Original Research Article

Revealing the Constraints Faced by the "Uzhavan app" Users in Tamil Nadu to Operate Uzhavan Application (Farmers and Extension Officers) and Suggestions to Overcome the Constraints

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A B S T R A C T

Fourth Industrialization phase is flooded by technologies. Information Communication and Technologies (ICTs) has rooted up in every field. Agriculture, considered to be the mainstay of our country has started to deploy ICT's in every aspects. The quality of information and timeliness of information and reliability of information were the three important aspects that have to be considered seriously to meet their requirements and prospects in the coming years. Thus with the intention of providing timely, reliable and quality information and agricultural services Tamil Nadu Government launched bi-lingual (Tamil and English) Uzhavan mobile application, in a bid to use technology for benefit of farmers. An ex-post facto research design was adopted for the study and data was collected from a sample of 90 uzhavan app users (farmers) and 30 uzhavan app users (extension officers) of Thanjavur district of Tamil Nadu, India during January 2020.Lack of training in operating uzhavan application as the major constraint perceived by the users (farmers and Extension officers) in handling the uzhavan app and majority of the users had suggested to conduct training on operating various subjects/sections present in the uzhavan app.Farmers and extension officers together should contribute to the utility of this user friendly uzhavan app, the positive attributes of this Uzhavan app technology could be strengthened so as to it will be used by more number of farmers effectively.

Introduction

Fourth Industrialization phase is flooded by technologies. Information Communication and Technologies (ICTs) has rooted up in every field. Agriculture, considered to be the mainstay of our country has started to deploy ICT's in every aspects. The penetration of internet, mobile apps and social media has opened a wide chance for blooming of mobile agricultural applications. Mobile agricultural apps show significant potential for modernization of the agricultural sector, in both developed and developing countries (FAO, 2019). Mobile agri apps can play a part in increasing the income of small-scale

producers, reducing the supply and distribution transactions costs and improving traceability (Costopoulou, 2016). Android apps on expert system in five crops (paddy, banana, coconut, ragi and sugarcane) and cattle developed by Tamil Nadu Agricultural University, contains decision support system, crop doctor for diagnostics of pest and diseases and information system to provide knowledge for better farming (Karthikeyan, 2018). About 638 agricultural mobile apps were found under Apple App store, 592 agricultural mobile apps were found under Google play store and 41 m-agri apps were found in other platforms (Aravindh Kumar S and Karthikeyan, 2019).

According to (Jangid, 2004) ICT is not the solution for every problem in society but it deserves as a tool to bring up the solution. In 2005, Mruthunjaya found there exists a wide gap between the extension agent and the farmers' information level. In 2009, Heeks reported in their ICT evaluation compendium that ICT was not fully utilized in agriculture. "Information technology offers a great opportunity to facilitate the flow of information and technology services delivery especially to the farmers" (Maningas, 2006). According to (Mittal, 2009) only large farmers has benefited through in the various states of India. This was because small farmers, despite access to information, had not succeeded in overcoming constraints resulting from poor access to capital, poor infrastructure and lack of access to markets. Overall information communication technologies (ICT's) have not yet been able to create an impact as expected, possibly because there are challenges in putting the new knowledge into use that are basically supported by traditional communication tools (Sulaiman, 2011). According to (Mathur, 2014)Indian farmers requires timely and reliable sources of information inputs for taking decisions but at present, the farmer

depends on trickling down of decisions inputs from conventional sources which are slow and un reliable. In 2012, Arathi suggested that an integrated framework for IC interventions in rural areas is required that could amicably blend community needs, knowledge and inputs along with inputs of other stakeholders. In 2017, Newcase ADhighlighted the basic challenges are illiteracy, major power-cuts, band –width issues and connectivity problems, financing difficulties, acute shortage of project leaders and guides who take responsibility to implementation of ICTs at the grass root levels. Although there were perceived benefits by farmers through mobile telephony the quality of information and timeliness of information and reliability of information were the three important aspects that have to be considered seriously to meet their requirements and prospects in the coming years(Ganesan, 2013).

Thus with the intention of providing timely, reliable and quality information and agricultural services Tamil Nadu Government launched bi-lingual (Tamil and English) Uzhavan mobile application, in a bid to use technology for benefit of farmers. It was launched by Chief Minister of Tamil Nadu in the state capital Chennai on April 8, 2018. The size of the Uzhavan app was just 3.93 mb and it was made freely available to the people in Google play store and Apple store. Nearly 55, 55,587 (AGRISNET, 2020) people had downloaded the Uzhavan application. Once the person downloaded the Uzhavan app, they had to go through the process of one time registration and after that, they gain access to advance their knowledge about both current central and state subsidy schemes and even they can register in the Uzhavan app for availing it. Uzhavan app users could insure their crops by using the Uzhavan app, they could also check for fertilizer stocks and seeds stocks availability in their region during the demand and kharif season. Even though

the app was performing well it lacks in some aspects, the intention of this study is to reveal the constraints faced by the uzhavan app users (Farmers and Extension officers) to operate uzhavan application and also to provide suggestions to overcome the constraints.

Materials and Methods

An ex-post facto research design was adopted for the study. Sampling was done during December 2019, there were 38 districts in Tamil Nadu and Villupuram district counted more number of Uzhavan app users (AGRISNET, 2020). Villupuram district was bifurcated into Villupuram and Kallakurichi districts during November 2019. However the Uzhavan app users were not available for the bifurcated Villupuram district. Hence, Thanjavur district which ranked second in terms of the number of Uzhavan app users in the state was purposively selected. Thanjavur district had 14 blocks among them, two blocks namely, Patukottai and Peravurani were selected for the study as it had relatively more number of Uzhavan app users. The list of Uzhavan app users in the two selected blocks was obtained from the Assistant Director of Agriculture, Thanjavur. From the list, a total of 90 Uzhavan app users comprising 60 from Patukottai block and 30 from Peravurani block were selected by using proportionate random sampling method. Among the various cadre of Extension officers of the Department of Agriculture, Government of Tamil Nadu, the following three cadre staff namely, Agricultural Officers (AO), Assistant Agricultural Officers/Assistant Horticultural Officers (AAO/AHO) and Block Technology Managers (BTM) were involved in creating awareness and convincing farmers to download the uzhavan application at grass root level in varying degree. They helped the farmers to avail subsidies by registering through uzhavan app. Hence, these three

cadre of extension officials alone were considered for the study. About 30 extension officials, allocating 15 from Patukottai block and 15 from Peravurani block were selected as respondents for the study. From each block a random sample of nine AAOs/AHOs, four BTMs and two AOs were selected as sample for the study. Data was collected from the selected uzhavan app users (Farmers and Extension Officers) by personal interview with the help of well-structured and pre-tested interview schedule. After gathering the required information, data were statistically analyzed using the SPSS version 16.0.

Results and Discussion

From the table 1, an overwhelming majority (92.22%) of the users sensed that lack of training in operating uzhavan application as the major constraint in handling the uzhavan app. During the harvest season farmers experience a crucial demand for combine harvester, the need for the harvest machinery keeps on upsurge during this period. So farmers have to pay a lot for the machinery during this vital period. To solve this problem and to reduce that extra pay, uzhavan app is included with custom hiring center section. Though uzhavan app contains the custom hiring center, where the users make intends to hire combine harvester, many farmers don't know how to utilize it. This seems lack of training in operating the uzhavan app was the major restraint that made the farmers to mention it as a constraint. About 84.44 per cent of the users detected that the information provided in the agricultural news section was inadequate and many users felt that even more agricultural information was available in social media than uzhavan app. Though the agricultural news section has been regularly updated the quantity of information provided were stumpy. The top third constraint caressed by more than three-fourth (76.67%) of the users was the weather forecast, which

was not delivered at real-time, even many users thought why the weather forecast was not digitalized?

About 71.11 per cent of the users common restraint was that, uzhavan app was functioning only at online mode, this restraint was decisive because when a user registers, for a benefit in the benefit registration section and during that time if he/she loses the network connectivity the whole app will stop functioning and he/she has to rebuild again their registration process after they gain the

connection. About 64.44 per cent of the users reported that the uzhavan app contains no information about the allied activities such as animal husbandry, fishery, apiculture etc. More than half (52.22%) of the users felt that contents present in seed stock section, fertilizer stock section and market price were not been regularly updated. About 46.67 per cent of the users recognized that there was no common platform present for e-trading their agricultural products, thus it lacks in e-commerce (Table 2).

Table.1 Constraints faced by the uzhavan application users to operate uzhavan application (n* = 90)

S. No.	Constraints	Number	Per cent (%)
1.	Lack of training	83	92.22
2.	Inadequacy of Agricultural news	76	84.44
3.	Weather forecast is not at real time	69	76.67
4.	Uzhavan app is functioning only at online mode	64	71.11
5.	Deficiency of information about allied activities	58	64.44
6.	Lack of content updation	47	52.22
7.	Dearth of e-commerce platform	42	46.67
8.	No videos and gallery about agricultural practices	36	40.00
9.	Agricultural news are not region specific	23	25.56

n* - multiple response

Table.2 Constraints faced by the uzhavan application users (Extension Officers) while operation uzhavan application (n= 30)

S. No.	Constraints	Number*	Per cent (%)
1.	Lack of training	28	93.33
2.	Weather forecast is not digitalized	26	86.67
3.	Absence of offline mode of uzhavan app	21	70.00
4.	No special section for value addition of agricultural products	19	63.33
5.	Lack of IT literacy level of end users	15	50.00
6.	Warning/ notification about seasonal pest	13	43.33
7.	Some content of the uzhavan app were not regularly updated	11	36.67
8.	No feedback from the users after using uzhavan app	08	26.67

n* - multiple response

Table.3 Suggestions provided by the Uzhavan application users for
improving Uzhavan application (n= 90)

S. No.	Suggestions	Number*	Per cent (%)
1.	Training on operation of uzhavan app.	86	95.56
2.	Sufficient agricultural information in agricultural news section might be provided	75	83.33
3.	Weather forecast must be digitalized and it should be on real-time basic/dynamic.	64	71.11
4.	Offline functioning uzhavan app should be created	61	67.78
5.	Advertisement about uzhavan app should be disseminated through social media	59	65.56
6.	Notification pop up similar to other social media should be included	53	58.89
7.	Awareness regarding uzhavan and its features has to upsurge	46	51.11
8.	Contents present in the uzhavan has to be updated regularly	34	37.78
9.	A common e-commerce platform has to be formed	23	25.56
10.	A video section regarding agricultural practices and new technology demonstration has to be established	18	20.00

n^* - multiple response

Table.4 Suggestions provided by the extension officers for improving uzhavan application n=30

S. No.	Suggestions	Number	Per cent (%)
1.	Need training on operating uzhavan app	26	86.67
2.	Weather forecast must be digitalized and it should be real-time.	23	76.67
3.	Offline functioning uzhavan app should be created	21	70.00
4.	Need a special section for value addition of agricultural products	19	63.33
5.	Farm calculator could be added	16	53.33
6.	Warning/ notification about seasonal pest	15	50.00
7.	Along with market price, market forecast could be augmented	10	33.33
8.	Contents present in the uzhavan app has to be updated regularly.	08	26.67

n^* - multiple response

In the study, it is inferred that 40.00 per cent of the users found there was no videos posted about agricultural practices, demonstration of agricultural technologies etc. Even there was no gallery section present in uzhavan app. One-fourth (25.56%) of the users sensed that the agricultural information provided in the agricultural news section was in regional language but not region specific. Thus, these are the major restraints faced by the users while operating the uzhavan app in the study area, during the time of investigation. Similar to farmers (users of uzhavan app), majority (93.33%) of the extension officers projected that lack of training in handling/operating the uzhavan app would serve as the major restrain to exploit uzhavan app to the core. About 86.67 per cent of the extension officers in the study area, felt that non-digitalized weather forecast section pretend to be a dirge. About 70.00 per cent of the extension officers restrained that absence of offline mode of

uzhavan app would lose to capture the non-smart phone using farmers or the famers who utilized low mobile data.

Nearly two-third (63.33%) of the extension officers stated that there was no presence of special section for value addition of agricultural products and half (50.00%) of the extension officers in the study reported that end users (farmers) were lacking savvy in Information technology. About 43.33 per cent of the extension officers proclaimed that agricultural news section pretends to be weaker; it doesn't announce/notify/warn the users about the occurrence of seasonal pest. About 36.67 per cent of the extension officers uttered that some content especially market price section of the uzhavan app was not regularly up-dated. More than one-fourth (26.67%) of the extension officers affirmed that uzhavan app users (farmers) don't use the feedback section of uzhavan app, thus this makes difficult for the extension officers to estimate or assess their service. These were the chief restraints faced by the extension officers while operating the uzhavan app in the investigation area.

It was understood from the table 3 that, majority (95.56%) of the users had suggested to conduct training to the farmers on operating various subjects/sections present in the uzhavan app. It is more essential because mainstream of the users felt that uzhavan app was so useful but they don't know how to utilize some sections such as customer hiring center, crop insurance etc. So it vital to conduct training in operating various subjects/sections present in uzhavan app to the farmers. About 83.33 per cent of the users sensed that agricultural information provided in the agricultural news section of uzhavan app were not enough, therefore they insinuate to provide more agricultural information that to be region specific. About 71.11 per cent of the users recommended to digitalize weather forecast by showing real-time information and make it dynamic.

Though all the users have a very good mobile wireless connection, 67.78 per cent of the users alluded that uzhavan app has to be available in offline mode also. About 65.56 per cent of the users suggested uzhavan app should be advertised in social media, hence it could motivate more number of people to use it. Advertising is, a well-planned form of communication that uses both verbal and non-verbal elements to inform people about the potential of their products. If advertising of uzhavan app in social media is effectively performed, it leads to capture more number of non-uzhavan app using farmers by showing how essential that uzhavan app is to a farmer and how it differed from other m-agri applications.

In the study, 58.89 per cent of the users have put forward to create notification pop-up similar to Whatsapp, Facebook, Instagram etc. If notification pop-up existed, farmers could be well aware whenever a new agricultural information gets posted in uzhavan app. More than half (51.11%) of the users suggested to increase the awareness of uzhavan app heading with their useful features. About 37.78 per cent of the users insinuated to update the contents present in the uzhavan app regularly. Nearly one-fourth (25.56%) of the users have suggested forming a common reliable and valid e-commerce platform for e-trading their products where they have no fear of middle men. About 20.00 per cent of the users proposed that they wanted a video section where they could see videos regarding agricultural practices, new technologies demonstrations, successive and failure farmer's stories, information about central and state agricultural schemes, how to double farmers income etc. These were the major suggestions provided by the uzhavan app users in the study area.

From the table 4, it was evident that similar to uzhavan app users (farmers) majority (86.67%) of the extension officers suggested to conduct training on operating uzhavan app, they were aware about all the content of the app still they need training to enhance their operating skills, so they could further establish more about uzhavan app to the farmers. Again parallel to the users, 76.67 per cent of the extension officers alluded that weather forecast section should be digitalized and the forecast should be real-time. Offline mode of uzhavan app has to be generated or some of its features like subsidy schemes, crop insurance and reservoir levels could be made available in offline mode was recommended by 70.00 per cent of the extension officers. More than two-third (63.33%) of the extension officers insinuated that new section regarding value addition of agricultural products has to be established in the app.

In the study, 53.33 per cent of the extension officers suggested to create farm calculator, which could be very useful for the farmers to calculate fertilizers, seed rate, herbicides and etc. Half (50.00%) of the extension officers evoked that warnings in the form of notification has to be posted in uzhavan app regarding seasonal pests that too region specific. About one-third (3.33%) of the extension officers recommended that in market price section along with market price, market forecast might be provided which would be very helpful for the farmers to choose a better crop for sowing and thus assuring him/her with definite profit. About 26.67 per cent of the extension officers suggested to update the contents of the app frequently especially the market price section. These were the major suggestions provided by the extension officers in the study area.

In conclusion the extension officers restrained that absence of offline mode of uzhavan app would lose to capture the non-smartphone using farmers or the famers who consumelow mobile data. This indicated that similar to Facebook lite, uzhavan app lite could be created for the console of non-smartphone users or the farmers who consumes low mobile data. Overall, uzhavan app users experienced a gain in their knowledge level due to the usage of various subjects present in the Uzhavan app. Uzhavan app has relatively lowered the information searching time and it has created more awareness about agricultural government schemes. Thus, uzhavan app was a successful initiative which has provided timely, reliable and quality information and agricultural services to the farmers.The content present in this app was so strong and has delivered the vital extension service to the farmers, so the positive attributes of this uzhavan app technology could be widely used in this state.

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