost for repair and maintenance of smartphones (3.57), and high cost of data tariffs (3.45) were the major hardware related constraints, and less awareness on agriculture related mobile apps/web portals (3.73), and unavailability of updated information (3.57) were the major software related constraints. The major suggestion provided by the farmers were provision of assistance by the government to purchase high end smartphone, creating farmer friendly data packs, regular updating of information and adding voice recognition facility in mobile apps, developing the knowledge of farmers on downloading and operating different apps and portals related to agriculture through method demonstration and trainings.

Keywords: Mobile, application, information access, paddy farmers, ICT

1. Introduction

Rice is the predominant food source for majority of the human population across the world. In 2021-22, rice production at global level was estimated to be 513.00 million tonnes (mt). China and India top the ranking in rice production among all the countries in the world, as they contribute more than half of the world's rice production (Nadhan and Bonnie, 2022) ^[1]. Releasing the third advance estimates of agriculture crops, the Government of India has said that the overall food grain production will be 314.51 mt during 2021-22 crop year (July-June). It has been estimated that rice production will be 129.66 mt, which is higher than last year's output of 124.37 mt. This was achieved through the rigorous efforts of different disciplines of crop sciences, policies undertaken by the government and the enormous efforts of the lakhs of rice farmers in the country.

Rice is one of the crop which is cultivated by farmers throughout a year in different seasons. So they need updated and timely information for decision making in their farm. Information and Communication Technologies can aid the extension workers in providing timely and accurate information to farming community (Ansari and Pandey, 2013) ^[2]. In different ICTs, mobile phones have more penetration around the world compared to other ICT tools. Mobile phone based communication has rapidly grown in the recent years and became the mostly used communication tool among all ICTs of the 21st century. In 2019, India ranked 18th in the smartphone penetration with the percentage of 36.70 and had 502.2 million people who used smartphone. In 2020, it was seen hike with 810 million smartphone users (Annapurani, 2021) ^[3].

Mobile phone has empowered the farmers by disseminating information related to inputs, weather, pest and disease control, farm machinery, animal husbandry, government schemes price of commodities, etc. (Aker, 2011) ^[4]. Even though mobile phone has a tremendous penetration in rural areas and spread its advantages, still many farmers face many difficulties in using smartphone for accessing agricultural information (Abdullahi *et al.*, 2021) ^[5].

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In the light of this, a research was conducted to elucidate the constraints and providing suggestions to overcome it.

2. Materials and Methods

The study was conducted in Thanjavur district which was selected based on maximum area under rice cultivation. Two blocks having maximum area under the crop were purposively selected. Orathanadu and Ammapettai blocks were selected from Thanjavur district. 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 which constitutes the sample size of 60.

Respondents were asked to express the constraints in accessing agricultural information through smartphone. Level of importance of the constraints was measured as 'Not a Constraint', 'Low Constraint', 'Medium Constraint', 'High Constraint' with scores of 1, 2, 3 and 4 respectively. Mean score was calculated from the total score of each constraint statement and applied for the meaningful interpretation.

3. Results and Discussion

3.1 Constraints faced by Rice growers in Use of Smartphone

The findings in relation to constraints faced by farmers in use of smartphone are presented in Table 1.

Table 1: Constraints faced by Rice growers in use of smartphone

S. No.	Constraints	Mean Score
I.	Hardware	
1.	Less knowledge and skill in using smartphone	3.82
2.	High cost for repair and maintenance of smartphone	3.57
3.	High cost of data tariffs	3.45
4.	Smartphones are expensive	3.15
5.	Less Storage	3.03
6.	Mobile network problem	1.50
7.	Non-availability of mobile service centres nearby	1.38
II.	Software	
1.	Less awareness on agriculture related mobile apps/web portals	3.73
2.	Information not updated (eg: Seed stock position, fertilizer stock position, agricultural machinery, etc.)	3.57
3.	Less knowledge on downloading mobile apps	3.07
4.	Non-availability of agricultural information in regional languages	2.88
5.	Less availability of location-specific information	2.72
6.	Complicated procedures in availing government schemes through app	2.68
7.	Multiple steps involved to access information causes frustration	2.30
8.	Virus threat due to installing new software	1.75
9.	Security threat due to downloading mobile apps	1.67

Multiple responses were recorded

I. Hardware

From Table 1 it is seen that rice growers faced the problems of less knowledge and skill in using smartphone (3.82), followed by high cost for repair and maintenance of smartphones (3.57), high cost of data tariffs (3.45), expensive smartphone (3.15), less Storage (3.03), mobile network problem (1.50), and non-availability of mobile service centres nearby (1.38).

Most of the respondents faced less knowledge and skill in using smartphone as key constraint followed by high cost for repair and maintenance of smartphone. The reason for this finding may be due to that most of the respondents possessed

less knowledge on mobile apps and web portals related to agriculture and they had less skill in accessing agricultural information using smartphone. Due to less skill in using smartphone respondents feared that they will impair the smartphone. For that high expenses to repair the mobile will occur.

II. Software

The rice growers faced the problems of less awareness on agriculture related mobile apps/web portals (3.73), followed by information not updated (3.57), less knowledge on downloading mobile apps (3.07), non-availability of agricultural information in regional languages (2.88), less availability of location-specific information (2.72), complicated procedures in availing government schemes through app (2.68), multiple steps involved to access information (2.30), virus threat (1.75), and security threat due to downloading mobile apps (1.67).

The rice growers faced the constraints of less awareness on agriculture related mobile apps/web portals. This finding may be due to the reason that the respondents were middle to old aged, had low level of social participation, and less exposure to agricultural messages.

Next to less awareness, farmers faced availability of updated information (3.57) as major constraint. This is due to the reason that rice farmers used to check seed stock position, fertilizer stock position, and agricultural machinery rental using Uzhavan app. So they will see the information and inform the labours about the sowing and go for the department office to purchase seeds. But that time the seeds won't be available there. In the case of agricultural machinery also farmers used to check the availability of rotovator, harvester, transplanters. Many time the app was showing the machineries were unavailable. It is due to that the registered farmers were not taken the machines from the service providers.

3.2 Strategies for improving smartphone usage by farmers: The findings in relation to strategies for improving smartphone usage by farmers are presented in Table 2.

Table 2: Strategies for improving smartphone usage by farmers

S. No.	Strategies	Mean Score
I.	Hardware	
1.	Government assistance to purchase high end smartphone	4.00
2.	Farmer friendly data packs to be offered by service providers	3.75
3.	Improvement of internet connectivity facilities in rural areas	2.62
4.	Establishment of mobile service centres in villages	2.40
II.	Software	
1.	Regular updating of information	4.00
2.	Adding voice recognition facility in mobile apps	4.00
3.	Location specific contents to be given	4.00
4.	Contents to be created in regional languages	4.00
III.	Training Needs	
1.	Knowledge on different apps and portals related to agriculture	3.98
2.	Downloading and operating mobile apps	3.92
3.	Accessing Market prices/Marketing Intelligence/Marketing of farm produce through portals/apps	3.92
4.	Accessing/registering as beneficiary for availing government schemes	3.72
5.	Purchasing of agricultural inputs through e commerce portals	3.03
6.	Doing online money transactions	3.02
7.	Using video conferencing tools for interacting with farmers and others	2.85

I. Hardware

The rice growers expressed that provision of assistance by the government to purchase high end smartphone (4.00) as the most important suggestion, followed by creating farmer friendly data packs (3.75), improvement of network connectivity (2.62), and establishment of mobile service centres in villages (2.40).

Owning less advanced smartphone restricts the farmers from downloading many apps and other features. A good quality smartphone costs around a minimum price of Rs. 12,000. The amount could not be bear by the farmers. So government should provide assistance to purchase the high end smartphone. Rate of data packs were vary with the service providers. In the starting period the service providers gave the data packs for less cost. But now they slowly started to increase the price of the data pack. Due to the hike in price of the data pack farmers were not regularly used to recharge data pack. So farmers opined that service providers should create data packs with affordable price. During COVID pandemic time the children were attended the class through online. Many time they completed the data pack by using it for online class. So, farmers could not able to use it for the agriculture purpose.

II. Software

The rice, millets, and cotton respondents expressed that regular updating of information, adding voice recognition facility in mobile apps, creation of content in regional language, and provision of location specific information (4.00) are the key strategies for improving smartphone usage by the farmers.

Most of the respondents opined that they are not getting updated information on seeds, fertilizers, and agricultural machinery availability. To overcome this State Department of Agriculture has to take necessary action to update the information regularly.

III. Training Needs

The rice growers expressed that knowledge on different apps and portals related to agriculture should be created by conducting training as key strategy to improve the usage of smartphone by farmers (3.98), followed by downloading and operating mobile apps, training on accessing market prices/marketing intelligence/marketing of farm produce through portals/apps (3.92), accessing/registering as beneficiary for availing government schemes (3.72), purchasing of agricultural inputs through e commerce portals (3.03), doing online money transactions (3.02), and using video conferencing tools for interacting with farmers and others (2.85).

Rice growers possessed less knowledge on different mobile apps and web portals. Awareness programmes and training on available apps and we portals of agricultural importance should be provided.

4. Conclusion

The experts of ICTs have realized that mobile is the most suitable gadget for providing accurate, timely, relevant information to farmers. Therefore it is very much necessary to find out the major constraints faced by them in using smartphone for accessing agricultural information and provide suggestions to overcome those constraints. Most of the farmers faced less knowledge and skill in using smartphone, less awareness on agriculture related mobile apps/web portals,

unavailability of updated information, as major constraints. To overcome these constraints State Department of Agriculture has to provide training on knowledge on downloading and using different apps, portals related to agriculture, and regular updating of information. Government has to provide assistance to farmers to purchase high end smartphone through which farmers can access agricultural information without any restrictions.

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6. Competing interests

Authors have declared that no competing interests exist.

7. Authors' Contributions

The study was carried out in collaboration with the authors and all the authors read and approved the final manuscript.

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