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Smart phone applications: Role in agri- information dissemination

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ABSTRACT

Agriculture is a standout amongst the most critical imperative segments of our country. Farming contributes almost around 17.01% of India's GDP. There are different elements that affected the agriculture development; however the most essential bottlenecks are lack of instant information and drudgery involved in farming practices. To conquer these issues, agriculture should be made more alluring and done smartly. Already there are limited talks on climate smart agriculture, which aims for sustainable increase in agricultural productivity and incomes to meet out the current and future demands. Here, we are examining about how the mobile application can help agriculture development faster and hustle free. There are varieties of mobile applications, utilized over the globe for different segments, including farming, but here the usage is still is limited. We have elaborated various agricultural mobile applications which potentially can be used in farming and allied activities as indicated by their source and usage. In India, there are enormous opportunities for utilizing the smart phones as a part of agribusiness improvement. Its utilization is vital for quick growth and easy access to information to Indian agriculturists, farmers and growers.

Key words: Smart phones, Mobile apps, Smart agriculture.

Agriculture and farming have been always a basic need for past, present and future. All human survival and culture flourish only when farming community is well developed. Many ICAR research institutes, SAUs (State agricultural universities), KVKs (Krishi Vigyan kendra) and philanthropic foundations are working together to make agriculture more profitable. Since Agriculture contributes nearly 17.01% of India's GDP (2014-15) therefore Agriculture and its allied activities are powerful venture to expand (Statistics Times.com, 2016). But it should be backed with powerful tools and technology, which include good connectivity and e-mobility. In the world of ICTs, information is the power. Information about policies, good agricultural practices, market prices of commodities, current demand of commodities and various useful agriculture schemes are helpful to farmer for reaping good profits. Thus, it is important for farmers to have all such information on their doorsteps. Even though all information is available on public domain, it is a very tedious task to farmer to access it. Mobile or Smartphone applications which is called apps could avail all such information with changing seasons and climate. The mobile app is one of the platforms, where a farmer can get all solution and information in just one touch. Smartphone apps revolutionized the connectivity and used for transferring agri-information to farmers. According to the statistics, there are two billion smartphones user across the globe in 2016 (EMarketer, 2016). Data also concludes that India has the third largest smartphone user after China and USA which hovers around 167.9 million in 2015 (EMarketer, 2016). During the past decades, agriculture information and technology transfers are mostly done by village level workers, extension personals, scientists, subject matter specialists of KVKs , universities etc. With the arrival of the internet, most of the information were tried to avail by web based approach (e-based services). But it has reached only limited users due to installation cost of the computer devices, for example e-choupals, kiosk, etc. SMSs and voice message delivery (push and pull) systems are easy, but it requires a special type of options or formats to be sent to the system to get the precise information, therefore ICTs are moving in the direction of mobile apps. Mobile based applications are nearly verge of replacing the computer based services due to its cheaper cost and easy integration with various cellular services. Mobile based revolution is a package, which is led by smartphones, internet service providers and application developers. Smartphones with advanced feature like high resolution cameras, greater memory, bright display, touch screen along with 3G or 4G speed internet attracted the users. These smartphones usages are rapidly increasing in many sectors like banking, medicine, shopping, lifestyle, games, artificial intelligence, etc. and agriculture in the same path of development but usage is very less.

Here we discussed the different types of app used for agriculture and agriculture related activities and technology transfer in future.

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Current agriculture mobile applications: There are thousands of applications present today in the area of agriculture. The utility depends upon the information, content and the mandate of app creation. Most of the apps are useful only for specific information while others are multi-informant. Some are just calculative types and for academic usage. According to mobile application use in agriculture they were classified as:-

1. Agri-crop mobile application
2. Multi-informative mobile application
3. Calculative mobile application
4. Diagnostic mobile application
5. Agri- academic mobile application
6. Agri- professional mobile application

Agri-crop mobile application

These are mobile applications which are related to crop cultivation and production. It provides information of good package of practices, market, weather, etc.

a)Agri-app- This app is developed by Criyagen and require registration. It provides the package of practices for various field crops like sugarcane, paddy, maize, watermelon, bottle guard, cotton etc. The package of practices involves varieties used with well referenced information. This app provided users to get information in three languages along with important agricultural news for the farming communities and also providing the assistance by the experts through chat and call. Further the app consists of various useful video like pomegranate cultivation, mushroom cultivation, goat farming and dryland farming, etc. (Criyagen, 2016).

b)Kisan Yojana- Kisan Yojana app is developed by Agriculture News Network (ANN) and till date, there are eight states of India namely Maharashtra, Gujarat, Karnataka, Andra Pradesh, Uttar Pradesh, Bihar and Jharkhand are included (accessed on 2 Feb 2016). This app provides information about the schemes and benefits provided by government to the farmers and rural people(ANN, 2016).

c)Weather app- These applications are useful for the farmers for obtaining forecasts of the weather. Weather related apps are the most used applications in agriculture(Karetsos, Costopoulou, & Sideridis, 2014) e.g. skymet weather app. The app collects the data from meteorological stations and process into easily readable formats to the user. The informations come with various languages like Hindi, Marathi and five others (accessed on 2 Feb 2016). This app also provides the variation in temperatures, news about climate change in agriculture and weather parameter for next seven days. This app also helps farmer for planning of farm operations like harvesting, sowing etc. e.g. India satellite weather, weather pro, weather timeline etc (Skymet Weather, 2016).

d)Disease management app- These kinds of applications are required for management of plant health and diseases for crops e.g. Plant health from APS. This app provides information on tomato and turf grass (accessed on 2 Feb 2016). It provides an interactive platform for farmers, gardeners and growers for the analysis of any kind of disease and plant deformity in the development stages. It also provides information for time of initial symptoms which appears at the start of any disease and disorder (APS, 2016).

Multi-informative mobile applications

These are multidisciplinary agriculture app provides information from sowing to marketing.

a)IFFCO App- This app is very relevant to farmers, as it provides weather related information with the help of India Meteorological Department (IMD). This app also provides information about prices of crop from sources like Agmarket or National Commodity and Derivatives Exchange Limited (NCDEX). This application assists to farmers by message or expert advice through call in ten Indian languages. This app useful as it provides links to information providers of various crops from where farmers can obtain information. Further this app contains a news section, where farmers can extract information about new schemes launched by the government or other organization like animal health card etc. This app is very handy as it serves all information in single platform(IFFCO, 2016).

b)myRML- It is composite app developed by Reuters Market Light (RML) which is providing information related to various operations namely agriculture practices of various crops, expert advice, market price and weather information. It also acts as a wallet for various practices of major crops like rice, wheat, pea, tomato, etc. This app also conducts quiz after completion of mobile number registration and act as huge resource of information for indigenous knowledge, mechanization, sustainable agriculture, conservative agriculture, poultry farming, animal husbandry, organic agriculture, success stories of farmer, schemes, planting density calculation, area convertor in different unit and instant messages (RML, 2016).

Calculative mobile applications

This category of app is required for calculating the requirements of the agricultural inputs/ outputs. The applications enables farmers to calculate pesticide quantities, seed in crop spacing, harvest losses and planting densities. Some of such apps are discussed in detail.

a)Ag PhD harvest Loss- This app estimates yield losses per acre before and during harvesting of crop namely wheat, barley, oat, soybean and maize. This app is useful in calculating crop loss per acre and also one can predict loss in terms of money by putting the current price of crop in market(AgPhD, 2016d).

b)Ag PhD planting population- This application helps to determine the spacing to be kept for the required planting population per acre. It also helps the farmers to maintain the

population stand, and help farmers in thinning operation.(AgPhD, 2016a)

c)Fertilizer calculator-This app used for the conversion of nutrient content of nitrogen, phosphorus, potassium in fertilizer doses. It provides eleven different combinations of fertilizers from nutrient doses. Some combinations are Urea-Single super phosphate-Muriate of Potash, Di-Ammonium phosphate-Urea-Muriate of Potash, calcium ammonium nitrate- Single super phosphate- Muriate of Potash, Ammonium phosphate-Urea- Muriate of Potash, etc. (Koti, 2016)

Diagnostic mobile applications

These mobile applications provide the option of insect and disease diagnosis of various crops including deficiencies. These apps also provide an opportunity for diagnosis of problems at field level.

Some common applications used for such purpose are:

a)Ag PhD Deficiencies- An app developed by Ag PhD which provide an idea about deficiency symptoms in 36 different crops (accessed on 2 Feb 2016) with photograph. It also includes major deficiencies of 14 nutrients and their common symptoms in some common crops like zinc deficiency in rice (AgPhD, 2016b).

b)Ag PhD Field Pest Identification and control- A valuable pest identification app developed by Ag PhD which provides basic information of insect, weeds and its control with photographs. Such kind of app is not only useful for the farmer, but also for extension workers. The app also contains an option of saving pest information in an app during field. It also provides space for field reports for entry. An agriculturist can also submit reports for their observations with this app(AgPhD, 2016c).

c)Soil Web- Soil web is an unique app which utilizes Global Positioning System (GPS) and provide real-time access to USDA-NRCS soil survey data with data on soil types and detailed soil analysis with current location (DAVIS UC, 2016).

Agri- academic mobile applications

These kinds of applications are mostly used in academics for better understanding of terms and concept. These are relevant to students, agriculture graduates, professionals, researchers, extension workers and farmers. It includes dictionaries such as agriculture dictionary app, genetics dictionary, entomology dictionary, learning modules, etc. Agriculture dictionary app which contains terms related to agriculture, livestock's, horticulture, plant breeding, Economics, Communication technologies, weather, agriculture policies and environment. It contain more than 6500 terms and abbreviations and it is compiled by European Union Agricultural Statistics experts (Ermilogic, 2016).

Agri- professional mobile applications

These applications are especially useful for Agri-professionals, Scientists, agriculture and policy makers. These mobile applications include a diverse range of apps like agriculture extension app, research highlight app, laboratory app regarding various techniques like soil analysis; PCR (Polymerase chain reaction mixture) apps etc. The few apps are discussed below.

a)Laboratory apps – This category of app is useful in determining the specific laboratory techniques like Polymerase Chain Reaction (PCR), soil testing, and real time PCR etc. It is more or less technical type and requires skill in a particular area. These apps are useful in standardization and calculation of protocol components.

b)Research highlight app- This app was developed by Elsevier and is more useful for scientists and researchers to find up emerging research studies and updated information. It contains more than 20,000 journals (Elsevier, 2016).

c)Agriculture Policy Research app- In now day's policies is one of the important criteria for the development of the nation. The policy research updates are required to provide valuable information to new researchers, which ultimately lead to the agriculture growth (Agricultural Policy Research, 2016).

Indian government apps and m-kisan portal

M-kisan portal is a government initiative which started in India on July 16, 2013 for aiming to connect 38 crore mobile phones of farmers in rural areas with subject specialists (mKisan, 2016). This service mainly aimed for the message based information broadcast using internet. SMSs have been sent to farmers in agriculture, horticulture and animal husbandry which is around 146 million approx each and followed by fisheries (6.4 million) and sericulture (495,146) throughout the country (GOI, 2016).The Indian government has also developed the application for agriculture, horticulture, animal husbandry and other useful services applications. Only agriculture applications are discussed here. In agriculture so for six applications were developed which are m kisan app,Shetkari Masik Android App,Farm-o-pedia,Bhuvan Hailstorm App, Crop Insurance mobile app and Agri Market.

a)m kisan app-This app is a non-registering advisory app for farmers and it has been designed and developed by Pune Centre for Development of Advanced Computing (C-**DAC**). It helps to send information by experts and government officials to farmers. Till now, it is downloaded up to 457 times (mKisan, 2016).

b)Shetkari Masik Android App- This is magazine based app. Shetkari Masik has been an agricultural magazine published since 1965. It is published by Department of Agriculture, Maharashtra. This android app is to provide users the access to magazine by mobile, internet or Wi-Fi. Registration is required for this app(mKisan, 2016).

c) Farm-o-pedia- This application provides crop specific information and created by C-DAC, Mumbai targeting more to Gujarat region. It also provides information on weather data, crop suitability data. This app is downloaded about 1501 times till now. (accessed on 14/02/2016) (mKisan, 2016).

d) Bhuvan Hailstorm App- This is crop loss estimation app from hailstorm given to the Agriculture Officer which having this app in his mobile and capture longitude, latitude and photograph of the area and other crop information which is loaded to the Bhuvan portal for the analysis (mKisan, 2016).

e) Crop Insurance mobile app- This application is mainly used for Crop Insurance, required for calculation of Insurance Premium for notifying crops based on the area, coverage amount and loan amount in case of loanee farmer (mKisan, 2016).

f) AgriMarket-This app is informative for farmers to identify market wise daily sale rate and sell their various agriculture commodities at reasonable prices(mKisan, 2016).

CONCLUSION

Smartphones have been identified as one of those effective innovations which benefited a large number of people in the developing world. In India, mobile applications are transforming agriculture. Agriculture is prime sector of importance. More than 50% of people are engaged in agriculture activity. To make agribusiness productive, smooth and respectable it is important that, it should be linked to recent technologies. These technologies need to be smarter, faster and cheaper to use. Mobile application one of such technology that can be used directly in agricultural growth. Although this channel of information dissemination is in juvenile phase but it's advantages can be seen in near future. The strategies for expansion of application based information require expulsion of obstacles like better modest handsets, compatible smart phones, multilingual platform, subsidizes internet packs, regular trainings and awareness amongst farmers. Smartphones are the example of overcoming adversity of connecting the rural digital divide, bringing monetary advantages and acting as catalyst for social mobilization through improved communication.

REFERENCES

AgPhD. (2016a). Ag PhD. Retrieved February 14, 2016, from http://www.agphd.com/resources/ag-phd-mobile-apps/ag-phd-planting-population-calculator/

AgPhD. (2016b). Ag PhD – Information for Agriculture - Ag PhD Crop Nutrient Deficiencies. Retrieved February 14, 2016, from http://www.agphd.com/resources/ag-phd-mobile-apps/ag-phd-crop-nutrient-deficiencies/

AgPhD. (2016c). Ag PhD – Information for Agriculture - Ag PhD Field Guide. Retrieved February 14, 2016, from http://www.agphd.com/resources/ag-phd-mobile-apps/ag-phd-field-guide/

AgPhD. (2016d). Ag PhD – Information for Agriculture - Ag PhD Harvest Loss Calculator. Retrieved February 14, 2016, from http://www.agphd.com/resources/ag-phd-mobile-apps/ag-phd-harvest-loss-calculator/

Agricultural Policy Research. (2016). Agricultural Policy Research - Android Apps on Google Play. Retrieved February 14, 2016, from https://play.google.com/store/apps/details?id=gdn.agripolicy.android&hl=en

ANN. (2016). Kisan Yojana - Android Apps on Google Play. Retrieved February 14, 2016, from https://play.google.com/store/apps/details?id=com.purplechai.admin.kissanyojnaapp&hl=en

APS. (2016). APS Launches New "Plant Health" Family of Apps for Professionals and Hobbyists. Retrieved February 14, 2016, from http://www.apsnet.org/about/newsroom/releases/Pages/apps.aspx

Criyagen. (2016). Criyagen Solutions For Sustainable Agriculture. Retrieved February 14, 2016, from http://criyagen.com/blog/

DAVIS UC. (2016). California Soil Resource Lab/ :: Soil Web Apps. Retrieved February 14, 2016, from https://casoilresource.lawr.ucdavis.edu/soilweb-apps

Elsevier. (2016). Research highlights.

EMarketer. (2016). Smartphone Users Worldwide Will Total 1.75 Billion in 2014. Retrieved February 14, 2016, from https://www.emarketer.com/Article/Smartphone-Users-Worldwide-Will-Total-175-Billion-2014/1010536

Ermilogic. (2016). Agriculture Dictionary - Android Apps on Google Play. Retrieved February 14, 2016, from https://play.google.com/store/apps/details?id=com.ermilogic.dat&hl=en

GOI. (2016). Mobile Seva Appstore. Retrieved February 14, 2016, from https://apps.mgov.gov.in/listcount.do

IFFCO. (2016). IFFCO Kisan- Agriculture App – Android Apps on Google Play. Retrieved February 14, 2016, from https://play.google.com/store/apps/details?id=com.IFFCOKisan

Karetsos, S., Costopoulou, C., & Sideridis, A. (2014). Developing a smartphone app for m-government in agriculture. *Journal of Agricultural Informatics*, *5*(1), 1–8.

Koti, V. (2016). Farm Calculators - Android Apps on Google Play. Retrieved February 14, 2016, from https://play.google.com/store/apps/details?id=com.easy.fertilizer.calculator&hl=en

mKisan. (2016). mKisan:IVRS. Retrieved February 14, 2016, from http://mkisan.gov.in/aboutmkisan.aspx

RML. (2016). RML App. Retrieved February 14, 2016, from http://www.myrml.in/

StatisticsTimes.com. (2016). StatisticsTimes.com. Retrieved February 14, 2016, from http://statisticstimes.com/economy/sectorwise-gdp-contribution-of-india.php

Weather Skymet. (2016). Skymet Weather – Android Apps on Google Play. Retrieved November 8, 2017, from https://play.google.com/store/apps/details?id=com.skymet.indianweather