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Classification of Uzhavan app farmers, constraints experienced by user farmers in the Uzhavan app and Policy guidelines to upscale the use of the Uzhavan app

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Abstract

As part of the Digital India Project, the TN government unveiled the 'Uzhavan' (Farmer) mobile application on April 8, 2018. This app aims to address the core problem of knowledge access, which makes it easier to overcome the major obstacles in agriculture, such as raising productivity and net revenue. The 'Uzhavan' smartphone software is only six years old, but as of right now, more than ten lakh farmers in Tamil Nadu have downloaded it. The distribution of users is not uniform, though. Consequently, a study was carried out to determine the "Uzhavan" app's usage patterns and limitations as well as to recommend policy guidelines to address the issues. Because it is the most agriculturally advanced district in Tamil Nadu, the Coimbatore district was chosen for the study. A survey of 120 farmers in Coimbatore who downloaded "Uzhavan" (farmer) was conducted, and the data was examined using the proper statistical software. Based on their degree of Uzhavan app usage, respondents were divided into four domains: downloaded farmers, accessed farmers, used farmers, and benefitted farmers. As previously mentioned, restrictions were described, and policy recommendations to increase the adoption of the Uzhavan app were thoroughly examined.

Keywords: Uzhavan app, classification, user farmers, constraints and policy guidelines

Introduction

Many research studies were conducted to diagnose the grounds for low technological adoption by the farmers of Tamil Nadu and those studies inferred that the both non assurance and be short of information about availability of seeds, fertilizers, machineries and implements at the needy time and be deficient in weather information as limitation to take decision on crop production (Ullah, M. A *et al*, 2014) [5]; ignorance about well-judged price for the produce and not having price forecasting system as constraint to take decision on selling (Anket Patil *et al*, 2023) [1]; non-accessibility to govt schemes and its subsidy, mode of applying for the same, approval and allotment procedures as restriction to take decision on implementation of innovative or high-end technologies or both (Moorthy, D *et al*, 2023) [3]; inadequate knowledge about the crop insurance schemes affect the decision to take part and the opportunities to witness the benefits (Dinamani, B *et al*, 2022) [2]. To get rid of the above proclaimed barriers on decision making behaviour of farmers and to adopt or reject a technology to greater extent, real time information related to critical inputs, machineries, marketing, weather, schemes are to be guaranteed.

ICTs, particularly mobile phones, can be very effective in delivering timely and relevant information to farmers, even to those living in remote areas (Mulugeta *et al*, 2017) [4]. Information adoption among farming community is widely acknowledged as one of the critical factors for agricultural decision making. In this existing scenario, launching of Mobile 'Uzhavan' (Farmer) application by TN State government on April 8, 2018 deserves special attention as it solved farmers' perceived constraints in decision making by giving real time, localised information and encouraged the farmers to take up farming activities effectively. It is bilingual app which presents information in English and Tamil language.

As on today this 'Uzhavan' mobile app was downloaded by more than ten lakh farmers scattered all over Tamil Nadu. This app offers more than twenty different kinds of services to support the farming activities of farmers from plouging to post harvest stages. However, the distribution of users is uneven. The study aimed to identify the usage pattern and constraints of 'Uzhavan' app and to suggest policy guidelines to overcome the shortcomings.

Research Methodology

This study was conducted at Coimbatore district. Coimbatore district comprises 12 blocks. From each block, 10 farmers those who have accessed and used "Uzhavan" (farmer) app was selected. By doing so the sample size for this study was 120. These 120 respondents were selected in consultation with Assistant Directors of Agriculture (ADA)

of respective blocks by adopting purposive random sampling. The well-structured and pretested interview schedules were used to collect data.

Statistical tools used

1. **Percentage:** For each response option, divide the count by the total number of responses and multiply by 100.
2. **Mean:** The mean, also known as the average, is a measure of the central tendency of a dataset. It is calculated by summing up all the values in the dataset and dividing them by the number of values.

Mean Formula

$$\text{Mean Deviation} = \frac{\Sigma_1^n |x_i - \mu|}{n}$$

where

$$\mu = \frac{x_1 + x_2 + \ldots + x_n}{n}$$

3. **Standard Deviation:** Standard deviation is the square root of the variance, providing a measure of the spread of the dataset in the same units as the data.

Standard Deviation Formula

$$S = \sqrt{\frac{\Sigma(X - \overline{X})^2}{N}}$$

where S = the standard deviation of a sample,
Σ means "sum of,"
X = each value in the data set,
$\overline{X}$ = mean of all values in the data set,
N = number of values in the data set.

Findings and Discussion

Services offered by Uzhavan app are Subsidy scheme, Benefit registration, Crop insurance, Fertilizer stock, Seed stock position, Agricultural machinery for rental, Market price, Weather advisory, Farmer officer contact programme, Farm guide, Organic products, FPO Products, Reservoir levels, Agriculture news, Feedback, Pest/ disease monitoring/ remedial, ATMA training and demonstration, Uzhavan e - Market, Department of sericulture, Agri budget, Kalaignar agriculture development programme, Kalnadai maruthuvar and TN Green Mission Tree Seedlings. The signature page and second page are depicted below as Fig.1 and Fig.2.

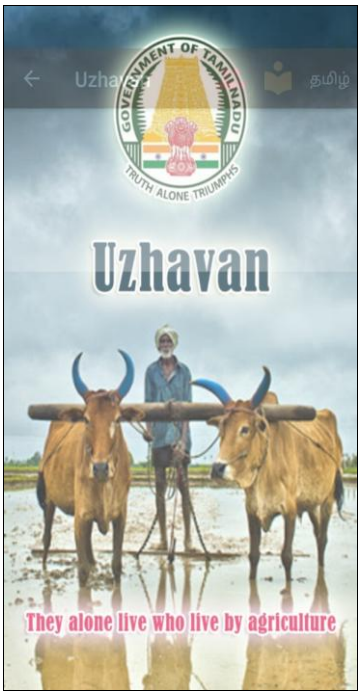

Fig 1: Uzhavan app

Fig 2: Services offered by Uzhavan app

It could be found from Table 1 that three-fourths of the respondents were young to middle-aged. The majority (90 percent) of the respondents were male. Nearly 40 percent graduated. Among the respondents, equally, fifty percent of them belonged to nuclear or joint family types. Their farming experience stands in between low to medium level, with half of the respondents alone practicing agriculture as their main occupation. Almost 44 percent of the respondents fell semi-medium (2-4 hac) category farmers ad their income was very low (Rs. 60,000-4 lakhs/annum). Social participation and extension agency contact were also very low to medium for nearly half of the respondents. Regarding social media usage, all the respondents were using it, followed by television and newspapers (each 36 percent); radioand farm journalism (18 percent). The types of mobiles used by the respondents were in the order of OPPO (33 percent); SAMSUNG and REDMI (each 22.50 percent); and VIVO and REALME (each 11 percent). The networks used by the respondents were in the order of AIRTEL (55.50%), JIO (22.50%), BSNL and VODAFONE (11.00%). It is interesting to note that 67 percent of the respondents were using the Uzhavan app, as all are involved in social media.

Table 1: Socio-economic profile characteristics of respondents:

Sl. No.	Particulars	Classification	Percent
1.	Age	Young (Up to 30 years)	21.00
		Middle (31 - 45 years)	54.00
		Old (Above 45 years)	25.00
2.	Gender	Male	90.00
		Female	10.00
3.	Education	Illiterate	0.00
		Primary	0.00
		High school	23.00
		Higher secondary	28.00
		Graduate and above	39.00
		Diploma	10.00
4.	Family type	Nuclear / Joint	50.00
5.	Experience in agriculture	Low (Less than 18 years)	62.00
		Medium (19 to 31 years)	16.00
		High (Above 31 years)	22.00
6.	Occupational status	Agriculture alone	56.00
		Agriculture +Business	22.00
		Agriculture + Govt. / Private Jobs	22.00
7.	Farm size	Marginal (Less than 1 hac)	11.00
		Small (1 - 2 hac)	39.00
		Semi medium (2 - 4 hac)	44.00
		Medium (4 - 10 hac)	0.00
		Big (More than 10 hac)	6.00
8.	Annual income	Very low (Rs. 60,000 - 4 lakhs)	67.00
		Low (Rs. 4 lakhs - 8 lakhs)	17.00
		Medium (Rs. 8 lakhs - 12 lakhs)	11.00
		High (Rs. 12 lakhs - 16 lakhs)	0.00
		Very high (Rs. 16 lakhs - 20 lakhs)	5.00
9.	Social Participation	Low	50.00
		Medium	20.00
		High	30.00
10.	Extension agency contact	Low	40.00
		Medium	40.00
		High	20.00
11.	Mass media exposure	Radio	18.00
		Television	36.00
		Social Media	100.00
		Farm journalism	18.00
		Newspaper	36.00
12.	Type of mobile	Apple	0.00
		NOKIA	0.00
		SAMSUNG	22.50
		OPPO	33.00
		VIVO	11.00
		REDMI	22.50
		REALME	11.00
13.	Network type	JIO	22.50
		AIRTEL	55.50
		BSNL	11.00
		VODAFONE	11.00
14.	Years of Uzhavan app usage	Less than 2 years	33.00
		3 to 4 years	23.00
		Above 4 years	44.00

Other mobile applications known / social media to the respondents

It could be inferred from Table 2 that, as previously stated, all respondents used social media for seeking different aspects of agriculture, *viz*., PLANTFIX (17%), Telegram (17%), Weather—Nam Uzhavan (17%), Nethra (11%), Kisan Samman (11%) and Farm Day (6%). Almost one fourth of the respondents belonged to one or few of the WhatsApp groups that disseminate information on agriculture. For information on managing pests and diseases, respondents utilized PLANTFIX; for irrigation schedules, farm development, daily price schedules in Uzhavar Santhai, and organic farming, they utilized Telegram. Weather - Nam Uzhavan: For weather forecasts, Nethra for forecasting prices. Farm Day provides information about agriculture and pricing forecasts, while Kisan Samman provides financial support.

Table 2: Details on Other mobile applications known / social media to the respondents

Other social media	Purpose	Percent
PLANTFIX	Pest and disease management	17.00
Telegram	Irrigation, farm development, uzhavar santhai, organic farming	17.00
Weather - Nam uzhavan	Weather forecast	17.00
Nethra	Price forecast	11.00
Kisan Samman	Financial support	11.00
Farm day	Price forecast and agriculture related information	6.00
WhatsApp groups	Not specific - generally related to agriculture and allied aspects	23.00

Classification of Uzhavan app farmers

Respondents were categorized into four domains, namely downloaded farmers, accessed farmers, used farmers and benefited farmers, based on their level of Uzhavan app usage. Any app can be used in four steps, which are as follows:

1. just downloading the app. Infrequently or never opened to see the content. They had been called "downloaded farmers."
2. Go through or view (by accessing) the services or features offered by the app to become familiar with all of its content. They had been called "accessed farmers."
3. Utilizing any of the services by following the guidelines provided in the app to obtain advantages such as information retrieval, application submission, service request, service registration, uploading of produce/service availability, etc. They had been called "used farmers."
4. Benefits of using the app include receiving information, receiving subsidies, obtaining essential inputs and farm equipment at reduced prices, being given priority in all programs, being aware of pricing changes, and guaranteeing in-person visits from extension agents, among other things. They were called as “benefited farmers”.

Table 3: Classification of Uzhavan app farmers: Number = 120

Categories	Number	Percentage
Downloaded farmers	120	100
Accessed farmers	77	64
Used farmers	42	35
benefited farmers	21	17.5

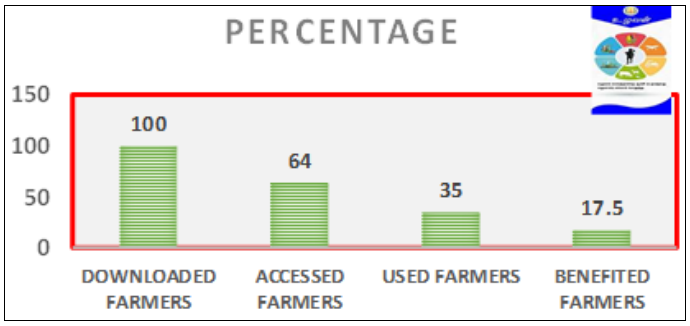

Fig 3: Classification of Uzhavan app farmers

It could be inferred from table 3 that since respondents were carefully chosen, all farmers in this study fell under the category of "downloaded farmers" based on the aforementioned criteria i.e., only farmers who downloaded were taken into consideration. However, just one-third of the farmers (64 percent) who downloaded the Uzhavan app actually opened it and used its services. Nearly half of the farmers who were accessible (35 percent) were used for various services. Nearly half (17.5%) of the farmers in the used farmers category reported benefits from using the app.

Constraints

- A little more than 75% of users said that after starting the process of signing up (registering) for a service or accessing information, they were unable to finish it because the website was unavailable.
- The majority of users reported that when services are selected, it takes a long time to download them and frequently displays "Server Problem" in the dialogue box after a lengthy time of downloading.
- The majority of farmers said they install the app to get information whenever a need occurs or information is needed. They then uninstalled the app. They complemented this by indefinitely installing and updating the software in the Google Play Store, which slows down mobile speed or causes the phone to hang.
- Users complained that the benefit registration process is extremely time consuming, takes numerous steps and necessitates the upload of numerous scanned documents (both personal and land related).
- The user must upload specific documents that have been scanned in a specific size in order to register for

subsidised programmes. Knowledge and proficiency in how to scan, save a document with Adope, and reduce the size with PDF reducer software are essential. All users cannot possess the information and skill set mentioned above. It is a significant limitation.

- It takes a long time to receive the necessary inputs or benefits after registering for a benefit or subsidy.
- When users use two services, "Labour app" and "To apply for horticulture subsidy" among the aforementioned subservices, they will obtain an OTP (one-time password) in their registered mobile number. In this case, most OTPs were either not received at all or took a very lengthy time to arrive. This issue deters users from applying for these services and is regarded or experienced as a major constraint.
- Bilingual is the description of this software in this app. Only in Tamil are few services offered bilingually, though. Additionally, some subservices are duplicated across various services.
- The bulk of users stated that the frequent entries of Aadhar numbers and other details while accessing the features of this app are quite inconvenient.
- A few farmers have pointed out that there are no services available for soil and water testing.

Policy guidelines :

- The app should be designed in such a way that service pages can be downloaded fast or in a short period of time, and it should allow users to finish the registration process or access the full content without displaying an error in server or web page availability.
- All users reported that the icons or graphics for the various services on the second starting page should be in distinct colours and with relevant images.
- The benefit registration process to be simplified. A kisan card, similar to the Aadhar card, is to be handed to each farmer and includes or links details such as a photograph, survey number, patta, chitta, adangal, topo drawing, and other required documents. Instead of uploading all of the preceding papers, the Kisan card number should be provided at registration.
- The app should be designed in such a way that it may connect with e-sevai centres to obtain Chiita, the Village Administrative Office for Adangal from A Register, and banks for financial transactions (Supportive services).
- Farmers should be informed about the Uzhavan app's existence and use through all conventional and contemporary communication channels. They ought to be instructed on how to use the services provided by the app after raising awareness.
- Some services of app not only giving information but also having institutional linkages such fertilizer shops, suppliers for drip irrigation, custom hiring centres, FPOs, farmers of organic agriculture, labour suppliers/ agencies, farmers either as buyer or seller. If so, their credibility to be monitored and scrutinized closely.
- To make the service "Agricultural Machinery for Rental" as successful and helpful even to remote customers, an adequate number of custom hiring centres with the necessary amount and quality machinery, as well as guaranteed operators or drivers, must be established.
- When installing drip irrigation by registering through "Subsidy service", a subsidy is provided, and as part of that, there should be a mechanism for previous users to provide feedback (reviews) on firms like Netafim or Phenolex, which new users or beneficiaries can use to decide which company to choose when installing drip irrigation.
- Wherever the quality of the product or service is concerned among the various services provided by the app, feedback from previous users may be given to proceed with/make a confident choice of the product or service.
- To help users of Farm Guide Service comprehend a technology, video clips or YouTube links should be provided.
- Few users suggested that these twenty-two services could be grouped into different categories keeping or using certain criteria. Each group (comprising few services) can be developed as an independent Uzhavan APP as Uzhavan APP for production, Uzhavan APP for protection and Uzhavan APP for after harvest.
- A few users suggested that update notifications (any information added or modified) be displayed in the same way as new messages and missed calls are displayed on mobile phones. It will enable them to receive updates without delay or very quickly. It indicates that new messages are being added.
- A few additional users proposed providing free inputs to a set number of users who registered through the Uzhavan app, both to encourage them and to urge the majority of other users to use the Uzhavan app voluntarily.
- As many videos as possible on how to use the Uzhavan app and access its contents; register for various services benefits to be developed in the same way as user manuals and uploaded on YouTube. As a ready reckoner, user guides must be prepared in both Tamil and English.

A few farmers suggested that in the future, vital inputs may be acquired via e-payment on the Uzhavan app and delivered to their farm gate.

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