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Case Study

Mobile Communication Technology in Agriculture and Rural Development; A Qualitative study on Tamil Mobile Apps on Agriculture

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Abstract

The progressive use of mobile communication has created great prospect towards social, economic empowerment and also development in grassroots innovation in developing countries. Mobile communication has brought in great revolution in the field of agriculture by providing vide scope of agricultural development through access of information on modern agricultural practices, agricultural market, new crops, weather, pests control and so on. Mobile technology has brought in confidence among farmers to communicate directly in getting advice related to agriculture and also to sell the product directly to the market without hindrance from third party brokers. Also due to the various initiatives by government of India many projects on technology based communication become easily accessible by farmers of all sectors. This study mainly focus in assess and understand the functionality of the regional Tamil mobile apps on agriculture in Tamilnadu based on the Mobile Apps rating scale (MARS- Mars is designed to analyse mobile apps based on the criteria of engagement, functionality, aesthetics and information quality) and how effective it can be in bringing development in Agriculture. This study will provide more opportunities for policy makers to effectively harness mobile application and to bring sustainable development in agriculture.

Keywords: Mobile Technology, Information, Mobile APPS, Agriculture, Development, Communication, Assessment

Introduction

Agriculture is the backbone of Indian economy and is largest provider of livelihood; nearly 58% of Indian population depends on agriculture directly or through its allied sectors. Agriculture is the greatest contributor towards the GDP (Gross Domestic product), it accounts for 18 per cent of India's GDP which provides employment to 50% of the countries workforce. The GDP in Agriculture has faced a steady decline towards its growth during past few decades. The sustainable agricultural development in terms of food security is something which everyone should primarily focus in. It has been a huge challenge for the policy makers to bring in new initiatives as well as refine the existing actions. The major dilemma the country is facing in present scenario is raising food prices and the ever growing population. It is necessary to bring in food security to balance the raising population and improve the livelihood of the farmers to sustain agriculture in India.

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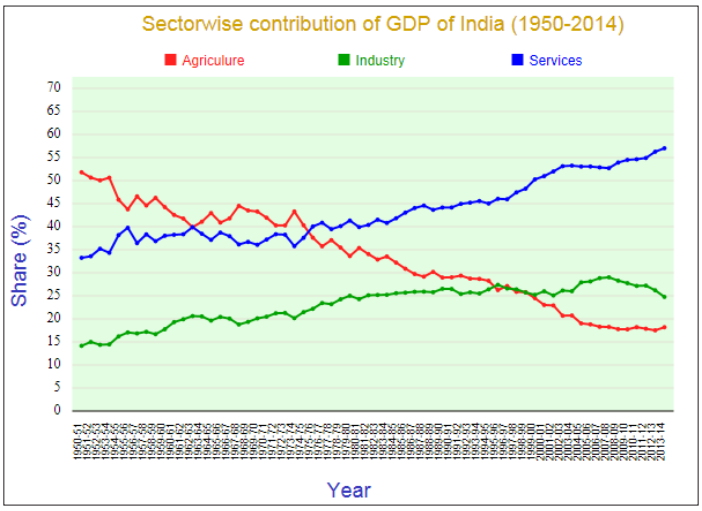

Source: Statistics Times

ICT in Agriculture

Information Communication Technology is not a new concept in Agriculture. It has been an important tool in disseminating information among agricultural masses for past few decades. Earlier it has been a one way mode of transmitting information with the help of traditional ICT (Radio, Television, newspaper) but now the new ICT initiatives through Computer, Internet and Telephony have advanced in bringing more people in to its network and also the information sharing became more dynamic. Among the whole of the ICT projects implemented around the world, India has the contribution of 45% of the ICT initiatives and also has the maximum number of information kiosks employed in rural India.

Mobile Technology in Agriculture

In India Mobile Telephony has the highest growth of 2.67% per month and according to the press release from the telecomm regulation authorities of India the total number of subscribers of telecom in terms of wire lines and wireless is 1,102.94 million as of 31 Oct 2016 among this 40% of the subscribers are from rural population and also nearly 20% of the subscribers among the total subscribers use broadband in the form of wired/wireless connectivity. In Tamilnadu in particular have 120.60 million subscribers which stand third next to Delhi and Himachal Pradesh which has been chosen as the study area.

As mobile penetration continues to increase among farming communities and information services and to adapt and proliferate, the scope exists for a much greater rural productivity impact in the future. Mobile Telephony can be an easiest medium through which the agricultural policy makers can successfully reach the farmers. Also the Farming communities appreciate mobile phone as easy, fast and convenient way to communicate and get prompt answers of respective problems. Mobile phones have reduced communication cost thereby allowing the individuals and organization to send and obtain information very easily and quickly. This also had an extensive economic benefit, improving agriculture and access to information around the world and so on. It also had narrowed the gap in digital divide were any individual can access and interact easily.

To objective of the study is to qualitatively analyze the Tamil agriculture mobile apps in Tamilnadu based on mobile application rating scales and to understand how effective is mobile apps in terms of Engagement, Functionality, Aesthetics and Information.

MARS scale

The MARS is a distinguished tool created by the Queensland University of Technology to compare health based apps and the function of this app is designed to score apps on the parameters of engagement, functionality, aesthetics, and information quality. The scale and its parameters are used in this study to analyze Tamil agriculture based mobile apps.

Case study method is adopted in identification of Tamil Agricultural apps, Case studies is a detailed contextual analysis of a limited number of events or conditions and their relationships. Researchers have used the case study research method for many years across a variety of disciplines. Social scientists have used qualitative research method in particular to examine present-day real-life situations and provide the basis for the application of ideas and extension of methods.

The identification of mobile application with the characteristics of Agriculture was identified from Google play store. The researcher has narrowed his research paper towards Tamil Agricultural apps and has identified nearly 36 apps in Google play store. Among these 36 apps on the basis of active users which are greater than 100 in numbers, four of the apps were selected and analyzed based on above said parameters.

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Table 1.Engagement & Functionality

	Engagement					Functionality		
	Entertainment	**Interest**	**Customization**	**Interactivity**	**Target Group**	**Performance**	**Ease of Use**	**Navigation**
Vivasayam	Moderate	Stimulate Repeat Use	Agricultural News, Water Levels in Dams, Q & A Section	Flexible	Farmers, Sellers, Buyers	High	User Friendly	Navigation with images
Vivasayam in Tamil	Moderate	Moderate	Videos, Organic Farming, Fertilizers, Essays, Events	Flexible	Organic Farmers	Functional	Friendly	Easy
Uzhavan	Moderate	Engage User	Seed Stock, Subsidy, Loans, Fertilizer Stocks, Filed Visits by officers	Basic Interactivity features	Farmers	Mostly Functional	Intuitive, simple	clear and intuitive screen flow throughout
Agri Book	to entertain user for a brief time > 5 min	OK, neither interesting nor uninteresting	Horticulture, Forestry	Insufficient interactivity, or feedback, or user input options, limiting functions	Acceptable but not targeted	Mostly functional with minor/negligible problems	Able to use app immediately	Different sections within the app seem logically disconnected

Table 2.Aesthetics & Information

	Aesthetics			Information				
	Layout	**Graphics**	**Visual Appeal**	**Accuracy**	**Credibility**	**Goals**	**Quantity**	**Quality**
Vivasayam	Linear, List View	Images, GIF	Effective Use of Color and font	Accurate	Developer	Clear Goals	Broad range of Information	Relevant
Vivasayam in Tamil	Table Layout & Linear Layout	Images, Videos	Some Visual Appeal	Accurate	Developer	Description lists some goals	Broad	Moderate
Uzhavan	Table Layout& List View	Moderate Quality Graphics	average, neither pleasant, nor unpleasant	Accurate	Agriculture Department	clearly specified goals	Comprehensive and concise	Relevant
Agri Book	Mostly clear, able to select/locate/ see/read items Table Layout	Low quality/low resolution graphics	Little visual appeal	Inaccurate. App contains very few of the described components/ functions	Source identified but legitimacy/ trustworthiness of source is questionable	Description lists some goals, but app has very little chance of achieving them	Insufficient or possibly overwhelming	Moderately relevant/ appropriate/ coherent/and appears correct

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Case: 1 Vivasayam-விவசாயம்: வாங்க விற்க, மாடித்தோட்டம்

Total Downloads:	9,912
Rating:	4.7
Offered by:	Nithra Edu Solutions India Pvt. Ltd.
Category:	Agriculture, Terrace gardening and Agriculture Books , with history of various agricultural vegetables, Herbs and greens, grains, fruits, oilseeds, flowers, Agriculture News, Workshops, Conferences, exhibitions, cattle farming, fertilizers, Crops, Q &A , Essays, Market prices, Dam water status, Weather, Important Address, Loans, Agricultural machineries and its availability, media news, agricultural Education, Sellers and so on
Language:	Tamil
Country of Origin:	Tamilnadu, India
Target Group:	Buyers, Producers, Farmers, Also common man who is interested in Agriculture
Size of App:	10 MB
Operating System:	Android

Engagement

The app is very interesting, would attract user in repeat use, It also have an Question Answer section were the registered member can raise any question related to agriculture and market and is answered by the experts or by the farmers itself. This makes it more interactive. The target group is farmers and also the common man who is interested in getting knowledge about agriculture. This also gives in knowledge source which carries the history of various plants, seeds, crops, grains, vegetables and so on. Here they also bring in information related with terrace gardening, thus making this app more engaging.

Functionality

The performance of this app is high comparing to all other tamil apps which can be understood by its user ratings and the number of users the app has and the app is very user friendly since this function only on the tamil language and also the interactive element is more easy and flexible. This app has more navigation and the navigation buttons are very prominent and is very easy to navigate this makes the functionality of this app more superior.

Aesthetics

The layout of Vivasayam app comprises of Table layout in home screen and linear layout in categorization of content and also list view is effectively used. The graphic elements like images and gif animation is used in design which helps the farmers navigate easily in to the app.

Information

The information in Vivasayam app is mainly categorized as Agriculture, Terrace gardening and Agriculture Books. Agriculture carries more information related with history of various agricultural vegetables, Herbs and greens, grains, fruits, oilseeds, flowers and so on. And in terrace gardening it carries more information related with various tips for home/ terrace gardening. Variety of tips for each plants and in the books section it has various classification of books related with agriculture.

This also carries more information like Agriculture News, Workshops, Conferences, exhibitions, cattle farming, fertilizers, Crops, Q &A , Essays, Market prices, Dam water status, Weather, Important Address, Loans, Agricultural machineries and its availability, media news, agricultural Education, Sellers and so on. The information given in Vivasayam app is more in quantity and in quality.

Case: 2 Name of APP: Vivasayam in Tamil.

Total Downloads:	1815
Rating:	4.5
Offered by:	aApp Technologies
Category:	Natural Fertilizer, Oranic Farming, Videos, Vegetable types, cattle farming, spinach types, Market, Millet cooking tips, News, Grains, Technology, Crops, Training, Proverb, Trees, Medicines, Terrace farming, Subsidies, Buy and sell, Agricultural essays, Agriculture Events.
Language:	Tamil
Country of Origin:	Tamilnadu, **India**
Target Group:	Buyers, Producers
Size of App:	5.3 MB
Operating System:	Android

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Engagement

The app is Interesting, would engage user in repeat use. The customization is in more particular towards informing the farmers more towards organic farms, fertilizers, Grains and also it speaks more on hereditary based agriculture and local seeds and medicinal plants of Tamilnadu so on. This apps uses more visual to guide farmers making it more lively and interactive. The interactive nature of this app is more specific towards the organic cultivation, farmers.

Functionality

This app can be effective among local farmers who are interested in getting information related with organic farming. It's perfectly logical, easy, clear and intuitive screen flow throughout, or offers shortcuts.

Aesthetics

The layout used in Uzhavan app is Table layout and linear layout and is more effectively used in this app. The app is seamless graphics – consistent and professionally designed.

Information

The information given in the app is more towards informing the organic farmers on agricultural and also to the people who are interested in terrace farming.

Case: 3 Name of APP: **UZHAVAN – உழவன்**

Total Downloads:	695
Rating:	4.4
Offered by:	Agriculture Department, Tamil Nadu
Category:	Subsidy scheme, Crop Insurance, Fertilizer stock, Seed stock, Custom Hiring Center, Market Price, Weather Forecast, Field Visits
Language:	Tamil & English
Country of Origin:	Tamilnadu, India
Target Group:	Buyers, Producers
Size of App:	3.1 MB
Operating System:	Android

Engagement

More than fun and entertainment, it acts as an information source for agriculture and is informative in nature.

The customization is in more particular towards informing the farmers more towards the Govt initiatives like subsidy availability, Crop Insurance, Fertilizer stock, seed stock, custom hiring centre, visits by extension officers and so on. The interactive nature of this app is more specific towards the target farmers. The app is more Target farmers specific.

Functionality

The app is more accurate in its functionality. This app can be effective for extension workers to get information and share the information. Farmers need some technical knowledge to work with this app.

Aesthetics

The layout used in Uzhavan app is Table layout and list view is more effectively used in this app. The app is Professional, simple, clear, orderly, logically organized, device display optimized.

Information

The information given in the app is more towards informing the farmers on agricultural services. Since this app is offered by agricultural department, the information provided will be more accurate and credible.

Case: 4 Name of APP: Agri Book in Tamil

Total Downloads:	120
Rating:	4.3
Offered by:	Ishwarya Prasanna Developed by: Shakthi Digital Technologies
Category:	Agriculture Farming, Horticulture farming, Organic Farming, Forestry.
Language:	Tamil
Country of Origin:	Tamilnadu, India
Target Group:	Farmers
Size of App:	8.8 MB
Operating System:	Android

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Engagement

The app is Dull, not fun or entertaining at all. The customization is in more particular towards informing the farmers more towards organic farms, Horticulture and Forestry. This app uses fewer images and concentrates more on content which makes it dull.

Functionality

This app can be effective among farmers who are interested in getting information related with farming. It's perfectly able to use app immediately; intuitive; simple

Aesthetics

The layout used in Agri book app is Table layout. The app is image graphics – Some visual appeal – average, neither pleasant, nor unpleasant

Information

The information given in the app is more towards informing the organic farmers on agriculture and also about horticulture and forestry.

Summary & Conclusion

Mobile Apps and Rural Development:

It is found that the Agriculture being an important sector of economic development it requires the active involvement of government and public sectors to develop, promote and distribute mobile apps. The mobile apps on the categories of Entertainment, Functionality, Aesthetics and Information it is found the entire mobile apps are special in terms of its objective and goal.

Engagement

The apps were moderate in terms of entertainment, and apps are interesting which make farmers to access and engage users, the customization were specific with the objective of the specific apps and were targeted among farmers in general also apps are more flexible which make the farmers easily access the need content.

Functionality

The apps have high and moderate functionality in terms

Category	Classification	Findings	Development
Engagement	Entertainment	Moderate	Flexibility in App usage Would Engage Farmers
	Interest	Moderate, Engage User	
	Customization	Farming, Subsidy, Experts	
	Interactivity	Flexible	
	Target Group	Farmers, Buyers & Sellers	
Functionality	Performance	Mostly Functional	Friendly Functionality Make ease of use among farmers
	Ease of Use	Use the Immediately, Friendly	
	Navigation	Navigation	
Aesthetics	Layout	Linear, Table, Grid Layout	Visual Appeal in Layout makes the app effective
	Graphics	Moderate Quality	
	Visual Appeal	Effective fonts, Colors	
Information	Accuracy	Mostly Accurate	Accuracy and credibility in information would engage farmers in multiple uses of Apps.
	Credibility	Developed by Developers	
	Goals	Objective of APP	
	Quantity	Comprehensive and concise	
	Quality	Mostly Relevant	

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of ease of use with higher navigation.

Aesthetics

Most of the apps use Table layout, linear layout, Grid Layout. The Graphic used were of average quality which helps to faster surfing in low speed internet connection, some use videos which makes the app more interactive. Visual appeals in terms of color, layout and fonts have been effectively used in most of the agricultural apps.

Information

In terms of accuracy and credibility most of the apps are of privately owned and few apps owned by the agricultural department. The content or information is created is completely depend on the credibility of the developers.

The policy makers can guide in development of apps which can benefit farmers. The farmers should be trained and educated by the policy makers for effective usage of the mobile apps by providing them with various training programs.

In the future the research can be further extended to analyze the usage, effectiveness and impact and its adaptation among farmers by quantitative research method.

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