



STUDENT STUDY PROJECT

On

MOBILE APPLICATIONS FOR AGRICULTURE IN INDIA – A STUDY

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MOBILE APPLICATIONS FOR AGRICULTURE IN INDIA – A STUDY

INTRODUCTION

Government's "Digital" project launched on 1st July 2015 envisions empowering citizens with e-access to government services and livelihood related services, among others. The project has three core components, viz. **digital infrastructure**, **digital services** and **digital literacy**. Mobile phone is the preferred delivery medium with focus on mGovernance and mServices. The mAgriculture and mGramBazar, out of the seven components covered under mServices, directly impact agricultural extension and marketing services.

The project will benefit small farmers. It seeks to

- ❖ Transform rural India into a digitally-empowered knowledge economy
- ❖ Provide universal phone connectivity and access to broadband in 250,000 villages
- ❖ Extend timely services to farmers through information technology and its tools
- ❖ Enhance efficiency in agricultural governance through digital literacy and electronic delivery of services.



Information and Communication Technologies has seen a powerful role in daily life of farmers. ICT (Information and Communication Technology) in agriculture is an emerging field focusing on the agricultural development and rural development in India. Introduction of ICT in Indian agriculture enables the dissemination of requisite information at the right time.

The rapid growth of mobile telephony and the introduction of mobile enabled information services provide a means to overcome existing asymmetry of information in all field like agriculture, healthcare and education. There is a big gap between the availability and delivery of agriculture inputs and agriculture infrastructure that can be bridge by the mobile technologies.

A smart phone is the device that is used to make telephone calls, having additional features and abilities like to send and receive e-mail, Wi-Fi and modem ability, internet access, Office documents, easy touch screen operation and most of all the capability to run custom software. The user interface is one more important characteristic of smart phone. It has a touch screen facility with ability to zoom in and out using simple interface buttons, menus and forms and the support of qwerty keyboard makes them easy and simple to operate for people who are not very aware with ICT technology and even not enough educated. The software must be easy to operate and farmer has to supply only the specific data required to complete an operation or a process. The cost of the smart phone is varying from low range to high range. So it's easy for farmers to buy any kind of smart phone which is in their budget.

In India, Mobile customers in urban areas reached 647.52 million and 528.48 million in rural areas. For 2017, the number of **smartphone users in India** is estimated to reach 299.24 million, with the number of **smartphone users** worldwide forecast to exceed 2.3 billion **users** by that time. The number of **smartphone users** worldwide is projected to amount to nearly 2.7 billion by **2019**.

As of **2019**, **Android** held a share of about 91 percent of the mobile operating system market in **India**. As of December 2016, **Android** was the dominant operating system in **India** with over 75 percent of the market share. This has also led to the rise and development of mobile apps which are helping existing government schemes, and other agriculture-based information to reach farmers in rural India. This digital change is acting as a game-changer for Indian agricultural conditions.

MAJOR APPLICATIONS AVAILABLE FOR AGRICULTURE IN INDIA

In India, ICAR (Indian Council for Agriculture Research) developed 106 mobile applications to serve farmers in different fields like crop science, horticulture science, natural resource management, agricultural engineering, animal science, fisheries science, agricultural

education, and agricultural extension etc. for food and commercial crops. Apart from these, many applications are developed by govt. departments, private firms and co-operatives. Many of the applications are available for free of cost and without internet.

KISAN SUVIDHA

Launched by the Honorable Prime Minister Sri.Narendra Modi in 2016 to work towards empowerment of farmers and development of villages, the app design is neat and offers a user-friendly interface. It provides information on current weather and also the forecast for the next five days, market prices of commodities/crops in the nearest town, knowledge on fertilizers, seeds, machinery etc. The option to use the app in different languages makes it more widely accessible.



IFFCO KISAN

Indian Farmers Fertilizer Cooperative Limited, also known as **IFFCO** is a Multi-state cooperative society engaged in the business of manufacturing and marketing of fertilizers headquartered in New Delhi, India.



This app was launched in 2015 and is managed by IFFCO Kisan, a subsidiary of Indian Farmers' Fertilizer Cooperative Ltd. Its aim is to help Indian farmers make informed decisions through customized information related to their needs. The user can access a variety of informative modules including agricultural advisory, weather, market prices, agriculture information library in the form of text, imagery, audio and videos in the selected language at profiling stage. The app also offers helpline numbers to get in touch with Kisan Call Centre Services.

KRISHI MITTR (RML Farmer)



RML Farmer is a one of its kind agricultural app where farmers can keep up with the latest commodity and mandi prices, precise usage of pesticides and fertilizers, farm and farmer related news, weather forecast and advisory. Its also provides agricultural advice and news regarding the government's agricultural policies and schemes. Users can choose from over 450 crop varieties, 1300 mandis, and 3500 weather locations across 50,000 villages and 17 states of

India. It works with the help of specific tools designed to analyze or provide information on different aspects of farming habits. Eg. CropDoc helps the farmers in identifying problems that affects their crops at the right time and suggests corrective actions; Farm Nutri provides general and personalized nutrient recommendations, which are presented in the form of a schedule of fertilizer dosage.

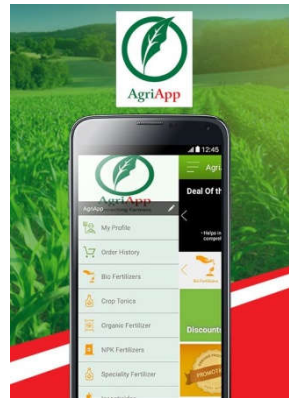
PUSA KRISHI

This app was launched in 2016 by the Union Agriculture Minister and aims to help farmers to get information about technologies developed by Indian Agriculture Research Institute (IARI), which will help in increasing returns to farmers. The app also provides farmers with information related to new varieties of crops developed by Indian Council of Agriculture Research (ICAR), resource conserving cultivation practices as well as farm machinery and its implementation will help in increasing returns to farmers.



AGRI APP

It provides complete information on Crop Production, Crop Protection and all relevant agriculture allied services. It also enables farmers to access all the information related to “High value, low product” category crops from varieties, soil/ climate, to harvesting and storage procedures. An option to chat with experts, video-based learning, the latest news, online markets for fertilizers, insecticides etc. are also available on this app.



KHETI-BADI

Kheti-Badi' (खेती-बाड़ी) is a social initiative App. It aims to promote and support 'Organic Farming' and provide important information/issues related to farmers in India. Agriculture today is heavily dependent on genetically modified seeds, chemical pesticides and fertilizers; this app helps farmers to switch their chemical farming into organic farming. However, this app is currently only available in four languages (Hindi, English, Marathi and Gujarati).



WHATSAPP

It may come off as a surprise to many, but one of the most widely used app for texting is bridging gaps between farmers. Departments of Agriculture of a few states have used this public platform to make groups called Progressive Farmers' which connects sons of the soil through

their android devices. It initially started with groups of top officials with android phones and was later introduced to agricultural communities.



KRISHI GYAN

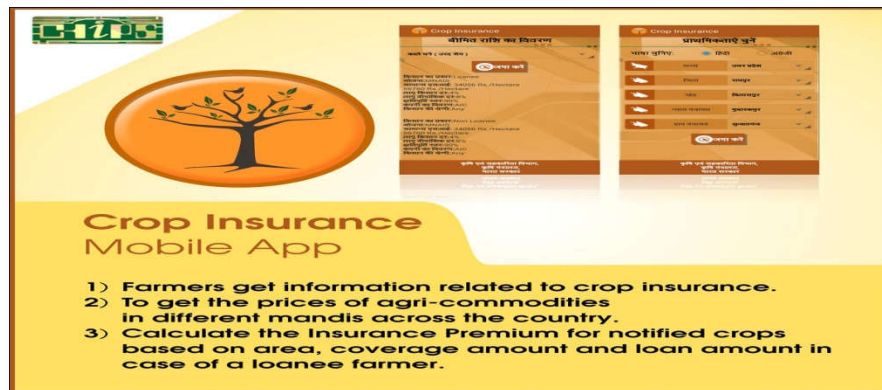
Works on a similar aspect as Whatsapp communication but is considered to be better as it doesn't require mobile numbers of individuals to stay connected. Apart from providing general information on farming, this application enables Indian farmers to connect with Krishi Gyan experts and ask them questions related to farming, and get answers within the application through notifications. The farmers as well as agriculture enthusiasts can also share their answer with each other.



CROP INSURANCE MOBILE APP

The app helps farmers to calculate insurance premium for notified crops and provides information cut-off dates and company contacts for their crop and location. It can also be used to get details of normal sum insured, extended sum insured, premium details and subsidy

information of any notified crop in any notified area. It is further linked to its web portal which caters to all stakeholders including farmers, states, insurance companies and banks.



AGRI MARKET

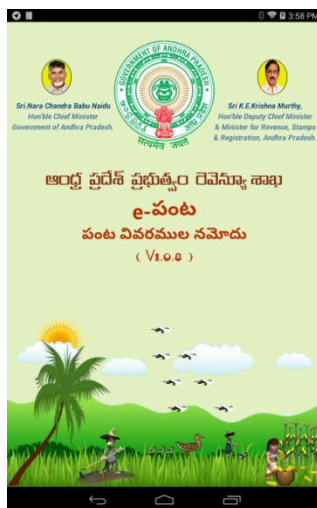
Launched along with the Crop Insurance app by the government of India, the app has been developed with an aim to keep farmers abreast of crop prices and discourage them to go for distress sales. Farmers can get information related to prices of crops in markets within 50km of their own device location using the AgriMarket Mobile App.



e - PANTA

Electronic crop booking (e- Crop booking) is an Android application launched with a local name called e-Panta, which is designed to know the ground reality of the crop details and to analyse the crop pattern across the state and to capture the standing crop in the state. Photographs as evidence in the case of crop damage and insurance are also available as the arable land in the state has been captured in latitude and longitude along with subdivision and occupancy..

All field officers are trained to capture the crop details in the existing agricultural fields using tabs and to upload the crop details to the server for every crop season. The features include an online transfer of crop details to Webland (Land record management website), evidence in the case of crop damage for insurance, evidence for crop loans by banks, crop pattern and water tax demand analysis, and GPS location of each land parcel across the state. The mobile app covers land use and the entire Pattadar's history of land cover.



D_ KRISHI (AADHAAR ENABLED SEED DISTRIBUTION SYSTEM)

Preparation of seed supply plan for Kharif and Rabi seasons as per the allotment for distribution by Commissioner & Director of Agriculture from time to time for general and subsidy sales. Arrangement for positioning of different crop varieties in the sale points of the districts in consultation with Joint Director of Agriculture as per allotment of Commissioner &

Director of Agriculture for distribution on subsidy under different schemes. Arrangement for procurement of non-available crop varieties in addition to A.P.S.S.D.C. LTD, production purpose with the approval of Commissioner & Director of Agriculture through tender process in agreement with seed producing firms on consignment basis. Acting as Nodal Agency for distribution of Vegetables Seeds on subsidy through Department of Horticulture on service charges. Monitoring the movement and sale of different crop varieties as per indent and requirement of the districts. Appointment of Dealers, distribution net-work etc. Compilation of daily, fortnight sale reports for onward submission to higher authorities. Preferring subsidy claims and settlement of advance payments received by Marketing Division. Monitoring the collection of pending dues. Sale of seeds of different crop varieties to other State Seeds Corporation & collection of dues. Handling the publicity and advertisement issues of the corporation. Arrangements of payment to the seed supplying agencies/firms for the procurement of seeds. Releasing dealer commission to the sales through dealers.



PLANTIX

Plantix is a mobile crop advisory app for farmers, extension workers and gardeners. Plantix was developed by PEAT GmbH, a Berlin-based AI startup. It can diagnose pest damage, plant disease and nutrient deficiencies affecting crops and can offer corresponding treatment measures. Users

can participate in the online community where they can find scientists, farmers and plant experts to discuss plant health issues and access their local weather reports. According to developers as more people use the app it becomes more accurate as the algorithm obtains more information. Due to the Plantix app, PEAT was listed as one of the 6 'Change the World' companies by Fortune Magazine in September 2017. The United Nations Food and Agriculture Organization estimates that between 20 and 40 percent of global crop yields are reduced each year because of plant diseases and pests. The Plantix app can help minimize these effects as users continue to use and share their experiences.



In the light of its contribution to agriculture in terms of knowledge dissemination, it is felt relevant to study the availability of mobile applications for agriculture and the status of their usage. As a part of the study, the primary data is collected from the farmers on aspects like educational status, size of the land holding, cultivating crop, access of a smart phone, usage of mobile applications in the areas like testing of soil fertility, selection of a crop, water management, usage of fertilizers and pesticides, market information, govt. schemes, insurance, and need of further services.

Review of Literature

Constantina Costopoulou, Maria Ntaliani and Sotiris Karetos studied agricultural stakeholders' interest and willingness to use mobile apps in their daily agricultural activities in Greece. The study has shown the majority of the participants (95%) have never used a mobile app for their agricultural activities. Specifically, a very small proportion takes advantage of the opportunity that is offered by smart phones and tablets for agricultural activities.

Anupam Barh and Maruthamuthu Balakrishnan examined the role of mobile applications in agri- information dissemination in 2018 and concluded that this channel of information dissemination is in juvenile phase.

According to the survey conducted by Tabassum Shaikh to know the impact of mobile applications in agriculture, 83 per cent of the sample farmers are not using any mobile application related to agriculture but they do use smart phones to a large extent.

The findings show that there are number of mobile applications are available for agriculture in India and most of them are offered at free of cost but they are underuse.

Objectives

The study was conducted with the following objectives:

- To study different mobile applications available for agriculture;
- To know the usage of mobile applications by farmers in agriculture;
- To understand the opinions of farmers;
- To find out the problems faced by the farmers while using mobile applications; and
- To suggest measures for improving the access of mobile applications to farmers.

Methodology

The data was collected from a sample of eighty farmers. They all belong to four villages from three mandals in West Godavari District. The villages are: Bhimavaram, Taderu, Undi and Kallakuru. The collected data was tabulated, computed, analyzed, and discussed in the light of the above objectives. The respondents were selected through a random sampling method. A pre-tested structured questionnaire is prepared for collecting inputs from the farmers. The questionnaire consists of background characteristics and thirteen questions related to study topic.

Data Analysis

Table 1: Division of Respondents by Village

Sl. No.	Name of the Village	No. of Respondents	Percentage
1	Bhimavaram	20	25
2	Taderu	20	25
3	Undi	35	43.75
4	Kallakuru	05	06.25

Majority of the respondents (43.75 %) belong to Undi village, followed by Bhimavaram and Taderu with 25 %. Only a limited percentage (6.25%) of the respondents is from Kallakuru. The selection of the sample villages is based on the access for the students who involved in this study.

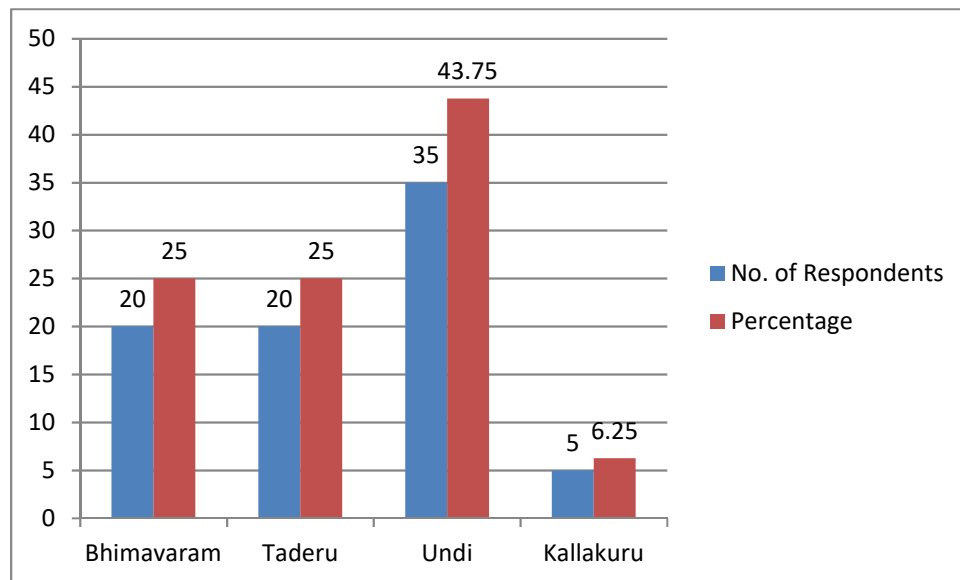


Table 2: Division of Respondents by Education

Sl. No.	Educational Status	No. of Respondents	Percentage
1	Illiterates	25	31.25
2	Up to 5 th class	19	23.75
3	6 th to 10 th	28	35.00
4	Intermediate	3	3.75
5	Graduation	5	6.25

Education details of the sample respondents presented in table no. 2. The data shows that 31.25 per cent of sample farmers are illiterates. The schooling years of 23.75 per cent respondents are below 5 and 35 per cent 5 to 10 years. Only 6.25 per cent of respondents are graduates.

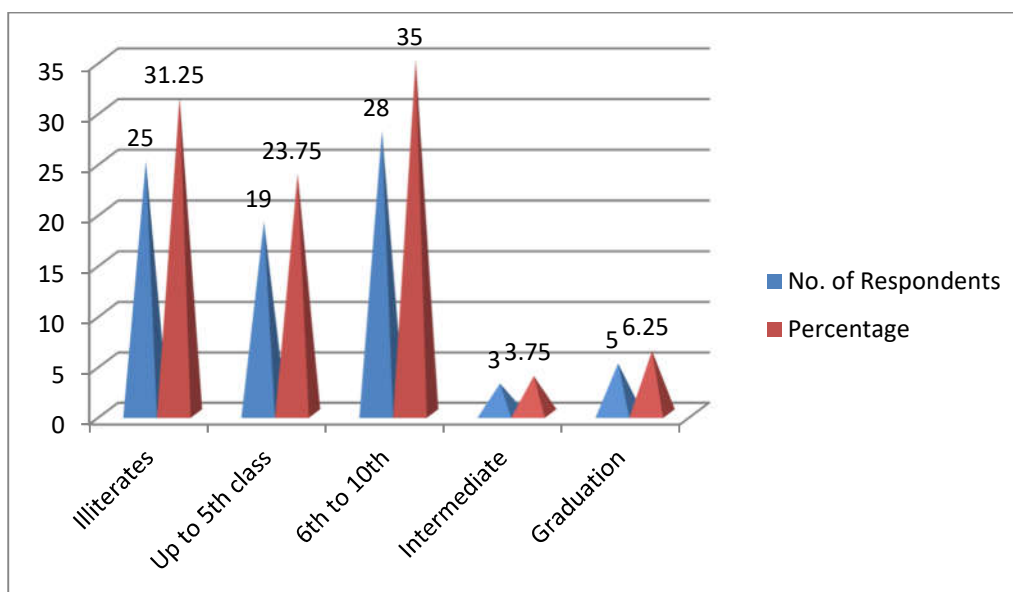


Table 3: Division of Respondents by the Size of Land Holding

Sl. No.	Size of Land Holding	No. of Respondents	Percentage
1	Up to 2 acres	18	22.50
2	2 to 5 acres	36	45.00
3	5 to 10 acres	21	26.25
4	Above 10 acres	5	06.25

According to the Agriculture Census, the total number of operational holdings in India numbered 138.35 million with an average size of 1.15 hectares. Of the total holdings, 85 per cent are in marginal and small farm categories of less than 2 hectares. The data in table no. 3 shows that 22.5 per cent respondents are marginal farmers and 45 per cent are small farmers. 26.25 per cent farmers are in 5 to 10 acres category and only 6.25 per cent are large farmers.

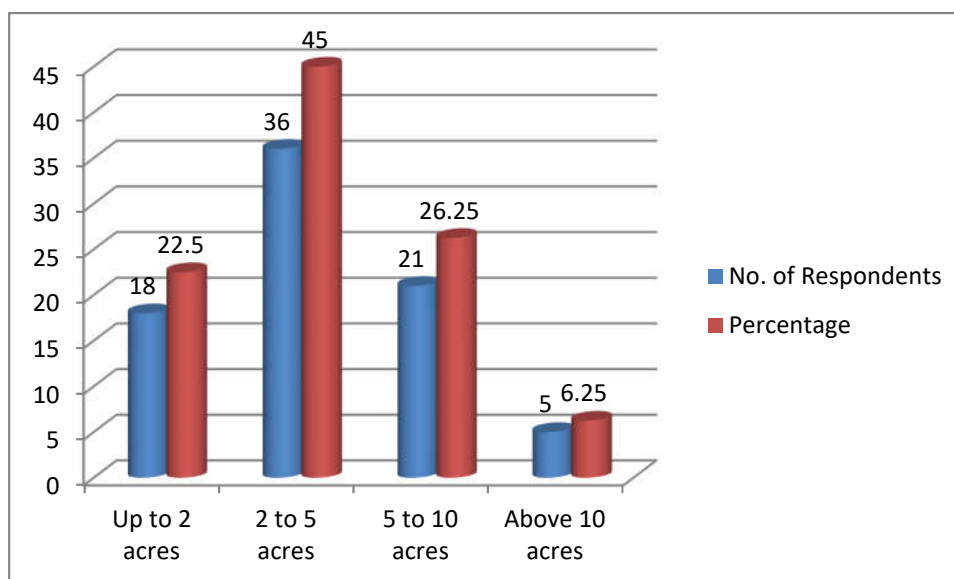


Table 4: Division of Respondents by Having Smartphone

Possessing Smartphone	Not Possessing Smartphone
30 (37.50%)	50 (62.50%)

The data revealed that only 37.5 per cent of the sample farmers are possessing smart phones. It clearly shows the way back of rural small and marginal farmers from smart communication inclusion.

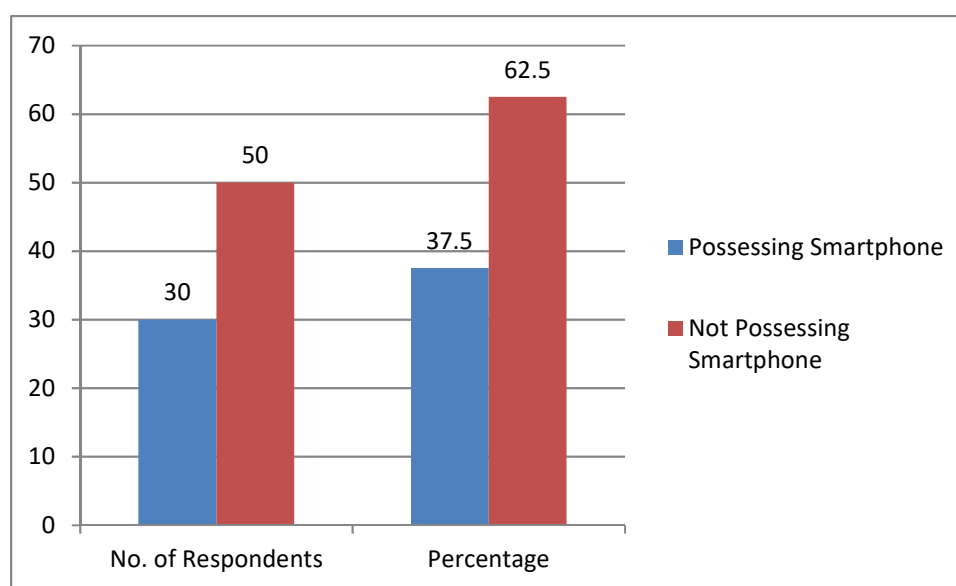
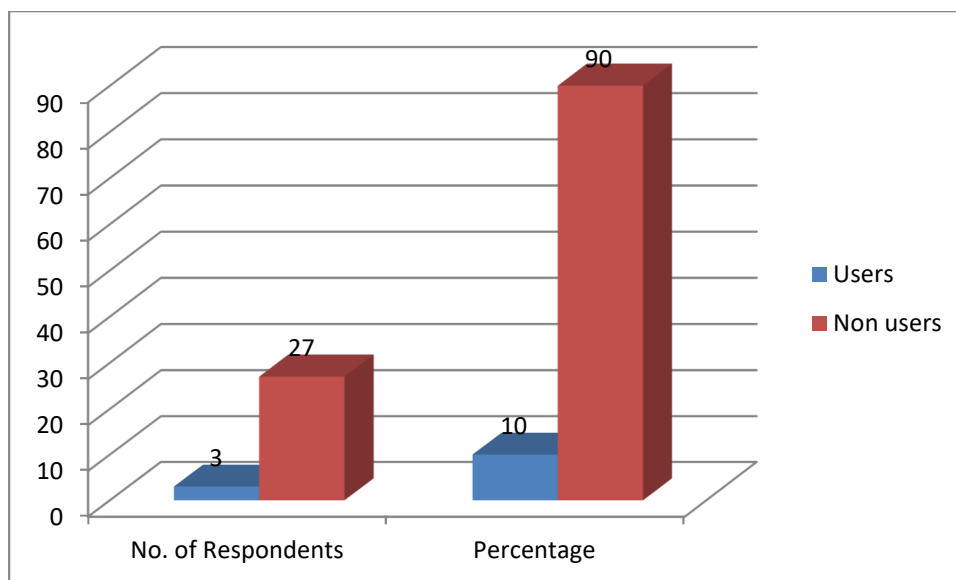


Table 5: Division of Respondents by Using Mobile Applications for Agriculture

Users	Non users
03 (10.00%)	27(90.00%)

Only ten per cent of the smart phone users are using mobile applications in agriculture. Lack of awareness mobile applications for agriculture, limited access to internet, lack of operational skills are the major reasons to low usage.



Major Findings

- 37.5 per cent of the sample respondents have smart phone.
- Only 10 per cent of the sample farmers who have smart phone are using mobile applications for agriculture.
- All the sample farmers told that the paddy farming is an age old activity; they are simply following their predecessors in cultivation process.
- 62.5 per cent of the respondents are unaffordable of having smart phone.
- 70 per cent of the sample farmers who have smart phone but not using any mobile applications are said that they does not aware of this applications.
- All the sample farmers told that the major resources for knowledge extension in the study area are fertilizer and pesticide firms who conduct regular meetings with farmers.
- Sample farmers are not seriously concerned on scientific usage of water, fertilizers, pesticides, soil testing before the crop season and all which is very seriously concerned by scientists and environmentalists.

Suggestions

- It is suggested to application developers to make available all the mobile applications for agriculture in local languages as language is the primary constraint while using them.

(Famous applications named Crop Insurance, Kisan Suvidha etc. are not available in Telugu language)

- It is suggested to local agricultural field officers to arrange awareness programs for optimal use.
- It is suggested to government to create serious awareness on running issues like water management, scientific use of fertilizers and pesticides, soil testing, crop and selection of seed etc. in which farmers are not seriously concerned.

Limitations

- The study is limited to four villages only.
- Only 80 farmers are selected for study.
- The study is restricted to paddy farming.
- The study was undertaken by final year BA students who are no much experience in collection of inputs.
