India is an agriculture-dominant country. Agriculture is one of the significant contributors to the Indian economy. Agriculture sector’s net share in the country's GDP is 17.32%. Android holds share of 82% in smartphone Industry and widespread availability of smartphones and Internet, there is a huge potential for supplying essential information via this means. Today mobile devices are used commonly by everyone, including the farmers and countryside people. Agriculture is the support of Indian economy so information sharing to the knowledge intensive agriculture area is upgraded by mobile-enabled information services and speedy growth of mobile telephony. Mobile application provides varied information services to farmers which are helpful for management, controlling and monitoring of the farm. This mobile application run on Android operating system is an open source; using it we can design and develop a software having functionality similar to agriculture app. After developing android application we can deploy it in an android market, so that everyone can download it freely. Growing a good crop depends on multiple factors like soil condition, climatic condition, rainfall, selection of good variety etc. and selection of crop and package of operation plays a very important role in getting a good return. This Research paper depicts to design and develop such a technique which will focus on mobile farming technology. Explores how Mobile Apps of agricultural services have impacted the farmers in their farming activities and which more innovative agriculture services will provide through Mobile App. Mobile app is very helpful for farmers to increase their farming to yield more profit.

**Keywords**: Android, Application, Operating System, Language, Crop, Farmer, Smartphone.

**I. INTRODUCTION**

Mechanization is a key factor for agricultural development and farmers’ well-being. Mechanization is the introduction of machines, automatic devices, innovative tools or technologies into a process, activity to improve it. In well structured agriculture, we have some steps: production, storage, transportation, processing, packaging, distribution and selling. The “mechanization” is used to describe tools, implement and machinery applied to improving the productivity of farm labour and of land; it may use either human, animal or motorized power or combination of these. Agriculture Mechanization Systems will help to increase yields and increase the income of farmers. Technology can play a great role in increasing accessibility with the digitization of the economy. This work is aimed on the development of the android based mobile app. The app will provide detailed information about the package of operation over different crops with respect to farm machinery and tools. The operational mechanism of the app also helps to fill the mechanization gap by accepting modern techniques. Implementing new technologies aimed at reducing pre and post-harvest losses through appropriate methods and encourages value addition. The main objective for such project is to develop a mobile phone based solution that helps in farm’s management, leads to agricultural yield improvement and helps in Practices on the farms. We can look for the impact of mobile phones on the production sector in India with a closer focus on small farmers. To meet this requirement there is urgent need to double the productivity of agricultural crops from the existing level. As we know it is continuously increasing its roots in every fields and increasing their efficiency and from current scenario only farmers seems to be untouched with it, and probably the reason for the backwardness of our farmers.

**II. LITERATURE REVIEW**

Viraj Patodkar, Sujit Simant et. al. “E-Agro Android Application” 2015 - In this researcher give an entire idea about when farmer is confused to take decisions regarding selection of fertilizer, pesticide and time to do particular farming actions. Based on sowing date of crop, farmer will get reminders about application of...
fertilizer, herbicide as per schedule, pesticide for diseases and weather alerts if particular crop exceeds its favorable temperature range. eAgro will offer expertise service to farmers regarding cultivation of crops, pricing, fertilizers, and disease detail method of cure and it also provide suggestions regarding modern techniques for cultivation, usage of bio-fertilizers, can obtain best crop cultivation. It will not only displays current weather parameters but also gives weather alert to avoid future crop damage and will suggest them the most suitable crop and even with the required fertilizers, pesticide, herbicide throughout their work.

Sotiris Karetsos, Constantina Costopoulou et. al. “Developing a smartphone app for m government in agriculture” 2014 - Farmers are conducting a range of work-related tasks with the devices including sending/receiving email; checking weather, news, and markets. Agriculture Management Information Apps can generate electronic maps of fields to keep a history of growing crops in the fields as fertilizing, planting, harvesting. Agriculture Information Resource Apps: are includes apps that are first and foremost utilized as a lookup implements or else a tool which assists to the identification of species, reviews regulations and takes expertise on a subject. Agriculture Calculator Apps as group of apps includes smartphone tools to help field calculations. Also, farmers can measure the maturity of a crop by viewing current and past growing degree days data of farm’s location. Agriculture News Apps for farmers can have access to a website presenting agricultural management news, markets, weather, several alerts, farm business blogs, articles and radio (e.g. AGWeb). Farmers can reach local agricultural news, grain and livestock markets, weather and blogs. Weather Apps for the use of smartphone weather applications. M-government App included some information apps provided by governmental agencies. In addition they can compare current crop disease resistance ratings, disease symptoms, map diseases and share images of diseases with others (Crop Diseases).

It also gives wider access and extended the reach of governmental information and services to the public. We are able to find information and submit requests and applications in a convenient and simple process. It also gives up-to-date about the administrative information and processes of their requests. Use of such apps, farmers could save time and money since they don’t need to travel in order to submit applications and documents by physical presence. On the other hand public agencies and local government related to agriculture can lower their administrative burdens and improve their accessibility, effectiveness and efficiency.

Hetal Patel, Dharmendra Patel “Survey of Android Apps for Agriculture Sector” 2016 - In this researcher may surveyed of Android based mobile application in different area of Agriculture and give them a classification according to their function and category, where the app may have different functions. We found that all apps are having dissimilar features. The FarmManager app is developed for the farmer of small farm only. The Agro Mobile app is useful for only recognition of botanical species and disease detection. The Krishi Ville app is for agricultural commodities, weather forecast updates and agricultural news updates. The Agriculture Supply Chain Management app is useful for those farmers who want to produce sugarcane. The Scheduling, Controlling and Monitoring of Agricultural Device app is limited to the work of controlling the motor and pesticide proportion, monitoring the farming activities going on and irrigation. The E-agro app is for detecting the leaf diseases. The Farmers helping services provide the Horticulture information about flowers, fruits and vegetable. This type of more application surveyed by the researcher and classified as: Diseases and pests apps, Farm management apps, Learning and reference apps, Location-based apps, Market data apps, Weather apps, Business App, Conference App. All this kind of apps has different usage as per its functionalities. Many apps are being utilized for different kind of functionality regarding the farming activities like cropping information, pesticide, fertilizer, seed, selling of crop, irrigation information, estimation of crop production, weather information and information regarding the best practices of farming.

Abishek A.G., Bharathwaj M. et. al. “Agriculture Marketing Using Web and Mobile Based Technologies” 2016 - An application, that serves as a platform for movement of agricultural products from the farms directly to the consumers or retailers. It may have the objective for Agricultural Marketing on web based as Digitalization Le e-commerce giving a more preference to it. As the objectives are getting the details of the products from farmers/consumers, analyzing the products obtained, considering the various criteria of examination required for it, with the help of agricultural experts to meet the quality expectation of customer, get the right value of the verified product and uploading it in the application. The products are sent to the agricultural experts. The experts are completely neutral with no partialities who will analyze the quality of the product received.
Depending on the device GPS system. Whereas Crop – itively improves the agricultural ion. Farmers will also -le on mobile phones, which will -ke area of land, type of soil, mobile phone with camera -uits, fertilizers and fodder. The products are produced by -d we can get approximate budget for -ence in the profit margin when this application is used. Through this application we achieve our main objective, which is to increase the profit margin of the farmers and make sure they get the right price for their efforts. Marketing of agriculture can be made effective if it is looked from the collective and integrative efforts from various quarters by addressing to farmers, middlemen, researchers and administrators. This application will be one such strategy that will encourage the farmers to continue farming and make sure they get the right fruit for the labor.

Shitala Prasad, Sateesh K. Peddoju et. al. “AgroMobile: A Cloud-Based Framework for Agriculturists on Mobile Platform” 2013 - IT has to play a big role in Indian agriculture to facilitate farmers in improving the productivity all over. Technology can be used in two ways: As a direct tool in agriculture production, such as satellite technologies, geographical information systems, agronomy and soil sciences, and As an indirect tool for empowering farmers to take information and have discussions which positively improves the agricultural activities that were traditionally conducted. Multi-functional software serves farmers to get detailed information about crops, their diseases and causes.

Mobile Cloud Computing (MCC) is useful to the Indian farmers to assist them in agricultural needs. It helps to detect botanical species recognition and disease detection using a simple mobile phone with camera–a Mobile Vision. This proposed system helps farmers in all manners, that is, in education, weather forecasting, crop analysis and understanding it more clearly.

Monika Chirmade, Komal Tayade et al. “Agro Supply Chain Management Based Android Application” 2015 - Agro Supply Chain will be available on mobile phones, which will be designed for farmers to help them stay on track, avoid troubles, manage their expenses in cultivation, receive all the latest and updated information, government schemes and strategies related to the field of agriculture along with suppliers details for sugarcane. The advisory system will enable its users to receive real-time and interactive advices and alerts on crop. Different alerts will be provided for plantation, insects, diseases and nutrition. Farmers will also receive regular pest, disease alerts and market price information to support on-farm decision making. It helps farmer for managing his expenses and schedule. From this application farmer can get approximate budget for planting sugarcane. Farmer insert details like area of land, type of soil, month of plantation. Depending on input harvesting period, amount of fertilizers, amount of water are display. Latest Government Policies are easily available; farmers will get latest government policies related to agriculture. It also provides new Strategies and Technologies for Farming, Plantation and upcoming Technologies for better production of crop. In Plantation technique, amount of irrigation to be done, type and amount of fertilizers to be used in plantation can be managed. This android application is the complete package for farmers who want to do farming on sugarcane and obtain good production with proper management.

Mukesh Choudhary, Sumeet Dhone et. al. “Scheduling, Controlling And Monitoring of Agricultural Devices Using Android Application” 2015 - This system is developed with Ardino Uno Microcontroller which in connected to the GSM, sensors and the motor. The temperature sensor is used to detect the temperature of the environment and capacitive sensor to sense the water flow in the pipe. In this it includes the application for water pump motor on/off, pesticide controller and user can schedule their tasks using this application. In this system we are using internet for connecting user with the server machine. This server has a java application which gives commands to the microcontroller and provides video streaming of farm to the user. From the convenience of android application, a farmer will be able to control the motor and pesticides proportion and monitoring the
farming activities going on in the farm remotely. The project will allow for improving the efficiency of the irrigation process.

Santosh Reddy, Abhijeet Pawar et. al. “A Survey on Crop Disease Detection and Prevention using Android Application” 2015 - The proposed system is an android application which has services for farmers. Image processing which usually detect leaf based plant disease detection system. Online marketplace feature which help farmers to buy/ sell goods online and also add extra benefits on their margins. Market rate guide, this feature helps users to gather information about market rates of different markets. Weather report system have feature plays a key role for users for decision making for farmers to take decisions regarding water management, provisions of pesticides and nutrients. It provides information about temperature, weather condition, humidity and wind speed. Soil information- using this feature, user may get information of their soil, also guide them to decide the crop type which is best suitable in their soil.

Shankar M. Patil “Android Application for Farmers” 2019 - Researcher made classification of the application in the form of Weather forecasting explored the details of the weather of a particular location, humidity of any district on the given day, sunrise, sunset, pressure. Market Rates shows the entire Vegetables and fruits price list that are available in the market. Government Schemes provide detailed information and process of different programs. Prediction made of market conditions of current week and previous one or two week, our system will predict future rates. Farmers who are using smartphones where they can get the real time updates about the vegetables, fruit rates of every market in India and they will be able to sell their products at the proper rates. Our application gives feature where all the farming related notices from the government will be added and farmers will get a proper information about different schemes. Depending upon certain market condition we are predicating the rates of the vegetables and fruits. Also we are adding feature of weather information which will helpful for the farmers to plan for next 2-3 days.

They can make better decisions about where to sell their output after getting market prices for a variety of local and distant markets. This may fulfilled the requirement and gave us a convenient way to overcome farmer's problem by One Stop Solution to all agricultural information needs, Location specific information delivery and Highly authentic and reliable database on agriculture.

Madhumathi R, Radhakrishnan R “Bidding Application in Amazon Web Services for the Sales of Agricultural Products” 2016 - Farmers and Agriculturist to achieve best price for their products they produce or sell. The owner/farmer attains their maximum price for their product with respect to their urgency. The customer who bids on which product, the price will out by the particular customer quotes for that product and the other related information of a product updated as and when the customer enters his bid price. The auction starts with the bid of lowest price and the price keeps on increasing by other bidders. The auction is completed, when the highest bid-price is reached or there is no other high bid quote from the receivers. The seller fixes an acceptable price as the marginal price and the auction is carried out in. In such way that the auction is forcibly by stopped when the bidding goes below the marginal price, thus this model provides the seller a secure price. This web application not only provides the highest price for the farmers but also it possess many additional features which serve the application as the most easy, reliable and user friendly application.

Aniket Bhave, Rahul Joshi, Ryan Fernandes “Mahafarm – An Android based solution for Remunerative Agriculture” 2014 - Information and Communication Technology (ICT) in agriculture is an emerging field focusing on the enhancement of agricultural and rural development in India. Using innovation is a key measure in the rural domain. The advancement of ICT can be utilized for providing accurate and timely relevant information and services to the farmers, thereby facilitating an environment for remunerative agriculture. This research describes a mobile based application for farmers which would exhaustively help them in their farming activities.

Shweta Sharan, Kamini and Neha Mahajan “Tech Productivity - An Android Based Solution for Indian Agriculture” 2013 - The main objective of such project is to develop a mobile phone based solution that helps in farm management, leads to agricultural yield improvement and helps in care/maintenance of the farms. It would also help them to maintain a list of suppliers and sellers of the different commodities and items sold in the market. The application would also provide the information about the various loan schemes offered by different major banks in India. The loan schemes for different nationalized and agricultural banks have been
hard coded in this application. As they change from time to time, the updated versions will have the latest schemes. Getting the market updates of different products makes better decisions about where to sell their output after getting market prices for variety of local and distant markets. They can also yield their crops after having the weather updates and information about the rains.

Tomoki Uchinuno, Yujiro Yasunaga et al. "Developed the knowledge sharing system for Agricultural Application" 2013 - The outline of the data sharing system developed by this research information about judgment of those who grow agricultural products is collected from a website. Simultaneously, cultivation environment data is collected by the sensor installed in farmland. Inheritance of agricultural technology by using two methods for collecting data Automatic Acquisition of the environment information by a sensor, Record of the work information by a farmer. Data Sharing System describes the model for the knowledge of skillful farmers and report the experimental result of the environmental-data acquisition about cultivation using some garden planters. Knowledge sharing system does not provide robustness for real data.


In this paper researcher given entire idea about develop a mobile phone based solution that helps in farm management, leads to agricultural yield improvement and helps in farm maintenance. Researcher explain that traditional farming tolerated unexpected environment where as, Modern farming provide expected environment by weather forecasting. Traditional farming requires large amount of labor and different activities for conducting farming. Alternatively Modern farming does not require huge amount of labor as the mobile, machines and new technology take care of the whole thing. This mobile application provides real time weather information, news and market prices at diverse locations and all information is provided in local languages. So, all the outcomes of researcher application are aid farmer to improve their agriculture to yield more earnings. Author expand the System Architecture for the farmer app which include different operations like registration of farmers Weather forecasting, News and feeds, Multiple language support, Market trading.

Vimal B. Patel, Rahul G. Thakkar, Dr. Sangeeta Ahuja “Agricultural Android Application” 2014 - In this paper researcher given entire idea about by using this Proposed System, just by operating the android phone farmers will receive all the information provided by the kiosks. As, Whether Forecasting information, Agricultural crops information and he will get various crops diseases information also farmer want to talk with Agricultural Experts for instant problem solution may added this feature. This proposed system provides user friendly environment to the illiterate farmer of India as System provide information in local language and in voice form. He received all Whether Forecasting, Agricultural crops, Crops diseases information just operation Android Phone Keypad. Farmers can access information 24X7 from anywhere, thus travelling time and waiting time in queue to access kiosk will be save. System is very cost effective as it is freely available Sunidhi Sharma, Dr. D.K. Sharma, Supriti Sharma “Overview of Mobile Android Agriculture Applications” 2018 - All the applications overviewed in the paper are developed by keeping in mind some specific purpose and provide the functionalities for the same. The functions are diverse ranging from cropping information, market rates, online shopping for farmers to weather forecast, and daily agriculture news.

Market applications are the ones containing the information about the market prices, give access to the available SME (Small and Medium Enterprises) in the area near the user based on their locations. Information-based applications are the knowledge-based applications, the ones containing the information related to the crops and their varieties suited to different soil types, the best practices to adopt for increasing the productivity. This category also includes the applications containing information about latest government schemes and plans which can benefit the farmer. Weather applications contain the information about the weather and forecast of a particular location as entered by the user or detected by GPS. Advisory applications are the ones which allow user to contact the labs, scientists, or KCC (Kisan Call Centre) near their location. Management-based applications are the ones which facilitate user to manage small or medium sized farms.

In this paper “Agriculture based android application” tells about the AgriCom, an android application. This
III. GAP ANALYSIS

In this researcher has reviewed various articles which are related to agriculture and development of mobile applications for farmers. We also found that there are many mobile applications made for farmers in different countries related to diverse services but to fulfill rural farmers demand. Researcher will design and develop user friendly mobile application which provides multiple features in one app like diverse information services as well as interaction platform for farmers and agriculture people along with information about Mechanization in Agriculture. This may helpful for the farmer to be more organized farming with this app and it will more beneficial to farmers to get platform for interaction and all information services from the start of farming up to the end, value addition service in one app. This mobile application will fulfill all the agricultural needs of the farmer in one touch on any time or any place.

IV. CONCLUSION

Rapidly expanding digital ecosystem, the mobile apps has surfaced and attained enormous importance. For the advancement of the agriculture sector, mobile apps are introduced to help the farming community. India is the country which is mostly depended on agriculture. There are various new technology develop for agriculture. Indian government also provides extra facilities for the farmers to improve their productivity. All the imperative information and plans regarding farming is not timely reach to the farmers due to unfair management. The majority of the farmers do not know about uses of new technologies in agriculture. Thus, in order to bridge this gap between farmers and new technology as well as government aids to improve agricultural growth researcher will develop app.

Farmers are the backbone of nation, to strengthen there need by supporting all the means and all the media. There is huge availability of information but it will not reach upto farmers due to lack of knowledge and ignorance may get developed. From this we can’t avail that facility and due to that survival, and drudgery reduction may not possible and economic status not uplifted. To make aware the farmers, scientist about the technology available at the different status for utilization of time upto the depth of among all the technology and to upgrade the economical status. So here we are trying to give the package of solution regarding to all crop from small marginal farmer to large marginal farmer. By using regional language this app is easy to understand and easy to access. This mobile app will define the necessary procedure and model to make farmers aware about new diverse knowledge about agriculture and also help them to improve agriculture in our nation.

V. REFERENCES


