Madras Agric. J., 2019; doi:10.29321/MAJ 2019.000236

RESEARCH ARTICLE

A Study on the Farmers' Perception on the Sugarcane Expert System based Mobile Application

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Received : 05th September, 2018
Revised : 22nd October, 2018
Accepted : 24th October, 2018

ABSTRACT

The agglomeration of expert system into mobile app paves the way for new era in transfer of technology in agriculture. The study is focused on farmer's perception on the Android App based Expert system in Sugarcane. Data were collected using a well-structured interview schedule and analyzed through percentage analysis. The results revealed that farmers had very little awareness about the android mobile application in agriculture. The perception of the farmers about the functioning of TNAU android expert system application in sugarcane was highly satisfied. Adequate extension efforts are required to be taken to popularize this App. among sugarcane growers.

Keywords: *Expert system, Mobile app, Sugarcane, Farmer, Awareness.*

INTRODUCTION

Sugarcane is one of the major cash crops of India. It is cultivated largely in ten states of India (GoI, 2017).In India many grass root ICT projects have been successful in sugarcane, It includes supply chain management, the case of Warna wired project and the notable private sector initiatives viz., India agriline by EID parry Ltd. (Bowonder and Yadav, 2005).Farmers perceived mobile phone as a tool for capacity development and extension service (Anand and Kumaran, 2017). There was a significant increase in the knowledge level of the farmers after exposure to expert system (Karupasamy and Sriram, 2015). Expert system is now one of the thrust tools in ICT enabled era of agriculture. It is an intelligent computer programme that uses knowledge and inference procedure to solve problems that are difficult enough which requires human expertise for their solution (Hunt, 1986). Expert system has vast utilization in areas like disease diagnosis, crop management, decision making and knowledge application for extension workers and farmers. Today farmers are accessing internet and other tools for knowledge acquisition. To tap the potential of expert system and mobile app, the e-extension center of Tamil Nadu Agricultural University has released mobile app on expert system in Sugarcane, Paddy, Coconut, Finger millet and Cattle in Tamil and English version. These Apps. Were developed under the National Agricultural Development Project – "Invigorating Extension through ICT Tools" (Karthikeyan, 2018). An analysis of farmers' awareness, perception and constraints over the above Apps. Would help to refine them in line with farmer respondents. Accordingly the present study has been taken up has been taken up among sugarcane growing farmers with the following objective. (i).To study the profile of farmers and their awareness about android mobile apps on agriculture, (ii).To study the perception of farmers' towards android mobile app on sugarcane expert system.(iii).To study the constraints faced by the farmers and get the suggestions to overcome them.

MATERIAL AND METHODS

The present study was conducted among the sugarcane growing farmers in Thondamuthur block of Coimbatore district during March 2018.The respondents and the study area were selected purposively in consultation with extension officials and secondary data. Accordingly, three villages namely Andipalyam, Telegupalyam, and Perur were selected from Thondamuthur block considering maximum area under sugarcane cultivated during the year 2017. Considering the budget and time limit, a purposive sample of 30 farmers were drawn randomly, allotting 10 samples from each of the study village. The data for the study was collected by exposing the respondents to the mobile application on sugarcane expert system loaded in tablet. A pre-tested and well-structured interview schedule was developed based on the objectives of the study. The collected data were analyzed using percentage analysis.

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RESULTS AND DISCUSSION

The results revealed that a majority of the farmers belonged to the middle aged category (66.66%) followed by old (26.66%) and young (6.66%) respectively. About three-fourth (70%) of the farmers had children below three followed by three and above (30%). Among the respondents most of the farmers had primary education (53.33%), followed by illiterates (16.66%), graduates (16.66%) and those with secondary education (13.33%). Educational status of the farmer's children were graduates (46.66%) followed by secondary education (23.33 %), primary education (20%) and illiterates (10%).Respondent's annual income ranged between Rs.1 lakh -2.49lakh (53.33%), followed by Rs.2.5 -3.9 lakh (30%) and least per cent in 4lakh and above category (16.66%).Cent per cent of the respondents possessed TV and mobile followed by personal computer (16.66%). Among the respondents, family members in 20 families possessed more than three mobile phone (66.66%), followed by two mobile phone (20%), and 13.33% had only one mobile phone in the family.

Table 1. Profile of the sugarcane growers. (n=30)

Item	Category	Number	Per cent
Age	Young (<35 Years)	2	6.66
	Middle (35-45 Years)	20	66.66
	Old (>45 Years)	8	26.66
Children	Less than 3	21	70.00
	3 and above	9	30.00
Educational status	Illiterate	5	16.66
	Primary education	16	53.33
	Secondary education	4	13.33
	Graduate	5	16.66
Children educational status	Illiterate	3	10.00
	Primary education	6	20.00
	Secondary education	7	23.33
	Graduate	14	46.66
Annual income (in Rs.)	100000-249999	16	53.33
	250000-399999	9	30.00
	400000-549999	5	16.66
ICT tool possession	TV	30	100.00
	Mobile	30	100.00
	Personal computer	5	16.66
No. of. Mobile phones in family	Three and above	20	66.66
	Two	6	20.00
	One	4	13.33

Majority of the farmers obtained agricultural information from pesticide dealers (73.33%), followed by farmers (20%) and less than one-tenth of them obtained information from the extension officers in the service area (6.66%). It can be evident from the Table 2 that 53.33 per-cent of the respondents didn't use mobile for gaining information on agriculture followed by 46.66 per cent had utilized for it. Regarding the awareness about mobile applications, only eight farmers had awareness about the application (26.66 %) and a majority of them had no awareness (73.33%). It is apparent from the table that farmers got awareness about the mobile application through media and friends.

Almost cent per cent of the respondents had no awareness about the mobile app on Sugarcane expert system. It may be due to the recent introduction of the app by TNAU in the Google play store during June 2017.Moreover the efforts taken to popularize this App. was very much inadequate. Overall perception of the respondents and their awareness are given in Table.3. Majority of the respondents were highly satisfied

with the simplicity of the operation and 23.33 per cent of the respondents were satisfied. It can be seen from the Table.3 that 70 per cent of the respondents were satisfied with the adequacy of the information and 33.33 per cent of the respondents were highly satisfied with the adequacy of information provided.In terms of motivation to learn agricultural information majority of respondents felt they were highly satisfied (63.3%), followed by satisfied (26.66 %) and a minimum proportion of them were not satisfied (6.66%). The unfamiliarity with the operation of the mobile app. resulted in perception "not interesting to use" among a majority of the respondents (66.66%). A majority of the respondents reported that they were highly satisfied to store the app. permanently in their mobile (76.66%). Respondents perception about the motivation to adopt the agricultural information were highly satisfied (70%) followed by (20%) satisfied and one–tenth of the people were not satisfied (10%). Majority of the respondents were satisfied (63.33%) with the hyperlinks provided in the expert system app. followed by highly satisfied (36.66%).

Table 2. The findings pertinent to the source and awareness of the agricultural information of the respondent farmers. (n=30)

Item	Response	Number	Percentage
Pesticide shop /farm input dealer	Yes	22	73.33
Extension officer	Yes	2	6.66
Nearby farmer	Yes	6	20.00
Mobile usage for agriculture information	Utilized	14	46.66
	Not utilized	16	53.33
Awareness about mobile application in agriculture	Aware	8	26.66
	Unaware	22	73.33
Source of awareness	Media	4	13.33
	Friends	4	13.33

Technical Component

Cover page

More than three- fourth (83.33%) of respondents were highly satisfied with regard to the title of each content followed by one–tenth of the respondents were satisfied and only 6.66 per cent of the respondents were not satisfied. More than three –fourth per cent of the respondents (83.33%) were highly satisfied followed by 16.66 per cent of the respondents were satisfied with the design of the cover page. The respondents fell equally under highly satisfied (50%) Category and satisfied (50%) with regard to the readability of the cover page. With regard to the quality of the cover page the respondents were highly satisfied (73.33%) followed by one–fourth of them (26.66%) found satisfied.

Text

Respondents were highly satisfied (93.33%) with the usage of simple words. Three -fifth (60%) of the respondents were highly satisfied followed by one–third (33.33%) of the selected respondents on the size of the letter used in the headlines. Most (86.66%) of the respondents were highly satisfied followed by 33.33 per cent of the respondents were satisfied with the size of the letter used in the running matter. Four–fifth (80 %) of the respondents were highly satisfied with regard to the appropriateness of the sub heads followed by 20 per cent of the respondents found satisfied. Little more than half of the respondents were highly satisfied (53.3%) followed by nearly half of them (46.66%) found satisfied with the colour combination of the text use.

Image

More than half of the respondents were not satisfied (56.66%) with the image quality of the app on crop doctor component. The farmers perceived that the image was not larger and they had to look very much closer to the image. It is visible from the Table.3 that little more than half of the respondents (56.66%) were satisfied followed by highly satisfied (43.33%) with the appropriateness of images supported to the text messages.

Table 3. Distribution of the respondents according to their perception on Expert System. (n=30)

Items	Highly satisfied		Satisfied		Not satisfied	
	Number	Per cent	Number	Per cent	Number	Per cent
Overall perception						
Simple to operate	23	76.66	7	23.33	-	-
Adequacy of information	9	33.33	21	70.00	-	-
Motivation to earn agricultural information	19	63.33	8	26.66	2	6.66
Interesting to use	20	66.66	10	33.33	-	-
Possibility to store the app permanently in mobile	23	76.66	7	23.33	-	-
Motivate to adopt the messages in farm	21	70.00	6	20	3	10.00
Understandability of Hyperlinks	11	36.66	19	63.33	-	-
Technical component						
Cover page						
Title of the each content	25	83.33	3	10	2	6.66
Design of the cover page	25	83.33	5	16.66	-	-
Readability of the cover page	15	50.00	15	50	-	-
Quality of the cover page	22	73.33	8	26.66	-	-
Text						
Use of simple words in sentences	28	93.33	2	6.66	-	-
Size of the letters used in headline	18	60.00	10	33.33	-	-
Size of the letters used in running matter	26	86.66	4	13.33	-	-
Appropriateness of sub heads	24	80.00	6	20	-	-
Colour combination of the text	16	53.33	14	46.66	-	-
Quality of the image	6	20.00	6	20	17	56.66
Appropriateness of the image	13	43.33	17	56.66	-	-
Message Component						
Completeness of information	6	20.00	19	63.33	4	13.33
Understandability of the message	8	26.66	22	76.66	-	-
Accuracy of the message	17	56.66	13	43.33	-	-
Sequence of the message	21	70.00	9	30	-	-
Explaining complex ideas	17	56.66	13	43.33	-	-
Practical utility of the message	5	16.66	25	83.33	-	-
Appropriateness of the message	19	63.33	8	26.66	3	10

Message component

More than half of the respondents (63.33%) were highly satisfied followed by 20 per cent were satisfied and 13.33 per cent were not satisfied with the completeness of the information. It is mainly due to the fact that some of the practices were not compatible with the existing agricultural practices. It is clear from the Table 3 that, 76.66 per cent of the respondents were satisfied followed by 26.66 per cent of the respondents were highly satisfied with the understandability of the message. Little more than half of the respondents (56.66%) were highly satisfied followed by 43.33 per cent of the population were satisfied with the accuracy of the

message. Majority of the respondents (70%) were highly satisfied followed by thirty percentage satisfied with the sequence of the message. It is understandable from the Table.3 that more than half of the respondents were highly satisfied (56.66%) followed by 43.33 per cent of the respondents were satisfied with the explanation of complex ideas. An over whelming majority of the respondents were satisfied (83.33%) followed by16.66 per cent of the respondents were highly satisfied with the utility of the message. More than half of the respondents (63.33%) were highly satisfied followed by 26.66 per cent of the respondents seen satisfied and a least per cent were not satisfied with the appropriateness of the message presented.

CONCLUSION

The study focused on finding out the perception of the farmers towards the utilization of TNAU sugarcane expert system – app (android platform). It can be concluded that the farmers' relied more on personal contact for obtaining agricultural information. Majority of the farmers within the study area were smart phone users. Awareness about the mobile application in agriculture was very low. The expert system app was perceived as highly satisfied in terms of its components viz., over all, technical and message components. The constraints majorly perceived by the farmers were the lack of knowledge about the functioning of app and utilizing it. The specific constraint in using the expert system app was that the image was too small to be viewed. Efforts should be taken to popularize the TNAU in using the expert system app. through Department of agriculture. It could be a best transfer of technology tool if the modification's proposed based on field survey are well addressed in future.

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