The Andhra Agric. J 71 (2): 236-239, 2024
doi :10.61657/aaj.2024.122

Constraints perceived in utilization of Mobile Apps by farmers in Kakinada district of Andhra Pradesh, India

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ABSTRACT

The study investigated into the constraints encountered by farmers while using mobile apps in the Kakinada district of Andhra Pradesh. The study was performed in a simple randomly chosen district and respondents were selected purposively who are using mobile apps. Data was collected from the respondents with the help of well-structured interview schedule during the year 2024. The acquired data was analysed by using Garrett ranking. The major constraints faced by the farmers in utilization of mobile apps were less availability of location-specific information, information not updated (eg: seed stock position, fertilizer stock position, etc.), non-availability of agricultural information in regional languages, multiple steps involved to access information causes frustration. Some major suggestions drawn from the respondent farmers were app should include success stories of progressive farmer on technologies adopted, providing time to time short film/video about information on various crops related technologies in apps and contact with experts must be arranged. All constraints could be overcome by implementing appropriate policies, educating the farmers about information technology, creating tailored mobile applications for farmers and establishing an effective feedback system.

Keywords: *Agricultural development, Dissemination, Extension system, Mobile apps, and Research system.*

India's economy is an agrarian economy, to support agriculture many new technologies or improved practices are being developed for development of farmers which are location specific and need-based. Information plays a vital role to get the successive development of agriculture. Constant flow of information/technology from research system to extension system and there on to the farmers is necessary for rapid agricultural development. The extension personnel of the Department of agriculture disseminated the technologies and messages to the farmers through various extension methods. But these approaches have not been able to reach majority of the farmers spread across the country as the ratio between farmer and extension worker is 1162:1. In this context, mobile apps play an important role in reaching the unreached, supplement and reinforce the extension efforts.

The third-party software that most smart phones have installed is often known as mobile applications (or mobile apps). The world is humming to the tune of mobile apps which is a solution for everything. Mobile application is also known as an app, smartphone app, web app, online app or iPhone app. It is a computer program designed to run on a mobile device such as a phone/tablet or watch and often stand in contrast to desktop applications that run on desktop computers and with web applications which run in mobile web browsers rather than directly on the mobile device. Mobile apps in the field of farming can be the most excellent option to boost farming production in country. Farmers can now readily download agricultural mobile applications to their smartphones in order to access a variety of amenities that were before unavailable to them. The potential of agricultural mobile apps as a tool for different decision-making processes is still not completely realized (Sivakumar *et al*., 2022). However, using mobile applications in agriculture can assist smallholders in accessing financial services, improving their market access and enhancing their visibility to improve supply chain efficiency (Okoroji *et al*., 2021). Hence mobile applications are an amiable option for transmitting information to people in villages and rural areas.

The mobile applications that offer the most recent agricultural information on methods, equipment, technologies and trends being used in the industry, assist in identifying pests and diseases, offer real-time weather data, storm warnings before they occur, the best local markets for buying seeds, pesticides and fertilizer, etc. The use of mobile apps keep them aware for weather forecast for agriculture input application like fertilizer and pesticides which might be affected by unforeseen disasters as communicated by meteorological department. Through the apps, farmers can also communicate with and get advice from agricultural specialists across the nation. These apps aid in the provision of market data, the facilitation of market links, the provision of access to extension services, the provision of information pertaining to farms, etc. The mobile software application provides a wide range of facilities like text message service, weather information, market pricing, agro-advisory services, online monitoring of crops, feedback mechanisms, helpline etc. Some of agri mobile applications are Kisan Suvidha, Pusa krishi, Crop insurance, Agri market, IFFCO kisan, Kheti-badi, Krishi Gyan, AgriApp, Farm-o-pedia, mKisan, e-Rythu, mana Verusanaga App, Agritech, Angrau-KVK Banavasi CFLD, angraurbk, Fertilizer Calculator, ANGRAU-Pashu Poshan, NaPanta, AgriCentral, Vyavasayam, BigHaat, KisanKonnect, IFFCO bazar etc.

MATERIAL AND METHODS

The present study was conducted in Kakinada district of Andhra Pradesh during the year 2024. An *Ex-post facto* research design was used in the present investigation. The Kakinada district was selected by using simple random sampling procedure in Andhra Pradesh. Out of twenty-one mandals in Kakinada district, three mandals namely Kajuluru, Karapa and Pedapudi were selected from the district by using simple random sampling procedure. From each of the selected mandal, four villages were selected by following simple random sampling procedure. T.Mamidada, Jagannadhagiri, Seela and Gollapalem from Kajuluru mandal; Karapa, Penuguduru, Nadakuduru and Gurajanapalle from Karapa mandal; Domada, Atchutapuratrayam, Pedapudi and Puttakonda from Pedapudi mandal were selected for the study. From each selected village, ten farmers were selected purposively who are using mobile apps. Thus a total of 120 respondents were selected for the study.

Data was collected from the respondents with the help of well-structured interview schedule which was developed keeping in view of the objective of the study. The collected data were coded, classified and tabulated. The Garrett's ranking procedure was used for meaningful interpretation of findings and for drawing conclusions.

The data are collected pertaining to the problems faced by the respondents with regard to mobile apps usage and also for suggestions given by the respondents was quantified in terms of the number of respondents who gave the rank based on the importance.

Garret's formula for converting ranks into per cent is given below,

Per cent position = 100 (Rij – 0.5) /Nj

Where,

Rij = Rank given for the i^{th} item by j^{th} respondent

Nj = Number of items ranked

RESULTS AND DISCUSSION

It was evident from the Table 1 that 'less availability of location-specific information' was the major constraint with a Garrett score of 79.26(rank I).

Majority of the respondents had expressed less-availability of location specific information was their major constraint. The reason might be that agriculture is highly location-dependent and farmers required precise and tailored information to make informed decisions about their crops, soil, weather conditions and local markets.

Information not updated (eg: Seed stock position, fertilizer stock position, etc.) was ranked II with a Garrett score of 68.33 because farmers utilizing mobile apps for agriculture required timely and accurate information such as weather forecasts, market trends and pest and disease outbreaks, to make informed decisions regarding crop management, pest control, irrigation scheduling and market strategies.

Non-availability of agricultural information in regional languages was ranked III with a Garrett score of 61.01. The reason could be that the absence of agricultural information in their regional language created a language barrier, making it difficult for farmers to access and understand the provided information. This could have led to incorrect implementation of agricultural practices, potential crop

losses and discouraged farmers from using agricultural apps and websites.

Multiple steps involved to access information causes frustration was ranked IV with a Garrett score of 55.71 because of time-consuming process, technical complexity and limited patience caused frustration.

Lack of knowledge and skill in using mobile apps was ranked V with a Garrett score of 47.13. This might have been due to a gap in the availability of training programs aimed at teaching farmers how to use agricultural apps. Without proper training and education, farmers might be unaware of the potential benefits these apps could offer or how to use them effectively.

Security threat due to downloading mobile apps was ranked VI with a Garrett score of 46.94 because mobile apps could have presented various security risks and farmers needed to be cautious about the apps they downloaded and used to protect their data, personal information and overall digital safety.

Poor mobile network connectivity was ranked VII with a Garrett score of 29.98 because it might have hindered their ability to access real-time agricultural information such as weather forecasts, market prices, crop management techniques and government schemes, leading to a lack of timely and relevant information for decision-making. The frustration caused by unreliable connections might have led to reluctance in adopting digital tools. More than half of the respondents conveyed that poor mobile network connectivity was not a major constraint for them in using smartphone because they had better connectivity.

High cost of smartphone was ranked VIII with a Garrett score of 29.82. The reason might be that availability of affordable smartphones and second-hand or refurbished devices provided a cost-effective alternative to buying new ones.

Non-availability of mobile service centres nearby was ranked IX with a Garrett score of 27.9 The reason could be that farmers had developed self-reliance in dealing with minor smartphone issues, either through self-repair, using online resources or relying on informal local repair services.

Table 1 Constraints perceived by farmers in usage of mobile apps

S. No.	Problems	Garrett Score	Rank
1.	High cost of smartphones	29.82	VIII
2.	Lack of knowledge and skill in using mobile apps	47.13	V
3.	Poor Mobile network connectivity	29.98	VII
4.	Non-availability of mobile service centres nearby	27.9	IX
5.	Less availability of location-specific information	79.26	I
6.	Information not updated (eg: Seed stock position, fertilizer stock position, etc.)	68.33	II
7.	Non-availability of agricultural information in regional languages	61.01	III
8.	Multiple steps involved to access information causes frustration	55.71	IV
9.	Security threat due to downloading mobile apps	46.94	VI

A perusal of the Table 2 indicated that majority of the respondents suggested 'app should include success stories of progressive farmer on technologies adopted' with a Garrett score of 77 (I rank). The reason might be that learning from the experiences of others who had successfully implemented technologies provides practical insights and actionable advice. It helped users understand how to overcome challenges and achieve success.

Providing time to time short film/video about information on various crop related technologies in app was ranked II with a Garrett score of 66.33 as videos and short films could have catered to visual and auditory learners, making complex information

about crop technologies more accessible and easier to understand compared to text alone.

Contact with experts must be arranged was ranked III with a Garrett score of 50.83 as direct access to experts would have allowed users to get personalized advice and solutions tailored to their specific problems or questions. This could have been particularly valuable in agriculture, where challenges can be diverse and complex.

Use of simple language and avoiding complex words in the text was ranked IV with a Garrett score of 35.5 as by using clear and straight forward language, the app might have ensured that all users, regardless of their background or education level, could easily navigate and use it effectively. This helped improve the overall user experience, making the app more accessible and useful.

Training should be provided for the use of app was ranked V with a garrett score of 19.66 as training could have been provided to farmers to help them understand how to use the app effectively. Even if an app was user-friendly, farmers might have needed guidance on how to navigate its features, input data and get the most out of it. Proper training would have ensured they could use the app confidently and fully leverage its advantages for their farming activities.

Table 2 Suggestions to improve the utilization of mobile apps

S. No.	Suggestions	Garrett Score	Rank
1.	Training should be provided for the use of app	19.66	V
2.	Providing time to time short film /video about information on various crop related technologies in app	66.33	II
3.	App should include success stories of progressive farmer on technologies adopted	77	I
4.	Contact with experts must be arranged	50.83	III
5.	Use simple language and avoid complex words in the text	35.5	IV

CONCLUSION

In the present study it was found that farmers faced many constraints such as less availability of location-specific information, information not updated (eg: Seed stock position, fertilizer stock position, etc.) and non-availability of agricultural information in regional languages. All the constraints could be eliminated by making suitable policies, educating the farmers about information technology, making need-based suitable mobile apps for farmers and developing suitable feedback mechanism. Improvement in internet connectivity, reduction in internet data tariffs, use of mobile apps by state line departments on sharing agricultural information, minimizing the irrelevant posts, providing only certified and high-quality inputs on purchasing platforms, time of responding the query should be minimal. The findings of this study will help agriculture university authorities and app developers to enhance the utility and quality of mobile apps in various areas such as downloading, user interactivity, attractiveness, engagement, visuals and content. The different modes of presentation of information like text, audio, video, multimedia, animations could be used for value addition to the information provided on the mobile apps so that the farmers could easily understand.

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Received on 13.02.2024 and Accepted on 05.03.2024