

KRISHI SAAGAR – An Android app for farming business

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Abstract: *India is the place where more than 42% of the population are into farming. Agriculture in India has created lot of employment opportunities, but this also includes a huge chain of middle-man because of which farmers are suffering to get back whatever they have invested on their crops. The technology now has been raised to the peak which farmers aren't aware of. There are multiple machineries that are been introduced which work smart and fast reducing the efforts of farmers, where he doesn't have a better platform to get these available. There exists no mutual connectivity between farmers from different regions which avoids knowledge transfer. Wholesalers and other local traders they are suffering by investing huge for buying crops in APMCs. So, our aim is to develop a mobile application "Krishi Saagar", This platform will overcome all those problems and making farmers benefited.*

Keywords: *Farmers; APMC; Local trader; Employment; Machineries*

I. INTRODUCTION

Agriculture is the key development in the rise of human civilization. It is defined as the science and art of cultivating plants and livestock. It is the primary source of food for the entire population of the country. It contributes 20.19% (2022) to the Indian economy and employs over 41.49% (2020) of the country's workforce. The recent advancements in technologies have made the agriculture processes easier. Technologies such as Artificial Intelligence, Machine Learning, Internet of things, Blockchain, remote sensing have increased the overall efficiency of the agricultural production process as well as the entire value chain.

Smartphones and applications serve a positive impact on farmers as it helps for better inputs and reach markets easily and enhance productivity and reduce costs. It gives them a platform to promote trading of agricultural goods,

information related to soil, weather conditions are also provided.

There are a lot of applications in the market supporting the direct connection between farmers and customers but yet there are a lot of disadvantages. Small quantity delivery costs a lot of money for the farmers as well as for the customers and there is no guarantee that his entire goods will be sold since it's a time-consuming process and goods like vegetables and fruits require immediate storage and delivery. An indirect means is thus a very important factor in supplying the products to the customer. Our application will basically help farmers in selling their agricultural products to local traders, retailers directly who purchase the products in larger quantities. The reason behind this is to avoid farmers and local traders from paying taxes for the Agriculture Product Market Committee (APMC).

II. LITERATURE SURVEY

The Existing applications in the market only concentrated on the farmer-customer relationship, where farmers directly sell their agricultural produce to customers. Some of the applications provide information related to environmental conditions which help farmers in taking better decisions concerning their crop selection, Online chat facility is also provided in some of the existing systems to bridge the gap between farmers and customers. The detailed information about the existing works is given below:

A. Virtual fruit market

Joe and Kalyani Khodaskar, focused on some of the major problems that were faced by farmers which include, the long line of middlemen, transporters, wholesalers, and retailers. She basically wanted to remove this chain and directly make farmer contact with the customer in order to sell the products. The name of the application that she developed was "virtual fruit market". The main aim of this application was to give the farming community fair and consistent prices for their

agricultural produce. This helps farmers in getting fair prices and also the customers will get fresh and hygiene products due to direct connection. Farmer has to log in and provide details of the products that he has grown, Customer can see a range of fruits and can select their choice, get price and location. It also indicates farm shops within 1KM range by a message containing the name of the shop and distance from the current location. The main disadvantage of this application is that no multi-language support was provided [1].

B. E-trading of agricultural products from farmers to customers

India follows an indirect means of product delivery from the place of production to the customers. This indirect method involves wholesalers, retailers, distributors, stakeholders, and finally the customers, and each person in this line gets a handsome pay. The farmer who puts all his effort into growing the products is the one to get the least amount in this supply chain. In order to break this indirect supply chain, this application has come up with an idea to connect farmers and customers directly, so that the farmer gets reasonable prices for his effort and also the products are affordable to customers [2].

The main features of this application include:

- Connecting farmers and customers directly.
- A chat facility is provided for their communication
- Information about government schemes is provided to farmers.
- Location of the farmer given through GPS.
- Multiple Language options are provided for easy usage.
- Notifications to both farmer and customer by the server upon placing the order.
- Customers can give their reviews and comments.

C. Agritechno

Joe and Alvin majorly citizens of the Philippines country focused on the problems such as, there was high importation of the crops from the neighbouring countries as a result of which the cost of the crops that were grown in the Philippines dropped down because of decrease in demand. Farmers who basically belong to marginal communities are being given less importance with respect to the government facilities and some farmers didn't exactly know what are the facilities that they get from the government. Keeping all these problems in mind they wanted to propose a solution by developing an application to a specific province called Negros Occidental. The application name is given as AgriTechNo which has an abbreviation of Agricultural Technology of Negros Occidental. In this application, they provided farmers with a forecast of the product that helps them to decide where to market their product based on the responses from the people in a specific region in the province. Once if any customer books the product there is

a tracking system implemented that shows on the map that were exactly the product is. The way they approached was, initially they took the support from the local government of negros occidental. Then started developing the architecture for the forecasting of the product and started implementing based on the requirement that they have got from the farmers when they have previously done with the survey. They finally concluded by saying farmers need not have to sacrifice their quality and wastage of crops if they use this application and this application also assists farmers to monitor the present price value that is in the trading post [3].

D. Digital Farmers Market App

This Application mainly concentrated on solving 2 problems which are faced by farmers:

- a) Optimum rates for their agricultural produce by removing the concept of middlemen.
- b) Food grains mafia where the agricultural products are stored in the warehouses to increase the demand for the products and also its rate.

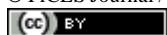
Digital Farmers Market App (DFMA) promotes e-trading of agricultural products. The main goal of this android application is to connect farmers and customers directly without any middlemen in between. It provides information related to agricultural products like their price, quantity of the products along with their images, product availability with GPS location, etc. The customer is allowed to pick products as per their requirements and can place an order, and the farmer will also be notified regarding the same through "SMS Manager API" and "Phone call". The application also connects fertilizer and seed vendors with farmers [4].

E. Application and Website for Farmers to Sell Their Produce at Better Rate

The authors Ayub Sayyed, Kritika Sharma, Kush Mandal, DipaliBhole have developed an application that brings a link between farmer and customer eliminating the middlemen. They majorly focused on problems that lead to poverty in farming such as lack of awareness of facilities or unavailability of it and how farmers are cheated by agents in marketing their products that result in heavy loss. They proposed a system that provides a platform to farmers and customers directly to sell and buy their products. This system has a goal of giving fair price to farmers to their commodities removing the middlemen completely. Through this application, farmers can also connect themselves to the food processing industries and consumers. Here, the user registers by giving their details, OTP will be sent via email and they can upload product details with its images. Buyer contacts the seller through contact number or chat and automatic location identification of buyer and seller is also made available [5].

F. Agro peddle

The authors Prof. A.V. Deshpande, Priti Dnyanoba Khatape, Rucha Vinod Sheth Veda Vilas Kunijr,



Meghana Subhash Shinde provided an application that reduce the involvement of middlemen and showed a price graph of their application versus involvement of middlemen. They majorly focused on the problem that customer rejection of products due to lack of quality and freshness of farm products. They proposed a system that detects whether the fruit or vegetable is uploaded with a video camera attached to the system and measures the quality factor greater than the threshold using R-CNN and SVM algorithms. The facility of checking quality before buying is provided with reasonable prices [6].

G. FARMS- Farm Machinery Solutions

This Application helps farmers and other people in the country, whoever are willing to provide their agricultural tools, machinery and equipment on a rental basis to increase their overall income. The farmers who are in need of the tools or machinery will book them as per their requirements [7].

H. Survey of Android Apps for Agriculture Sector

The authors Hetal Patel and Dharmendra Patel focused mainly on how to bridge the gap between the availability of agriculture input and delivery of agricultural outputs and its infrastructure. This paper provides the details about how Android apps of agricultural services have impacted farmers in their agricultural activities. Analysis of Android based applications is also provided that are useful for farmers. They provide information about the crop planning and basic information such as soil data, type of seed, required pesticides and fertilizers of particular crop, plant diseases and Marketing details to sell their goods. They explored various agricultural information apps that are helpful for farmers and surveyed Android app in different area of agriculture [8].

I. GeoFarmer: A monitoring and feedback system for agricultural development projects

The authors are concerned with Digital Agriculture using Internet Communication Technology (ICT). This approach is still out of reach with many farmers due to lack of connectivity, missing capacity building, and poor usability of ICT applications. They proposed an application named Geo farmer that supports processes of co-innovation in agricultural development projects and can be used as a cost-effective ICT-based platform to monitor agricultural production systems with interactive feedback between the users, within predefined geographical domains in real-time. They used Q-approach for effective feedback. This system allows users with different roles such as expert role, facilitator role, and moderator role to interact with the system and perform different tasks. It is a useful tool for farmers to manage their crops, reduce risk, and enhance productivity [9].

J. Android Application on Agricultural marketing

This Application on farming helps in connecting the farmers and customers directly. It provides them a platform to sell their agricultural products. It provides farmers the current prices provided for the products at different places through the internet. The application

mainly concentrates on removing the involvement of third-party agents in the supply chain between farmer and customer [10].

III. PROPOSED WORK

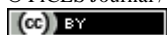
Farmer once grows his crop, in order to sell them he takes those to APMCs. Here he has an additional cost such as transportation and brokerages incurred. Our application will basically help him sell his crops to the local traders and other wholesalers directly, where they come to his location check the quality and quantity of the product and then move further or if the buyer wants the supply of goods by just looking at the uploads done by farmer, the farmer thereby creates employment opportunity for smaller distance delivery, hereby avoiding unrecoverable losses as mentioned above. Our application provides the facility to a farmer to broadcast his requirement of labors for farming so that the one who has right skill can book and work. Every day one or the other farmer will be posting the requirements. Farmer in one location knows a better and easier way of cultivation which is highly efficient but others in different regions might be using some techniques which are very difficult. So, our application connects farmers, where they can exchange their thoughts and transfer their precious knowledge. Sometimes one farmer would have grown some quantity of crop and the other has grown some other quantity, say the local trader requires the quantity of sum of those two quantities, this is a platform for those farmers to interact and sell their crops combined to the local trader. The technology as getting improved, the tools and machinery are also developed that makes the farmers work easier and faster. This platform helps farmers in getting machineries for rent or buy some required tools posted by others. The local traders or wholesalers even they are paying more to buy crops from APMCs, using this application they can buy it comparatively at low cost from farmers directly. We will be designing our application using “Android Technology”, which provides the above-mentioned services.

IV. CONCLUSION

Farmers are focused by many of the problem solvers in their own perspective in order to make them benefitted by providing some solutions to the most affecting problems faced by them, using the technologies. Apart from those problems and solutions which other authors have concentrated on, we have focused in a different aspect not only about farmers, also reducing the chain of middle man not exactly removing complete middle man. By this both farmers and local traders or wholesalers will be benefitted.

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