Android App to Connect Farmers to Retailers and Food Processing Industry

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Abstract—**Mobile internet will help the farmers to sell their products directly to consumers and food processing industries. This paper provides market information to a farmer using its easy interface on the mobile application. The mobile application is intended to be used for fast and updated information delivering system for farmers. Also, it has native language support to make the transaction easy for farmers. The mobile application treats farmers as a seller and a buyer. The intention behind this paper is to help farmers so they buy or sell their agriculture goods and products. Market prices provided by data.gov.in lets the system to keep the selling and buying prices in control. As the products are to be browsed and there may be plenty of products for the user. To make browsing easy many filters can provide. Farmers face many problems while selling their goods and products, this system promises to provide an easy and recreational way to sell the products. The system lets the farmers to sell goods at a reasonable price and makes business even fair and transparent. Consumers are the opposite side of the same coin. This system lets consumer to choose from a wide variety of products, select the product as per their requirement and also to apply price filters. Location is a one of parameter for consumer and producer while selling or buying their product it will helps the user to get the product nearby their location. The basic objective of the system is to considers every one need and full fills their requirement with fair and transparent agriculture business**

Keywords—Mobile Application, Food Processing Industry, Agriculture

I. INTRODUCTION

Farmers are the spine of India. Agriculture represents 17.-18% of the GDP (Gross Domestic Product) in 2017-18 and around half of the workforce[1] [2]. Agriculture is geographically the broadest financial segment and assumes a huge part of the general financial texture of India.

Farmers work vigorously all through the session to develop their harvests; they confront a lot of issues over the season like characteristic disasters, unpredictable rain, and unviability of water resources. Farmers need more facility to tackle the issues. If they could manage all the issues and produce their product the second major issues arise of the price they won't get the market price of their product they face lots of issues with price money most of the time they will not get the price for their product as per there expectation because of market strategy. The framer also manages other than farming like to handling the transportation, stockpiling or storage which is incorporated into the agribusiness market. These exercises are deficient in the economy agricultural business. The factors which are demotivating the farmer efforts is transportation where the farmer has to bear the transportation cost because the marketplace is far away from the farming location. It is the main obstacle in the way of effective marketing. The farming areas are not connected with the marketplace by roads. A lot of agricultural product is wasted due to the transport problem. The farmer borrows the money from others to buy the seed in the market. Farmers do not use the improved seeds and fertilizers so the quality of the product is very poor due to which they get low prices in the market. Another major issue with storage, storage facilities are required by the producers as well as by the government. The farmers need warehouses to preserve and sell their product with a suitable time. The government needs a store for keeping reserve stocks. Due to lack of storage facilities, a lot of product is damaged because of lack of storage facilities [3]

The farmer is not getting enough prices for their product because of the intermediary entities. The intermediary entities take a big share of the farmer's income without doing anything. A farmer isn't familiar with various sales taking place at various places or best deals for his product. The Intermediate Entity provides this information in a limited quantity and takes a big commission on it. They will buy the bulk amount of product from the farmers with low prices and selling to the food processing industry with high prices. The intermediate person is getting more profit than the farmer [4].

The proposed system ensures a stable market as well as the better return to the farmers and also it can handle the basic issues of the farmer. It protects the interest of both consumers and producers. The basic purpose of this system is to create a platform for farmers to sell their goods directly to retailers and food processing industries. It is an Android platform application which will be generally used by farmers to sell their crops online. The main motive of this application is to remove the middleman brokers, because due to the middleman brokers who buy farmers crop at a low rate and sell them at a much higher rate in the original market. Using this app farmer can also connect themselves to the food processing industries and consumers. The food processing industries require more and more raw materials so they can get directly from farmers with different quality of the product.

II. RELATED WORK

Gauravjeet Dagar in his study stated that the fundamental motivation behind promoting data framework Marketing Information System (MIS) is to support farmer to understand the different marketing strategy which advertising basic leadership and showcasing endeavors of business people and agriculturists. The Author said efficient information about the real market prices should know by the farmer and if it would be available in a single platform then the farmer will get the benefit. In any case, the data is additionally helpful for different sorts of associations, for example, government, advancement associations, academicians, and scientists. The accessibility of auspicious and exact data to every single invested individual is on sequent fundamental, regardless of whether it be given by the administration itself or by the private part. This paper investigates the different sorts of farming advertising data frameworks pre-dominant and endeavors to give a wide point of view on promoting data framework. Utilizing an illustrative approach, it endeavors to portray applicable horiculture advertising data frameworks, and examine them to create thoughts and bits of knowledge which might be valuable for creating and fortifying MIS in agribusiness segment [5].

Shakeel-Ul-Rehman et al [3] stated that there is a need to change the marketing strategy of the agriculture business author said its time to adopt the technology for selling and buying the agriculture products. It's also stated that there are various problems and challenges for agriculture business marketing lack of knowledge of the market, lack of knowledge in agriculture.

Abdul Razaque and Md Salleh Hassan [6] in their study stated that the mobile phone playing the important role in agriculture development mobile phone use in developing nations is assuming a crucial part for the upgrade of farmer business towards farming. As of late, correspondence through mobile phones is viewed as essential in improving ranchers' entrance to better comprehend rural market circumstance. The usage of mobile phones internet is increasing rapidly among people for obtaining the information about related issues, problems and their solutions in the field of agriculture the mobile phones are playing important role in developing country like India it has also reducing the communication cost and information cost in agricultural business. Cultivating people group acknowledges mobile phone as a simple, quick and helpful approach to convey and find provoke solutions of individual issues. These days, the cell phone has created an open door for the ranchers particularly to get the data about promoting and climate. Through this critical innovation, they straightforwardly stay in contact with advertise personals and offer they are creating with sensible costs. The utilization of mobile phone additionally keeps them mindful of climate conjecture for farming information application like compost and pesticides which may be influenced by unanticipated fiascos as imparted by the metrological office. This gadget has given new course and way to deal with ranchers to impart straightforwardly and share about late advances with each other. The examinations demonstrated that cell phones have spared vitality and time of agriculturists and eventually enhanced their wage. Cell phones have given a chance to the ranchers to discuss straightforwardly with showcase representatives and clients for offering their item at a great cost.

The data correspondence innovations are expanding in creating nations for the advancement of various individuals, for example, educationist, specialists, and agriculturist. The ranchers are one of the huge groups in creating nations where they have not offices in their general vicinity for increment their item and pay. The cell phone is expanding among agriculturists yet at the same time, there is whole accessible among business, clients, and ranchers. There is a need to upgrade diverse task about cell phone advancements where agriculturists could get simple access to speak with individuals to offer their products in the showcase. The administration and other related division ought to likewise plan to achieve these ranchers and give the most recent data about seed, climate, and market on the time and give a great cost of their item [7].

Existing System

Deals are done manually with basically no common platform and less connectivity between the farmers and the food processing industry the current systems deprives farmers of being the principal decision maker. The Food processing industry employs people (middlemen) who search for the raw material needed. This Process needs a lot of manpower and time; this can lead to human-induced errors. Digital Involvement is very less in the traditional system.

III. METHODOLOGY

The proposed system is defined in the way the application developer can be maximum utilized. This paper is intended to use for fast and updated information delivering system for farmers. Also, we intend to use native language support to understand certain modules so that farmers, personnel can also utilize the features provided by the application. So paper scope can be summarized as fast and efficient support for newer information available the consumer and Food Processing Industry or Agro Industry can find the same product with different farmers and their cost and quality in a single window [8]. Agricultural commodities are traded in the market at the district level. The government sets support prices to stabilize the prices but the market prices are dynamic. The farmer, to access these prices enters the date, crop name, quantity and quality features in all the states. The application uses APIs provided by Open Government Data (OGD) Platform India to make HTTP requests to the Agro market Portal servers from where data in XML format is received, which, after formatting, is made available on the app in a human-readable form The result table contains information about market (district name), arrival quantity (in MT), origin, variety, grade, minimum and maximum selling price, (in Rs. / quintal) With a rough idea about the prices, the chances of a farmer being exploited and cheated are minimized [9]

The Design is based on a client-server architecture where the client is an Android device and server as Firebase (server-less technology) can use to develop this application. Firebase is an integration of various web APIs and

programming language APIs. The developers to focus on crafting fantastic user experiences[10].
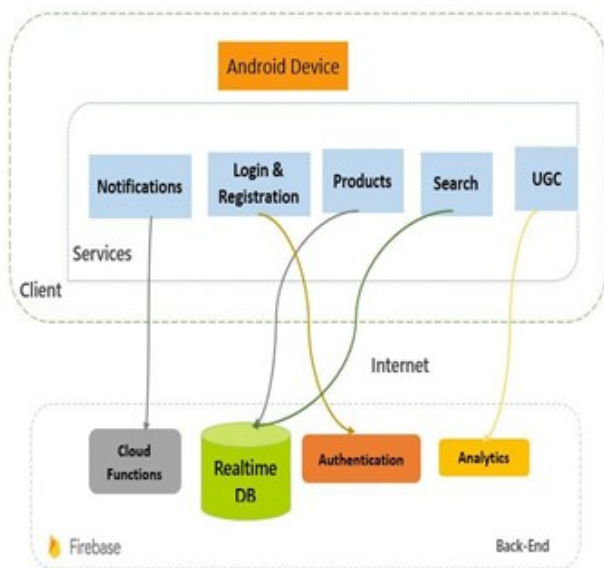

Fig. 1. System Architecture

In Fig.1 show the internal modules of an application. This application basically considering to provide the user-friendly interface so the user can access and browse the information with easy steps. The application provides the basic authentication for the user i.e farmer and Food Processing Industry. The user can register as a producer or consumer with the minimum details. It provides two different areas for producer and consumer for better accessing internal data

A. Product Details Upload

If the user is the seller, he/she can upload their product details with real images in this system and also updated information related to their product i.e. product name, cost, specification, quantity, and price. It has also automatically identified the location of the buyer and seller while they are uploading the details.

B. Shopping Cart and Notification

The notification is generated when someone will product. The notification can send to the farmer. Once an order will have placed it will send the notification to the farmer with details of the product i.e. product name, quantity and contact details. The user can add more than one product in the shopping cart, the shopping cart will display all selected product and their prices, once you place the order it's automatically calculated the total amount of the product

C. Product Search

The searching the technique is playing important role in the app the user can search their product through search option with different parameters. The seller and buyer can easily search the required product with different options like product name price and quantity etc. the app will give the product details with the nearest location of the seller and buyers, it has also list similar product with their cost on a single window where buyer can compare different prices so

it helps the buyer to choose the product with multiple options

D. Real-Time Database

The real-time database is used to store all data of the app. The responses time of this service is very short and it also provides listeners to update app data when changes are encountered in the database. The Cloud stores and share user-generated content like images, audio, and video with powerful, simple, and cost-effective object storage built for Google scale. The Firebase SDKs for Cloud Storage add Google security to file uploads and downloads for Firebase apps, regardless of network quality.

E. Cloud Functions and Cloud Storage

The cloud function is also known as server-side code. Cloud functions support various triggers and HTTP-requests. This application used Cloud Functions to sanitize data, admin function, creating a user, manipulating the real-time database and for notifications.

F. Authentication

It manages the users and their sessions over the app. This service dispense authentication such as Google login, Facebook login, Anonymous login, Email-password login, Mobile number logins. The app used login with a mobile number. An OTP is sent to the user's device which is used to authenticate the users.

G. Analytics

The Android SDK automatically captures certain key events, user properties, and its activities then it will display captured data in the form of graphs. The Android APIs can provide the all the summarized data to the user so a user can easily understand through graphs and figures, for this purpose firebase application can use. Firebase is Google application it will provide us with important features like data analysis, database, and data recovery. Firebase is a Google product freely available it scales automatically even bigger app. Firebase is a cloud-based application, it works individually but share data within the app so they working together inside the app. So firebase is the best solution for data analytics

H. Client-side

The Android mobile app is developed in java with inbuilt APIs. The necessary APIs to communicate with Firebase. The app uses listeners which are location-based (i.e location in Real-time database) to keep client data updated. Messaging service is a gateway for any notification to be delivered to the client. App also supports multi-language; all strings are translated in various languages when the language of an app is changed the strings are replaced with the string of that language

IV. CONCULUSION

This system will help farmers and food processing industry and user to get the better return. It protects the interest of both consumers and producers. This application is a single window where all the agriculture industry, farmers and user

will come together and get their product with comparative prices. The present agricultural marking is unorganized, so this app can streamline the agriculture business with fare marketing; Farmers are facing many problems to sell their products this app will help the farmers to sell their product in an easy way and will get good prices of their product. The app would distribute the trader's margin between farmers and retailers/FPIs. Households would pay lower prices. The communication gap between farmers and retailers/FPI will be reduced by the app as it will provide a platform for farmers to sell their goods at an affordable price and

negligible loss. The marketplace is the main communication link between farmers and the retailers/FPI. They acquire various taxes and transportation money from both the sides hence marketplace charges much higher rates. This system will help the farmers to compare the price with the market and sell according to it. This system will be having a location tracker which will help the consumer to find the nearest farmer to him; this will save his time and money too

V. REFERENCES

[1]https://www.financialexpress.com/budget/india-economic-survey-2018-for-farmers-agriculture-gdp-msp/1034266/

[2] https://www.indiabudget.gov.in/

[3] Shakeel-Ul-Rehman, M Selvaraj,M.Syed Ibrahim , "Indian Agriculture Marketing-A Review", Asian Journal of Agriculture and Rural Development, Vol. 2, No.1, pp. 69-75 (2012) .

[4] S Mahindra Dev, "Small Farmers in India: Challenges and Opportunities", ICRIER, 14-15 November 2011.

[5] Gauravjeet Dagar, "Study of Agriculture Marketing Information System Models and Their Implications", ,AIMA Journal of Management & Research, , Volume 9 Issue 2/4, May 2015.

[6] Abdul Razaque Chhachhar, Md Salleh Hassan , "The Use of Mobile Phone Among the Farmers for Agriculture Development" , International Journal of Scientific Research (IJSR), Volume: 2, pp 95-98 June 2013.

[7] Surabhi Mittal, Gaurav Tripati, "Role of Mobile Phone Technology in Improving Small Farm Productivity", Agricultural Economics Research Review, Vol. 22 pp 451-459.

[8] Sami Patel Sayyed I U, "Impact of Information Technology in Agriculture Sector", , International Journal of Food, Agriculture and Veterinary Sciences Vol 4(2) pp 17-22, May- Aug 2014.

[9] Suporn Pongnumkul, Pimwadee Chaovalit, and Navaporn Surasvadi, "Applications of Smartphone-Based Sensors in Agriculture: A Systematic Review of Research", Journal of Sensors, Volume 2015, Article ID 195308, 9th July 2015.

[10] Sotiris Karetsos, Constantina Costopoulou, Alexander Sideridis, "Developing a smartphone app for m-government in agriculture", Journal of Agricultural Informatics, Vol. 5, No. 1:1-8, 2014.