



RESEARCH ARTICLE

## Factors Influencing the Utilization of “Uzhavan App” as Perceived by the Farmers in Tamil Nadu

Aravindh Kumar S<sup>1</sup> and Karthikeyan C<sup>2</sup>

<sup>1</sup>Department of Agricultural Extension and Communication, Agricultural College and Research Institute, Killikulam - 628252

<sup>2</sup>Department of Social Sciences Agricultural College and Research Institute, Killikulam- 628252

### ABSTRACT

Information Communication Technologies (ICT's) is now performing as the third hand for shifting farmer's life to next level by improving access to information and sharing of knowledge. Tamil Nadu Government has launched “Uzhavan” mobile application for the benefit of farmers. The focus of the present study is to find influencing factors on utilizing Uzhavan app as perceived by the farmers and to bring up the changes felt by the farmers after utilizing Uzhavan application. An ex-post facto research design was adopted for the study. Data collected from a sample of 90 Uzhavan app users in Thanjavur district of Tamil Nadu, India, during January 2020. Operability, Accuracy, Readability, Directness, Timeliness, Creditability and Reliability were the most influencing factors of the utilization of the Uzhavan app by the farmers. Farmers felt that Uzhavan app has relatively lowered the information searching time and it has created more awareness about Agricultural Government Schemes.

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### INTRODUCTION

Technology plays a vital role in increasing growth through providing better services and innovative delivery models. Information Communication Technologies (ICT's) is now performing as the third hand for shifting farmer's life to next level by improving access to information and sharing of knowledge. The ICT tools pretends to be the stimulator by enhancing the ideas, activities and knowledge of the farmers. ICT made farmers feel empowered and ensured by adopting appropriate measures at the right time needed. Though smartphones with high-speed internet have had a transformational effect on our daily lives, ICT Development Index (IDI) 2015, published by UN International Telecommunications Union (ITU, 2015) measures the level of information and communication technology access. India ranked low, 131 out of 167 nations. This reflects the poor access of the population to ICT services. Although India has made tremendous progress in raising its telecom density, the country remains far behind when it comes to providing internet access. The report noted that 43.4 per cent of the global population has access to the internet. In contrast, only 18 per cent of Indians have access to the internet. On other hand (Patel, 2014) underline the importance of providing farmers with access to technology to aid in their agricultural business. According to Hornbæk

(2007) utilization could define as “The effectiveness, efficiency and satisfaction with which specified users could achieve goals in a particular environment”.

Broady (2010) finds that older people are generally less comfortable and competent in computer usage. Those who are experienced with technological means and functions tend to act more self-confident and self-assured; those without tend to feel anxiety and stress when involved with technology. O'Donnell (2013), reflects on the use of ICTs in order to enhance and empower marketing for small agricultural producers and highlights various effective features and solutions that farmers can benefit from. ICTs can offer opportunities to farmers to find new buyers, improve their negotiation process, and ultimately sell their products.

Writer (2015) notes that in Uganda, a government project exists to encourage the use of ICTs among participants in order to develop and improve farmers' conditions. They have developed a platform through which, using their smartphones, village agents collect appropriate information – such as demographic statistics, details for production – while using a Global Positioning System (GPS) function for cultivated lands. As a result, village agents provide farmers with services such as; better economic practices, weather forecasts, market prices, digital financial services, crop insurance etc. In addition, the platform involved stakeholders to communicate

\*Corresponding author's e-mail: starowin7@gmail.com

amongst each other and to ask questions if they have issues. The penetration of the 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 in the agricultural sector, in both developed and developing countries (FAO, 2019).

According to Costopoulou (2016) mobile agri apps can play a part in increasing the income of small-scale producers, reducing the supply and distribution transaction costs and improving traceability. Aravindh Kumar S and Karthikeyan (2019) reported that about 638 agricultural mobile apps were found under the Apple App store, 592 agricultural mobile apps found under Google play store and 41 m-agri apps found in other platforms. For obtaining farming information through digital tools, 88 per cent of farmers were in supportive of the agricultural app and 82 per cent of a Facebook page in attempts to find information about market price and weather forecast (FAO, 2019). Social media is a platform of enlargement and mass influence (Varner, 2012). It gives farmers direct opportunity to connect with peer groups (Stanley, 2013 and Carr, 2015). The fast penetration of ICT thus brings new opportunities for agricultural stakeholders to improve their knowledge and livelihoods Asongu, 2015: (Aker and Mibiti, 2010). Agricultural stakeholders conflicting perceptions (Fuess, 2011), lack of capacity (Newburry, 2014) in using social media act as the constraint to use social media in extension programme delivery, Farmers' neither technology savvy nor receive quality information (FAO, 2019), thus leading to reluctance in the process of adoption of digital tools' (Diem, 2011). The research done by Richardson (1996) and Hayrol Azril (2009) indicated the familiar problems in the adoption of ICT's in the rural environment that farming population chooses and use traditional ways instead of using ICT, they rely much on their neighbors and mass media, ICT illiteracy (Azhar, 2008), availability of appropriate and localized contents in their regional languages (Irant, 2005), easy and affordable accessibility.

As the next step in m-agriculture for the benefit of farmers, the Chief Minister of Tamil Nadu launched a bi-lingual (Tamil and English) mobile application named as "Uzhavan app" on 18<sup>th</sup> April 2018. The size of the Uzhavan app was just 3.93 mb and it made freely available to the people in Google play store and Apple store. Nearly 55, 55,587 people had downloaded the Uzhavan application (AGRISNET, 2020)<sup>1</sup>. The basic objective of this paper is to find out the major factors that influence the utilization

of Uzhavan app as perceived by the farmers in Tamil Nadu and to bring out the barriers and proposed basic changes as felt by the Uzhavan app users.

## MATERIAL AND METHODS

An ex-post facto research design selected for the study. Among 38 districts in Tamil Nadu, Villupuram district counted more Uzhavan app users (AGRISNET, 2020). Recently during January 2018, Kallakurichi has been bifurcated from the Villupuram district and it declared as a new District. However, the data regarding the total number of users in Villupuram after bifurcation was not available and hence Thanjavur district which stood second in terms of the total number of Uzhavan app users in Tamil Nadu state was purposively selected. In Thanjavur district, out of 14 blocks, Patukottai and Peravurani blocks selected for the study because it had a relatively more number of Uzhavan app users. From the respective blocks, list of Uzhavan app users was obtained from the Assistant Director of Agriculture (ADA). From the list, 90 Uzhavan app users, 60 from Patukottai block and 30 from Peravurani block selected by using Proportionate Random Sampling method. Data collected from the Uzhavan app users by personal interview with the help of a well-structured and pre-tested interview schedule. After gathering the required information, data statistically analyzed using the SPSS (16.0) and Utility Perception Index computed using the

$$\text{Utility Perception Index} = \frac{\text{Actual score obtained by the Uzhavan app user}}{\text{(Total Score)}} \times (100)$$

following formula.

## RESULTS AND DISCUSSION

**Table 1. Distribution of Uzhavan app users according to the Utility Perception Index (n=90)**

Category	Number	Per cent	Cumulative %
Low (79.53 and below)	19	21.11	21.11
Medium (79.54 – 84.64)	48	53.34	74.44
High (84.65 and above)	23	25.56	100.00

From table 1, it was perceived that more than half (53.34 %) of the Uzhavan app users 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. About 21.11 per cent of the Uzhavan app user's perception towards Uzhavan application was at low level.

**Table 2. Extracted factors with eigenvalues after rotation**

Factors	Eigen values	% of variance	Cumulative %
Factor - I	4.269	15.426	15.426
Factor – II	3.570	11.536	26.962
Factor - III	2.726	09.913	36.875
Factor - IV	2.617	08.527	45.402
Factor – V	2.460	08.036	53.438
Factor - VI	1.648	07.887	61.325
Factor - VII	1.630	06.212	67.537

**Factor-I**

From table 2, six instituting statements of the factor-I in order of the factor loadings were: Information and services can be obtained within a single click ( $S_{20}$ ), the information provided by the Uzhavan app gives the confidence to take a decision ( $S_{28}$ ), overall had good experience with Uzhavan app ( $S_{30}$ ), most of the information were accessible within the Uzhavan app ( $S_{21}$ ), Uzhavan app has convenient download size ( $S_8$ ) and Uzhavan app ensures safe and comfortable hiring of farm implements ( $S_{29}$ ). According to the nature of the statements which created the factor-I was named as “operability”. In concerning the highest eigenvalues of this factor (eigenvalue 2.639 and variance 15.426 %) operability was considered to be the most important influencing factor on utilization of Uzhavan app as perceived by the farmers in Tamil Nadu.

**Factor-II**

Three consecutive statements of the factor-II in order of the factor loadings were: Content present in the Uzhavan app is up-to-date ( $S_{23}$ ), accurate weather forecasting ( $S_{22}$ ) and precise translation have been done in the contents of the app [Eng-Tam & Tam-Eng] ( $S_{33}$ ). According to the oddity of the statements, which formed the factor-II, named as “accuracy”. This accuracy (eigenvalue 2.390 and variance 11.536 %) considered the second most inducing factor for utilization of Uzhavan app as perceived by the farmers in Tamil Nadu.

**Factor-III**

Four constituting statements of the factor-III in order of the factor loadings were: Legible to read the content of the Uzhavan app ( $S_1$ ), simple language is used ( $S_3$ ), appropriate colors are used ( $S_4$ ) and precise font size used in the app ( $S_7$ ). According to the features of the statements, which made the factor-III, named as “readability”. This readability with 2.216 eigenvalue constitutes 9.913 per cent of variance on utilization of Uzhavan app as perceived by the farmers in Tamil Nadu.

**Factor-IV**

Three progressing statements of the factor-IV in order of the factor loadings were: Uzhavan app has

been regularly updated ( $S_{17}$ ), easy to enter and to exit from the app ( $S_6$ ) and links provided are easily accessible ( $S_{11}$ ). According to the content of the statements, which shaped the factor-IV, named as “directness,” which determined 8.527 per cent of variance on utilization of Uzhavan app as perceived by the farmers in Tamil Nadu.

**Factor-V**

Three constituting statements of the factor-V in order of the factor loadings were: Providing timely information ( $S_{31}$ ), saves time in getting access to information ( $S_{32}$ ) and reservoir details were renewed daily ( $S_{27}$ ). According to the nature of the statements, which made the factor-V, named as “timeliness”. Timeliness created 8.036 per cent of variance on utilization of Uzhavan app as perceived by the farmers in Tamil Nadu.

**Factor-VI**

Three instituting statements of the factor-VI in order of the factor loadings were: Seed stock position are appropriate ( $S_{24}$ ), fertilizer stock position are accurate ( $S_{26}$ ) and daily market price information provided by the app helps to identify the right market for the farm produce ( $S_{30}$ ). According to the feature of the statements, which created the factor-VI, named as “creditability”. This creditability with 1.648 eigenvalue constituted 07.379 per cent of variance on utilization of Uzhavan app perceived by the farmers in Tamil Nadu.

**Factor-VII**

Four progressing statements of the factor-VII in order of the factor loadings were: Information provided in the agricultural news are significant to my location ( $S_{15}$ ), Uzhavan app delivers suitable marketing linkages ( $S_{12}$ ), related information are present in each section of the app ( $S_{13}$ ) and getting information about ongoing and new subsidy schemes ( $S_{25}$ ). According to the content of the statements which made the factor-VII was named as “Reliability” which resolute 06.720 per cent of variance on utilization of Uzhavan app as perceived by the farmers in Tamil Nadu.

Totally as it mentioned in the table 2, the seven mentioned factors constituted about 67.537 per cent

of contributions towards the utilization of Uzhavan app as perceived by the farmers in Tamil Nadu and the rest 32.46 per cent related to factors projected in the study. Out of 33 statements, 26 statements grouped into seven factors. The remaining 7 statements such as design of the Uzhavan app is attractive (S<sub>2</sub>), opening image of the Uzhavan app

is looking good (S<sub>5</sub>), icons present in the app for each section are attractive (S<sub>7</sub>), respond quickly to the feedback (S<sub>14</sub>), queries are resolved by the app (S<sub>16</sub>), no crowding of web pages (S<sub>9</sub>) and agriculture news provided are short (S<sub>10</sub>) were not grouped in any factors. Hence, they are not influencing the utilization of the Uzhavan application.

**Table 3. Changes perceived by the Uzhavan app users after using the Uzhavan app**

Changes felt by the Uzhavan app users	Number* (n=90)	Per cent
Acquired more agricultural knowledge	77	85.56
Agricultural information searching time had greatly reduced.	71	78.89
Getting more awareness about agricultural subsidy schemes.	67	74.44
Uzhavan app supported during disaster (gaja cyclone) very effectively by providing handy information about availability of coconut seedlings.	60	66.67
No need for others support to seek agricultural information	52	57.78
Availing of agricultural subsidies became faster.	43	47.78
Contacting Assistant Agricultural Officer (AAO)/Assistant Horticultural Officer (AHO) became easier.	36	40.00

**Multiple response**

From the table 3 it is evident that 85.56 per cent and 78.89 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 greatly reduced. The result could be because of the most influencing factor i.e. operability of the Uzhavan app where information and services can be obtained within a single click.

Nearly three-fourths of the users (74.44%) sensed that Uzhavan app has created more awareness regarding the availability of agricultural subsidy schemes. More than half (66.67%) of the users experienced that during the time of disaster (gaja cyclone) Uzhavan app supported the users by providing information about the availability of coconut seedlings and ensured the users by identifying the right persons to sell their wood logs which were affected by gaja cyclone. More than half of the users (57.78%) believed that they do not need other people support for seeking agricultural information. Less than half (47.78%) of the users deemed that after registering for seeking subsidy benefits in the Uzhavan app, availing of agricultural subsidies became faster. Less than half (40.00%) of the users felt that contacting Assistant Agricultural officers (AAO)/Assistant Horticultural Officers (AHO) became easier because of the availability of a section, namely visit of AAO/AHO in the Uzhavan app. These were the major changes perceived by the farmers in Tamil Nadu after using the Uzhavan mobile application.

**CONCLUSION**

The use of ICT as a tool for enabling innovation in South Asia and found that its potential had not been adequately utilized (Sulaiman. R V, 2011). Operability, accuracy, readability, directness, timeliness, creditability and reliability were the most influencing factors of 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.

From the study, when we see the profile of the Uzhavan app users, most of them were well educated, had frequent contact with extension agents and had ample exposure towards mass media especially social media. The users sensed that they gained more knowledge and information regarding agriculture, ongoing agricultural schemes and subsidies, market price and weather forecast within a single click in their regional language. The users also felt that presence of Uzhavan app was very useful during the disaster (Gaja Cyclone) time. The Uzhavan app users also realized that they do not need to spare more time and others support to seek agricultural information.

This Uzhavan app would deliberately remain as a mean of support to the farming community. More awareness regarding the availability of Uzhavan application has to spread in the social media, in this study it was also observed that people who used smartphone likes to suffer in YouTube, Facebook and Whatsapp for 3-4 hours daily. In 2017,



Marketingtofarmers.com reported that You tube was the leading social network among farmers, where farmers were watching videos to acquire information on products and services for their farm. Therefore, the commercial advertisement of the Uzhavan app through you tube would grasp the non-users of the Uzhavan app. Uzhavan app has relatively lowered the information searching time and it has created more awareness about agricultural government schemes. This mobile application was a very good initiative taken in the field of agriculture; the content present in this app was so strong and delivering vital extension service to the farmers so this app could be strengthened and replicated anywhere.

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### **Originality and plagiarism**

I solely declare that this research article is originally written by the authors. The article has not been submitted elsewhere for publication or consideration.

### **Consent for publication**

All the authors agreed to publish the content.

### **Competing interests**

There were no conflict of interest in the publication of this content

### **Data availability**

All the data of this manuscript are included in the MS. No separate external data source is required. If anything is required from the MS, certainly, this will be extended by communicating with the corresponding author through corresponding official mail starowin7@gmail.com.

## **REFERENCES**

Aker and Mibiti. 2010. Mobile-phones and economic development in Africa. *J. Econ. Pers.*, **24(3)**: 207-232.

Aravindh Kumar S and C. Karthikeyan 2019. Status of Mobile Agricultural Apps in the Global Mobile Ecosystem. *Int. J. Edn. and Develop. using Infor. and Commun. Technol.*, **15(3)**: 63-74.

Asongu, S. 2015. The impact of mobile phone penetration on African inequality. *Int. J. Soc. Econ.*, **42(8)**: 706-716.

Azhar, I. A. 2008. *Overseas Migration and Its Socio-economic Impacts on the Families Left Behind in Pakistan: A Case Study in the Province Punjab, Pakistan*. kassel university. GmbH.

Broadly, T. E. 2010. Comparision of older and younger adults' attitudes towards and abilities with computers: Implications for training and learning. *British J. Educational Technology.*, **41(3)**: 473-485.

Carr, C. 2015. Social media: defining,developing, and diving. *Atlantic J. Comm.*, **23(1)**: 46-65.

Costopoulou, C.M. 2016. Studying mobile apps for agriculture. *IOSR J. Mob. Comput. Appl.*, **3**: 44-49.

Diem, K.H. 2011. Is extension ready to adopt technology for delevering programs and reaching new audiences? *J. Extn.*, **49(6)**.

FAO, 2019. *Digital Technologies in agriculture and rural areas status report*. Budapest: FAO.

Fuess, L. 2011. *An Analaysis and Recommendations of the Use of Social Mediawith the Coperative Extension System: Opportunities, Risks and Barriers*. Cornell University, College of Agricultural and Life Sciences, Ithaca.

Hayrol Azril, M.D. 2009. Level of Mass Media Usage (Television, Radio and Newspaper) among Malaysian Agro-based Entrepreneur. *Journal of Agricuture and Biology.*, **8**: 417-419.

Hornbæk, K.A.C. 2007. Meta-analysis of correlations among usability measures. *ACM*, 617-626.

Irant, T.A. 2005. Communication Preference of Politically Active Agriculture Leaders. *Journal of Agricultural Communications.*, **89(2)**.

ITU. 2015. *Measuring the information society report*. Geneva: ITU.

Newburry, E.H. 2014. Over the hurdles:barriers to social media use in extension offices. *Journal of Extension.*, **52(5)**.

O'Donnell, M. 2013. Using ICT to enhance marketing for small agricultural producers. *USAID*.

Patel, D.J. 2014. Challenges and opportunities for ICT initiatives of agricultural marketing in India. *Oriental Journal of Computer Science and Technology.*, **7(3)**: 377-381.

Richardson, D. 1996. *The internet and rural development: recommendations for startegy and activity final report*. Rome: Sustainable Development Department of the Food and Agricultural Organization of United Nations.

Stanley, S. 2013. *Harnessing Social Media in Agriculture*. A Report for the New Zealand Nuffield Farming Scholarship Trust.

Sulaiman. R V, N. K. 2011. *ICTs and Empowerment of Indian Rural Women What can we learn from on-going initiatives?: CRISP*. CRIPS, Hyderabad, India.

Varner, J. 2012. *Agriculture and Social Media*. Mississippi State University Extension Service.

Writer, G. (2015). How Ugandan youth are making money with ICT for agriculture. Retrieved from < <http://www.ictworks.org/2015/06/08/chasing-the-42-per-fsrmer-dream-how-youth-are-making-money-with-ict-in-agriculture/>>