

Executive summary of “Assessment of utility behaviour of uzhavan app among the farmers and extension officers in Tamil Nadu”

Introduction

Twenty-first century would be deliberated as the age of information and communication technology. Artificial intelligence and machine learning had penetrated in almost all fields. A smartphone is an e-toy designed for the lonely inner child hidden in each and every one of us. Smart-phones were extensively considered as a prospective tool for communication and disseminating information. Now-a-days mobile applications have become familiar among the people but in the field of agriculture m-apps were in the stage of budding. Uzhavan app a great initiative taken by Tamil Nadu government to deliver agricultural information, create awareness about agricultural schemes, disseminate market prices, weather forecast and also to establish contact between farmers and extension officials quicker than before. The research was undertaken to assess the utility behaviour of uzhavan app by the farmers and extension officers in Tamil Nadu. The research was farmed with the following objectives as follows,

- To study the profile of Uzhavan app users (Farmers and Extension officers).
- To determine the usage pattern and changes felt by Uzhavan app users (Farmers and Extension officers).
- To identify the factors that influence the usage of Uzhavan app by the farmers.
- To find out the reasons for non-adoption of Uzhavan app by farmers.
- To assess the farmers and extension officers perception about the Uzhavan app.
- To document the constraints in operating the Uzhavan app by the farmers and extension officers.

Methodology

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 user's data was 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 and among them, two blocks namely, Patukottai and Peravurani were selected for the study as it had relatively more number of Uzhavan app users.

A sample of 90 uzhavan app users (or users), 30 non-uzhavan app users (or non-users) and 30 extension officers was fixed as sample size for the study purpose. List of users in the selected study area was obtained from the Assistant Director of Agriculture. 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 and 30 non-users were identified in the selected villages as respondents by using proportionate random sampling technique. 30 extension officers working in the Agricultural department, Patukottai and Peravurani blocks were selected as respondents.

The diverse variables taken for the study were separated into two groups as individual variables and communication variables. The individual variables consist of age, gender, educational status, occupational status, family size, and family type, farming experience, farm size, annual income, social participation and extension agent contact. The communication variables consist of mass media utilization, months of usage of uzhavan app, session of usage of uzhavan app, type of phone, year of awareness of existence of Uzhavan app, duration of usage of uzhavan app per day, type of network, first used subject in uzhavan app, frequency of usage of uzhavan app and time spent in mobile phone per day. One dependent variable, perceived utilization calculated by working out utility perception index was included. Data was collected from the selected uzhavan app users through 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. The salient findings of the study is given below.

Salient findings

1. Profile of uzhavan app users (farmers)

- Preponderance (57.78%) of the users belong to middle aged (36-44 years), the strength of male users in the study area was very high (90.00%) in comparison to female users and majority (42.22%) of the users had completed collegiate education.
- More than three-fourth (78.90%) of the users performed agriculture alone as their regular activity for generating income, nearly one-third (36.67%) of the users had 9-16 years of experience in agriculture, more than half (57.78%) of the users had farm size above 5 acres and majority (45.56 %) of the users earned annual income of less than Rs.85, 000.
- The study revealed that majority (72.22 %) of the users came from medium sized family (4-5 members) and preponderance (88.89%) of users had nuclear type of family.
- The users who had minimum level of social participation has contributed 44.44 per cent and majority (45.56%) of the users had high level of extension agency contact.
- The study exposed that half (52.22%) of the users had medium level of mass media utilization. Social media acted as a catalyst which has a huge potential to change the behaviour of the users, about 31.11 per cent of the users have used You Tube, Facebook and Whatsapp regularly for collecting agricultural information, seeing new agricultural technologies, sharing their view about agriculture etc. and few (12.22 %) of the users had not utilized social media for agriculture.
- Nearly one-fourth (25.56 %) of the users owned Redmi smart phone and more than half (53.33%) of the users had Jio network connection.
- The results showed that nearly half (51.11) of the uzhavan app users were using the uzhavan application for a period of 7- 12 months and very few (04.44%) of the users were subjected to less than 6 months period of handling the uzhavan application.
- About one-third (33.33%) of the uzhavan app users used the uzhavan application daily, nearly one per cent (01.11 %) of the users had routinely used the uzhavan application every fortnight, about 41.11 per cent of the users used the uzhavan application during morning

hours and more than one-third (35.56%) of the users, used the uzhavan application for 6-10 minutes per day.

- The investigation revealed that nearly three-fourth (73.33%) of the users were aware of the existence of uzhavan application during the year 2018. Preponderance (43.33%) of the users had initially used subsidy scheme as their first subject when they downloaded the uzhavan app.
- Nearly one-third (32.22%) of the users in the study area had devoted their time of about 2-3 hours/day on their smart phone.

2. Profile of uzhavan app users (Extension officers)

- The study exposed that half (50.00%) of the extension officers belonged to middle age group (36-45 years), the strength of female extension officials were found to be high (56.67%) in the study area, preponderance (46.67%) of the extension officers had attained education up to Diploma level and majority (46.67%) of the extension officers were designated as assistant agricultural officers/assistant horticultural officers.
- It was observed from the study that more than one-third (36.67%) of the extension officers had 15-20 years of service experience and nearly two-third (63.33%) of the extension officers had received medium number of trainings in ICT.
- Majority (43.33%) of the extension officers had high level of mass media utilization. About four-fifth (80.00%) of the extension officers used mobile phone for delivering advisory services to the farmers but nearly two-third (63.33%) of the extension officers in the study area declined to deliver contingent services through mobile phones and majority (90.00%) of the extension officers in the study area, avowed that mobile phone was very useful to create awareness.
- About 60.00 and 43.33 per cent of the extension officers used Whatsapp and Facebook respectively, for delivering advisories, dissemination of innovation or organizing farmers into various groups and preponderance (93.33%) of the extension officers used internet to search for agricultural information.
- The study revealed that more three-fourth (76.67%) of the extension officers stated that extension personnel should undergo specialized training on ICT and majority (93.33%) of the extension officers had disseminated the information regarding the availability of uzhavan app by conducting awareness campaign at public places like bus stands, colleges, union office etc.

3. Profile of non-uzhavan app users (Farmers)

- The study revealed that more than half (56.67%) of the non-users belong to the old age group, more than three-fourth (80.00%) of the non-users were found to be male.
- Education appeared as one of the dominant factors that served as a guiding torch to profound this study, about 30.00 per cent of the non-users had undergone middle school education.

- Preponderance (40.00%) of the non-users performed agriculture+ labor as their regular activity for generating income, two-fifth (40.00%) of the non-users had more than 30 years of experience in agriculture and again two-fifth (40.00%) of the non-users had less than 2.5 acres of agricultural land and fell into marginal farmers category and majority (46.67 %) of the non-users earned an annual income of less than Rs.75, 000.
- Majority (40.00 per cent) of the non-users came from medium sized family (4-5 members) and nearly three-fourth (70.00%) of the non-users had nuclear family construction.
- The study results showed that majority (70.00%) of the non-users did not have any social participation and more than half (56.67%) of the non-users had contacted extension officers rarely by exhibiting low frequency of contact.
- About two-fifth (40.00%) of the non-users had medium level of mass media utilization.
- The most owned brand was shown by the study results; Redmi with a majority frequency of 33.33 per cent and nearly half (46.67%) of the non-users had Jio network connection.
- Mainstream (43.33%) of the non-users had devoted their time (1-2 hours/day) on their smart phone, more than half (53.33%) of the non-users were aware of the existence of uzhavan app and majority (43.75%) of the non-users emanated to know about the existence of uzhavan app by extension officers.

4. Usage pattern and changes felt by uzhavan app users (Farmers)

- The investigation disclosed that majority (60.00%) of the users were not aware of any mobile agricultural applications other than uzhavan app, more than four-fifth (83.33%) of the users downloaded the uzhavan application immediately, as soon as they came to know about uzhavan app and its salient features.
- Preponderance (86.67%) of the users were fond of Tamil language and they utilized Tamil for exploiting uzhavan app and majority (70.00%) of the users used the benefit registration section, thereby registered and benefited.
- In the study more than one-fifth (22.22%) of the users had utilized seven subjects/sections present in the uzhavan app and none of the users had stopped their utilization with one subject.
- More than half (56.67%) of the users often pursued subsidy scheme section, overwhelming majority (86.67%) of the users gained information about availability of uzhavan application through government extension officials and mainstream (53.33%) of the users had depended on government extension officials as their source to get information about agriculture before the existence of uzhavan app.
- About 85.56 per cent of the uzhavan app users felt that they had acquired more knowledge in agriculture after using the uzhavan app and their time for searching the agricultural information has been greatly reduced (78.89%), nearly three-fourth of the users (74.44%) sensed that uzhavan app has created more awareness regarding the availability of agricultural subsidy schemes.

5. Usage pattern and changes felt by uzhavan app users (Extension officers)

- The study results clearly indicated that 56.67 per cent of the users had the habit of using uzhavan app, at the rate of once per day, three-fifth (60.00%) of the users browsed the uzhavan application during morning time.
- More than two-fifth (43.33%) of the extension officers, used the uzhavan application for 6-10 minutes per day and more than one-third (36.67%) of the extension officials had initially recommended subsidy scheme as their first subject when they downloaded the uzhavan app.
- Absolutely 100 per cent of the extension officers realized that time has been greatly reduced for disseminating information regarding agricultural schemes with the help of uzhavan app and majority (83.33%) of the extension officers recognized that more knowledge about agriculture has been gained by using uzhavan app.

6. Before and after usage of uzhavan app by the uzhavan app users (Farmers)

From the result of paired t- test, null hypothesis was rejected and alternate hypothesis was accepted i.e., there was a significant difference between users (farmers) collected agriculture related information through various sources (Government officials, para extension workers, neighbors, friends, fellow farmers, mass media, social media etc.) before introduction of uzhavan application and users (farmers) collected agriculture related information through various sources (Government officials, para extension workers, neighbors, friends, fellow farmers, mass media, social media etc.) after introduction of uzhavan app.

Before the introduction of uzhavan app, farmers have to depend on various sources like Government extension officials, para extension workers, neighbors, friends, fellow farmers, mass media, social media etc., in the search for agriculture and its allied information. This caused more information seeking time. But, uzhavan app was considered to be a consolidated mobile agricultural application where farmers can search agricultural information related to central and state agricultural schemes, crop insurance, availability of seeds and fertilizers in their region, hiring farm tools and implements, daily market prices, weather forecast and reservoirs details within a single click. The reduction in number of farmers who collected agriculture related information through various sources after the introduction of uzhavan app indicated that most of the uzhavan app users (farmers) have been convinced by the agricultural information provided through the uzhavan application expect in weather forecast and new agricultural practices and technologies provided in agricultural news section. Hence, the dependency of the farmers with others for seeking information has been greatly reduced with the help of uzhavan application. The result of the paired t-test also coincide with the farmer's perception. Uzhavan application not only reduced the information searching time but also deliberately made awareness about presence of various agricultural schemes (central and state) for marginal, small, medium and big farmers. Uzhavan application has eased the process of registering and availing agricultural subsidy and benefits for the farmers in Tamil Nadu.

7. Factors that influence the usage of uzhavan app by the farmers

- The study showed the results of the multiple regressions, which revealed that 78.80 per cent of variation in the utility perception was explained by all the twenty one independent variables selected for the study and R^2 was found to be statistically significant.
- The variables like social participation, session of usage of uzhavan app, type of network, frequency of usage of uzhavan application were statistically significant at 5 per cent level and variables like educational status, extension agent contact and mass media utilization were statistically significant at 1 per cent level.
- Educational status and extension agent contact had maximum contribution towards utility perception of uzhavan app to an extent of 66.31 per cent and 22.10 per cent respectively.
- Operability, accuracy, readability, directness, timeliness, creditability and reliability were the most influencing factors of utilization of uzhavan app by the farmers in Tamil Nadu. Among them 'operability' was considered to be the most important influencing factor on utilization of uzhavan app as perceived by the farmers in Tamil Nadu which caused 15.42 per cent variability followed by accuracy with 11.53 per cent variability.

8. Reasons for non-adoption of uzhavan app by farmers

The study exposed clearly that half (50.00%) of the non-users had lack of interest on using the uzhavan application followed by 46.67 per cent of the non-users were not even conscious about the presence of uzhavan application and more than one-third (36.67%) of the non-users do not trust the mobile applications, they had the intent that mobile application will not be valid and reliable.

9. Perception of uzhavan app by farmers and extension officers

The research revealed that the more than half (53.34 %) of the uzhavan app users (farmers) had medium level of perception towards the uzhavan application, followed by nearly one-fourth (25.56%) of the uzhavan app users had high level of perception towards uzhavan application.

Majority (40.00%) of the extension officers had perceived uzhavan application at medium level, followed by 36.67 per cent of the extension officers had high level of perception regarding uzhavan app.

10. Constraints in operating the uzhavan app by the farmers and extension officers

The constraints faced by uzhavan app users (farmers) in operating the uzhavan app were lack of training (92.22%), inadequacy of Agricultural news (84.44%), weather forecast is not at real time (76.67%), uzhavan app is functioning only at online mode (71.11%), deficiency of information about allied activities (64.44%), lack of content updation (52.22%), dearth of e-commerce platform (46.67%), no videos and gallery about agricultural practices (40.00%) and agricultural news were not region specific (25.56%).

Lack of training (93.33%), weather forecast is not digitalized (86.67%), absence of offline mode of uzhavan app (70.00%), no special section for value addition of agricultural products (63.33%), lack of IT literacy level of end users (50.00%), lack of warning/notification about seasonal pest (43.33%), some content of the uzhavan app were not regularly updated (36.67%) and no feedback from the users after using uzhavan app (26.67%) were the constraints faced by extension officers in operating uzhavan application.

11. Strategies for enhancing the utility of uzhavan app by farmers and extension officers in Tamil Nadu

Training on operation of uzhavan app (95.56%), sufficient agricultural information in agricultural news section might be provided (83.33%), weather forecast must be digitalized and it should be on real-time basic/dynamic (71.11%), offline functioning facility for the uzhavan app should be created (67.78%), advertisement about uzhavan app should be disseminated through social media (65.56%), notification pop up similar to other social media should be included (58.89%), awareness regarding uzhavan and its features has to upsurge (51.11%), contents present in the uzhavan app has to be updated regularly (37.78%), a common e-commerce platform has to be formed (25.56%) and a video section regarding agricultural practices and new technology demonstration has to be established (20.00%) were the suggestions provided by the uzhavan application users for improving uzhavan application.

The major suggestions provided by the extension officers in the study area for improving uzhavan application were need training on operating uzhavan app (86.67%), weather forecast must be digitalized and it should be real-time (76.67%), offline functioning uzhavan app should be created (70.00%), need a special section for value addition of agricultural products (63.33%), farm calculator could be added (53.33%), warning/ notification about seasonal pest (50.00%), along with market price, market forecast could be augmented (33.3%) and contents present in the uzhavan app has to be updated regularly (26.67%).

Implications for the study

1. The profile of the uzhavan app users indicated that most of them were well educated, had frequent contact with extension agents and had ample of exposure towards mass media especially social media had utilized the uzhavan app efficiently.
2. Operability, accuracy, readability, directness, timeliness, creditability of the content and reliability were the most influencing factors for the utilization of Uzhavan app by the farmers in Tamil Nadu. An effective concentration on these factors would significantly increase the potential and utilization of Uzhavan app. by the farmers.
3. The 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.

4. The major reasons for non-adoption of uzhavan application were unawareness about the existence of uzhavan application and lack of interest. Creating more awareness about the availability of uzhavan app and its salient features through mass media such as radio, television, You tube, Facebook, etc., would grasp the non-users of the uzhavan app.
5. Most of the uzhavan app users (farmers) felt the contents of the app was not regularly updated. Though majority of the app users were well educated, they felt training on operating various subjects of uzhavan application. Training on operating uzhavan application seems to be an essential one.
6. Extension officers felt that non-digitalized weather forecast section presented in uzhavan app pretend to be an obstacle and extension officers restrained that absence of offline mode of uzhavan app would lose to capture the non-smartphone using farmers or the famers who consume low 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.
7. The result obtained in the study would have certain broad implications. This might be useful in formulating effective strategies for enhancing the utility of uzhavan app.

Suggestions for future research

Analysis of influencing factors for utilizing uzhavan application as perceived by the users may be conducted in-depth and case studies (success and failure) on effective utilization of uzhavan application can be investigated. Further studies may be taken up in other agricultural mobile applications or the similar type of study may be taken up in other areas even in large scale to compare the results.