

Awareness and Impact of Agriculture Apps on Production and Farmers Livelihood Security:

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ABSTRACT:

Ranking second in the world farm output, the agricultural sector is the backbone of Indian Agricultural Economy contributing majorly to the country's GDP. 58% of rural Indians depend on agriculture for their livelihood and this sector contributes around 17-18% to the country's GDP (Gross Domestic Product) it is estimated as on February 2018. India's agriculture is producing many crops, with the foremost food staples being rice and wheat. India is agriculture-based country; Indian farmers grow pulses, potatoes, sugarcane, oilseeds, and non-food items as cotton, tea, coffee, rubber, and jute (a glossy fiber used to make burlap and twine). India is a fisheries giant as well.

The Food and Grocery market of India is the 6th largest in the world with nearly 70% of the retail sales. The food processing industry in India is accounting of 32% of the Country's total food market and one of the largest industries in India and it ranked 5th in terms of production, consumption, export and expected growth. The Indian food processing industry contributes around 8.80 and 8.39 per cent of Gross Value Added (GVA) in Manufacturing and Agriculture respectively, and it contributed 13 per cent of exports and 6% of industrial investments in India. Despite the overwhelming size of the agricultural sector, however, yields per hectare of crops in India are generally low compared to international standards and it is estimated that as much as one-fifth of the total agricultural output is lost due to inefficiencies in harvesting, transport, and storage of government-subsidized crops. Sowe want to take out inefficiencies through technology. Smart Technology Apps in Agriculture performing all kinds of operations and tasks like scouting fields and managing agronomic data, to the flying drones and creating farm maps, there is virtually no job that a farming app can't do. Hence this paper tries to reveal the present trend of agriculture apps on productivity and its future prospects to meet this growing demand, developers continue to launch apps that are useful, user friendly and simple to use.

KEY WORDS:*Trends in Agriculture, Growth, Productivity, Farm, GPS.*

INTRODUCTION:

Indians are the 2nd largest mobile users in the world market and it comprises about 30% of the total volume of the global feature phone industry. In 2018, India had 1184 million mobile phone users, out of which 487 million mobile users from rural area. In 2018 it is estimated that 337 million Smartphone users with access to internet. As published in 'The Rising Connected Consumer in Rural India', study from the Boston Consulting Group, the share of rural India will jump to 48% by 2020. The Government of India has taken many steps nowadays to make this happen sooner than predicted. **Digital India**, launched in 2015 by Indian Prime Minister Narendra Modi, aims towards the promotion of digital literacy and

creation of digital infrastructure for empowering rural communities. Considering that 58% of rural households depend on agriculture as one of their most eminent source of livelihood, the role of Digital Agriculture needs to be considered within Digital India.

Indian farms badly need technology. "Cultivable area is reaching its limits, so yield increases are a must," according to a latest report by the OCED and the Indian Council for Research on International Economic Relations (ICRIER). Indian rice and wheat yields are approximately 3 times lower than worldshighest. By resolving majority of the issues facing by Indian farmers together with enhancing their income minimum Rs.15K per month per family can easily be achieved by developing a sustainable and equitable 'Model Green Village' by treating agriculture as professionally likes an industry on commercial scale. The 'Model Green Village' once it's successfully implemented the same concept can be implemented / followed in other villages. Based on this model we can easily solve huge economical & social problems of Indian farmers.

Smartphone's are the other key intervention as they are equipped with GPS to track where photos of field infestations or hail damage have taken place for technical support or insurance claims. The smart feature phones will also enable farmers to integrate into structured markets based on standard approved grades and its quality can be verified using calibrated photos. The payments & banking settlements can be made through mobile money.

The key to increasing the Agriculture productivity is based on usage of Digital smart technology in farming by delivering tailored recommendations to farmers based on weather forecast, crop, planting dates, varieties to be sown, real time localized observed weather conditions and projected market prices. Remote sensing is another technology by using big data resource to support the development of derived weather products, improved hydro mechanism and watershed management, soil health management, crop coverage and crop health estimates among other applications. This is now complimented by Unmanned Aerial Vehicles (UAVs) that can capture multispectral images to assess crop health, damage and yield far more accurately than satellites.

CHALLENGES FACED BY INDIAN AGRICULTURAL SECTOR

- Lack of proper irrigational facilities is the major reason in lower productivity of pulses and it is also observed that majority of the pulses cultivation is under rainfed or monsoon based rather than irrigated.
- Majority of Indian Agrarians are depending heavily on monsoons, so in case if in a particular year India experiences inadequate rainfall then the agricultural output suffers majorly.
- Have little knowledge of latest technology & product mix design for high yield produces at low cost.
- Have inadequate finance and negligible management expertise.
- Cannot earn reasonable profit to support their families due to holding of small pieces of land.
- The lack of Indian government policies to adjust the price at which the farmers buy his inputs and the price at which he sells in the market. The unstable of this price fluctuations have led to a plethora of farmer's committing suicide in India.
- Other problems like lack of agriculture marketing facilities and awareness on the prices on daily basis for their products, lack of credit and ways to mitigate soil erosion, inadequate warehouse / storage facility and lack of proper mechanism
- The unplanned & inefficient use of water in agriculture is affecting the productivity of the crops.

THE BEST ANDROID APPS FOR INDIAN FARMERS/AGRICULTURE – 2018

The world's population is expected to reach 9.6 billion people by 2050 and to feed them all, we must elevate our agricultural produce by 70 percent. So here mobile app developers are contributing their little, thereby, introducing the smart farming concept.

For each and every activity in your life we are depending on smart phones, like ordering a pizza to finding a home, for everything, there is an app. By using the smart phone app economy is rising exponentially, consumers are more empowered and businesses catering to their needs, more efficient, the agriculture sector and its farmers didn't get the desired attention. Below are the top 5 agriculture apps that are transforming farmers to next-generation entrepreneurs.

Below agriculture apps are very useful for Indian farmers and agriculture community which keep up to date with the latest technology of agriculture. It helps to Indian farmers and fill the information gap between the rural people and Govt. Android apps provides the latest market rates, weather forecasting, Govt policies and schemes for farmers, latest technology videos, news related to agriculture etc. In that Farmers can directly ask the question and query to the Agriculture experts using these apps to solve their query instantly.

1. AGRIAPP

Agri App is one of the most usable apps by farmers. It has a rating of 4.3 out of 5 from the users. It provides chat option for farmers. Farmers can easily chat with an expert of agriculture using this app. Diversified videos of agriculture work can be seen in this mobile Application. Approximately 0.1 million users downloaded this farming app.

This Android based mobile Application provides the complete information on Crop Production, Crop Protection and all relevant agriculture allied services on your Smartphone!!!

It is also an online market place bringing farmers, agri inputs, and retail & fulfillment services on a common digital platform.

The AgriApp team provides complete information on crop protection and advises good practice for managing plant disease, insect, pests and weeds that damage agricultural and horticulture crops. AgriApp is available in majority of regional languages namely Kannada, Hindi, Telugu, Tamil and Marathi.



APPFEATURES:

1. Package of Practices: Farmers can access to all the information related to “High value, low product “category crops from Varieties, soil/ climate to harvesting and storage procedure.

2. Chat: Farmers can directly chat with our scientists by chatting feature. Highly knowledgeable and qualified agri experts discussion with farmers related to various issues like crops, farming and agricultural practices. User can upload a pic, share video or audio on this multimedia platform. Our experts will analyses the issue and provide relevant recommendations.
3. Videos: Videos on best practices, farming technology, agricultural information, feedings for livestock, manure production, treatment for particular disease are uploaded into the app . The videos appear based to other language selected.
4. News: Let farmers know about the agriculture related news, success stories which can motivate farmers. News also has information about latest trend and what is happening in agriculture world. Updated new will come as a notification.
5. Quick Search: You can search any related information about agriculture based on category, discount, SKU and more using sort and filter features.
6. Discounts: you will get the notifications on best deals and offers and Enjoy new discounts & offers on a wide range of products on our app.
7. Secure Payments: Shop using your Credit/Debit Card, Net Banking through Payment gateway, ensuring complete security

2. IFFCO KISAN APP

IFFCO Kisan app is the best app in agri apps for Kisan/Farmers. It is a small Android app with an easy interface to use. This android application provides information about the latest agriculture advice, latest mandi prices, Animal Husbandry, horticulture; a buyer and seller platform, and all agriculture related news and govt. and various farming tips. It also provides weather forecast information and agriculture alerts to farmers in 10 Indian languages in text as well as agriculture audio clip for the convenience of the farmers who are most comfortable in their own language. Approximately 50 thousand users downloaded this app.

The Most Popular & No one app for the Farming Community, The IFFCO Kisan App is mostly dedicated to farmers. Indian agriculture farmer are using “IFFCO Kisan” assuvidha App.



APPFEATURES:

WEATHER-This Feature provides the weather forecast for next 5 days with temp, RH, rainfall possibility, expected wind speed & its direction in the set preferred location. Two districts can be selected as preferences for weather data access at a time. Data source-IMD

MARKET OR MANDI-Farmers can get the instant mandi prices for their product and prevailing trade prices along with quantities and also view price trends for their product. The last 3 transactions market history details will be provided to Farmer on any agricultural commodity.

AGRICULTURAL ADVISORIES- Advisories and alerts are provided based on research by industry experts; our agricultural advisories guide rural farmers to initiate necessary & corrective actions based on prevailing weather conditions.

ASK OUR EXPERTS -Through this feature, farmers can talk to industry experts and get advice on 1-click. It is useful for those farmers who have difficulties in writing; they can just take a photo of the concerned area/ disease and can send it to our experts to study the issue through the app. Agriculture experts will provide technical solutions through voice call to farmers.

GYAN BHANDAR- It is like a library contains important agriculture information related to crops, agriculture cycle, agriculture field preparation, water management, agriculture diseases management and agriculture proactive actions.

MARKET PLACE-This feature will make a buyer and seller will come to same platform and It will help them to buy or sell faster, with higher profitability.

3. AGRI MEDIA VIDEO APP

Agri Media Video App is one of the most popular applications in mobile for farmers'. It has a rating of 4.8 out of 5. It provides an online marketplace for farmers, agriculture input/output, farming retail and fulfillment service on an online platform. Agri Media Video App provides chatting services to farmers to resolve their clarifications or questions related to agriculture with the option of uploading the images of infected crops. By using this App the farmers can easily communicate and chat with agriculture expert to get the remedial measures for their problems. It provides the service related to agriculture practice, new technologies, successful farmers, rural development, agriculture news, new govt. schemes related to agriculture etc. Nearly Ten Thousand of farmers using this app.



Digital Agri Media is considered as most trusted organization for Gujarat's & India's farming community i.e. Kisan, Gramvasi, Khedut, Pashupalak. This apps provide audio video education about Agri, this is best distance learning extension education for agricultural revolution in India. Here we are trying to make our traditional agri more powerful, commercial and professional. AgriMedia Video Apps produced complete scientific crop cultivation process video from land preparation to harvesting which is a value addition for Farmers.

Main aim is to provide video based Agri education and Information to Kisan/Farmers in the field for their better income and life too. AgriMedia app provides the scientific information like Agri, Horticulture, Animal Husbandry, Agro-Forestry, Poultry, Dairy farming, apiculture, sericulture, Agri engineering, co-operation, Rural development, Entomology,

Extension, Microbiology, Plant Pathology, Soil Science & Agriculture Chemistry, Crop Physiology, Food Science & Nutrition, Farm Technology, Floriculture, Olericulture, Economics, Agronomy, Genetics & Plant Breeding, Plantation Crops, Pomology, Medicinal and aromatic crops, Soil & Water Conservation, Process & Food Engineering, Post Harvest Technology, Plant Biotechnology, Forestry, Environmental Science, Agriculture Marketing & Cooperation, Agro Business, Seed, Fertilizer, Plant protection, Value addition, Sajeew kheti / Organic farming, Pesticide, Agri Gyan Vigyan etc.

AgriMedia video app has launched new concept of Video education for service of farming community/khedut/Kisan, Bagayat, Krishi, Khetiwadi, Fisheries, Rural Development, Poultry, animal husbandry & Agribusiness activities and marketing of agri produce. This technical scientific videos on crop specific oilseed crops (Groundnut, Sesame, castor, mustard), Cash crops (Cotton, Sugarcane), Cereal crops (Paddy, Wheat, Jowar, Bajari, Maize), Pulse crops (Tur Gram, Green Gram, soyabean, etc.), Fruit crops (Banana, Pomegranate, Papaya, lemon, coconut, sapota, Guva), Flowers (Rose, Mary gold), Spices and condiments (Cumin, Fennel, Isabgul, coriander, dilseed, turmeric, ginger), Vegetable crops (Potato, onion, Garlic, Tomato, Brinjal, Chilly, Lady finger, Cabbage, Cauliflower, Guard), meditational plant (Anola), and various agricultural activities like Green house (to grow Rose, Jarbera, cucumber, simlamirch, tomato), mulching, IPM, IRM, INM, IWM, IDM, irrigation management (Drip, Sprinkler, Rain gun), pashupalan (Gircow, Buffalo, poultry, emu), Dairy, Dry farming, Gobar gas, biofertilizer, oilpalm, sag, Precision Farming, nilgiri implements, Agricultural Machinery, Agriculture Business and IT services to agri management, Seeds Manufacturers, Tractor, Agro Chemicals/Pesticides/Insecticides, Nursery Industry, Biotechnology/Tissue culture, Magazines, Agriculture portals, Organic foods, Sky solar yojana, Government schemes, etc.

Still Farmers are facing problems, so need to clarify their queries of Khetiwadi & khedut ASAP earliest. Kisan can send their images of diseased or pest infected crop and AgriMedia Team & Agri Expert provides better solution with scientific recommendations given by agri universities and research institutions.

Feature of AgriMedia app:

A : Video & Audio Section : Digital Scientific cultivation of crops and scientific care of animals.

In this section, we can do the Video education for farming community and provides the video based education and information to the farmers.

- 1 Krushi video
- 2 Bagayat video
- 3 Pashupalan video
- 4 Agri engineering video
- 5 Rural development / cooperation video
- 6 Research & Technology
- 7 Success story of farmers

B : Write up and photo information section

In this section we can see the chatting window, so farmer can send their problems with agri expertise and send their related information to farmers.

8. Annadata–To know the farmers problems and the resolution
- 9 KrushiSamachar - AgriNews

10 e- Pustakalay - Digital library

11 Mahatvapurn website - Important Websites

C : Commercial section

In this section we can see the Commercial platform for farmers , so they can buy and sale their products.

12 KharidVechan (Buy and Sale)

13 Ad Box : Product

14 Adbox : Video

4. FARMBEE - RML FARMER:

Farmbee - Rml farmer is most beautiful agriculture android apps which has a rating of 4.3 out of 5. It is a very small app in terms of memory with an easy user interface. We can able to see this app in 10 different Indian languages. At every stage of the crop life cycle the FarmBee-RML Farmer apps provides fertile agriculture content and information. A farmer can able to find from 450 crop varieties, 1300 markets, 3500 weather locations. It provides mandi price and weather forecast based on a user location. Approximately 0.5 million users downloaded this app.



HOW TO USE THE FARMBEE-RML FARMER APP

Follow the steps to get started

1. Download App and Register with your personal details.
2. Add your Farm details like size of the land and details of land owner.
3. Add crops information into the app.(which crop you are going to farm).
4. To get the personalized recommendations, reports and analytics and improve your crop yield.

By using this app we can see the weather, daily price of the crop for your farm. You can add the services to the farm for the crops being grown and get complete solutions for farm management on pests, disease, nutrition, agronomy etc. It provides the services Get intelligence and analysis gathered over thousands of similar farms at your fingertips and starts your precision digital agriculture practice.

KEY FEATURES:

Rich and Localized Farming Methods:

Get rich and localized agriculture methods will gives you the demonstration on formats (video, articles, visuals and audio) on your timeline. You can tag to this app and get the farm specific data and get world class agricultural methods completely personalized to your farm.

Technology Solutions:

By using Agriculture apps farmers can directly communicate with agriculture expertise.They will give the technological solution to the framers queries.

Engaging Content on Agriculture

Get the information about Mandi Bhav, commodity analysis, weather data as well as news, events and success stories throughout the year.

Download FarmBee - RML Farmer now and start your journey to become digital farmer and get more for your farm.

5. KISAN YOJANA:

Another popular Android agriculture appis Kisan Yojana available for free. It provides information about all Govt schemes to Farmers and schemes of the different relative state Government. Soit commutes the information gap between the Rural People and Govt. By using this application farmers can savestheir time and travel expense to reach the state Govt office to obtained the information. Approximately 50 thousand users downloaded this app.



- * It is one of the most popular & Number 1 app of Farming Community.
- * This app is specifically meant for farmers.
- * It provides the Information & Knowledge Gap between the rural people and government.
- * Majorly all Government Schemes are available in this App and respective State Agriculture Department schemes are available with this app to farmers
- * Using this app the farmers will get all the information on Agriculture schemes and information from the respective state Government departments, hence they would save the travel time and their expenses for the office visit to gather the information or updates.
- * The farmers will get the information of the particular scheme with regarding on the exact benefit they would obtain from the scheme and the eligibility criteria to apply to that particular scheme.

* The farmers will get the point of contact detail for particular scheme using this app, where they mention the POCs name against each scheme; hence they would directly connect with agri expertise to get the details of that scheme.

* This app is updating soon with the regional languages to get all the details of particular schemes and other all relevant information on agriculture from the state department of agriculture.

APPLICATION OF GLOBAL POSITIONING SYSTEM IN AGRICULTURE:

From the last 10 years the digital technology usage is widely adopted in all the areas of human lives. The Indian agriculture has gone tremendous change in its format in using the latest technology adaptation from cultivation to planting and in different operations to marketing information, weather forecasting to Global Positioning System (GPS).

From the usage of GPS on the tractors, the entire process from leveling the field to planting the seed to irrigating the crop has been much more efficient than in the past. GPS application is used for most aspects of Indian agriculture.

By combined usage of GPS and GIS (Geographic Information System) the development and implementation of precision agriculture or site-specific farming is most widely implemented successfully. GPS & GIS technologies are enabling the real-time data collection with accurate position information, leading to the efficient management and analysis of large amounts of geospatial data. GPS applications are used in precision farming are being used for farm planning, soil sampling, tractor guidance, crop scouting, field mapping, variable rate applications and yield mapping. This application allows farmers to work during low visibility field conditions such as fog, rain, dust and darkness.

The Roles and Responsibilities of GPS

- USDA agency missions are used for develop and Conducts research and develops applications of GPS technology.
- For cartography, remote sensing, and geographic information systems as a function of the Geospatial Line of Business integrated with GPS
- The usage of GPS is widely practicing for precision agriculture, sustaining natural resources, fire protection and suppression and supporting implementation of the Farm Bill.

Prior to the development and usage technologies in agriculture ,it was difficult for farmers to correlate production techniques and crop yields with land variability. Due to limited use of new technologies their ability to develop the most effective soil/plant treatment strategies that could have enhanced their production. Today,by using precision agriculture more precise application of pesticides, herbicides, and fertilizers, and better control of the dispersion of those chemicals are possible. This is reducing the expenses, producing a higher yield, and creating a more environmentally friendly farm.



Precision agriculture is gaining more popularity usage of high technology tools into the agricultural community that are more accurate, cost effective, and user friendly. Majority of the innovations are integrating with board computers, GPS time and position data collection sensors, and reference systems.

Experience with information technologies the precision agriculture can only be realized on large farms with huge capital investments. This is not so expensive and every one can easily use this methods and techniques. By improving land and water use can be collected through GPS, GIS, and remote sensing, information. By using fertilizers and other soil amendments the Farmers will achieve the better benefits, determining the economic threshold for treating pest and weed infestations, and protecting the natural resources for future use.



The GPS team is developing many tools to help farmers and agribusinesses become more productive and efficient in their precision farming activities. Now a days, many farmers use GPS-derived products to enhance operations in their farming businesses. By using the GPS app location information is collected by GPS receivers for mapping field boundaries, roads, irrigation systems, and problem areas in crops such as weeds or disease. GPS Technology give the accuracy of farm maps with precise acreage for field areas, road locations and distances between points of interest. And also allows farmers to accurately navigate to specific locations in the field, year after year, to collect soil samples or monitor crop conditions.

By using the GPS device Crop advisors use rugged data with positioning to map pest, insects and weed infestations in the field. For the pest problem areas in crops can be identified and marked for future management decisions and input recommendations. With the same field data can also be used by aircraft sprayers, enabling accurate swathing of fields without use of human "flaggers" to guide them.

Suggestion given by Farmers and agriculture service providers can expect even further improvements as GPS continues to modernize. Adding to the current civilian service provided by GPS, the United States is committed to implementing a second and a third civilian signal on GPS satellites. In 2005 the first satellite with the second civilian signal was launched. In the future new signals will enhance both quality and efficiency of agricultural operations.

ADVANTAGES OF GPS:

- It helps proper soil sampling, data collection, and data analysis, enable localized variation of chemical applications and planting density to suit specific areas of the field.
- Exact field navigation minimizes redundant applications and skipped areas, and enables maximum ground coverage in the shortest possible time.
- It can work through low visibility field conditions such as rain, dust, fog and darkness increases productivity.
- Precisely monitored yield data enables future site-specific field preparation.
- It will increase spray efficiency and will reduce the need for human "flaggers" and minimizes over-spray.

SUGGESTIONS:

It's found that usage of Agricultural Apps are not widely using by the Farming community, hence there is large promotion required to use of these Apps with the Farming community to install these Apps in their android mobiles and get the information on Crop cultivation, Market prices on daily basis on fruits, vegetables, cereals, pulses, spices & oil crops along with other commercial crops. Also, there is larger portion of work in Apps development is still pending to include all the crops information (still many of these Apps doesn't have all the crops details). There is another area of improvement and larger extension of Apps development is still pending on developing these Apps in the Rural regional languages to better understanding and usage of the farming community.

As generic communication Apps like WhatsApp, messenger, Chatboxes these agriculture Apps need to be widely advertise to the farming community with the help of Agricultural Universities, KVKs, ICAR Institutes, NGOs and other means.

CONCLUSION:

To increase the GDP in Agriculture& allied sectors, weneed to incur more expenditure in agriculture and allied sectors.It is necessary on the part of the Government to give due priorities to key segments like Marketing, Price Mechanism, Agriculture Engineering Technology, Research & Development on Agriculture sectors and Trade. With the combined effort and support of Government andPrivate interference the goal of sustainableagricultural growth can be attained. By using the smart agricultural technologies, the farmers can get the benefits and attain the precision farming to achieve more productivity.To meet the future prospects & growing demand, developers continue to launch apps that are useful, user friendly and simple to use.At the same time priorities must be given to enhance the overall standard of living of the rural poor farmers. Our National Father Gandhi intent for the villages, "the true India is not to be found in its few cities but in its seven hundred thousand villages, if the villages perish, India will perish too".

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