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Agricultural Development Using Mobile App for Farmers

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Abstract

Most of the day-to-day activities are done using mobile apps, even the same for the farmers. The mobile apps have given many benefits to farmers starting from better land management judgements to quality yield. Farmers are using different types of apps to review the health of the crops during the crop cycle. Some of the mobile applications are developed to help the farmers in lots of ways like horticulture, crop management etc. Also, some mobile framer applications inform the farmers about the weather forecast, agricultural field opportunities, expert suggestions, answer to the questions, etc. Aloof, some of the apps also offer details related to the quality of soil, the utilization of fertilizer's, etc.
Keywords: Android, Farmer produce, weather forecasting, transportation

1. Introduction

In the rapidly changing today's world, the mobile apps have emerged and attained great significance. The Mobile Apps were introduced to support businesses. For the development of the agriculture sector, application was introduced – to help the farming community. With the introduction of digital India and smart agriculture system, there is a race in the industry for introducing advanced Mobile Apps. Farmer often struggle to get the weather report, but they are stuck because they do not know where they can see it. Our new mobile app will prove helpful to the farmers in this regard, but they must have a smart phone. The app will be used by many people as India has a population of over 135 crores. These provide farmers with the services they need. Farmer has to pay a commission in order to sell their product and hence our app will help here. It increases the confidence of farmer and also increases the profit of the farmer and hence our application will help the farmer to gain more profit. Sourcing from big manufacturer results in not getting more profit from them because they has to pay commission to the big corporation to sell their

Produce, as they cannot sell their produce on their own they has to depend upon these big manufacturers to sell their produce because they are depended on them. The app has a simple interface and provides information on four modules which are sell, buy, transportation and weather. A tap on the weather button shows details of temperature, humidity, wind and rainfall for the current day and the forecast for the next five days. Some farmers who live very near to the cities bring their stock directly to the wholesale markets and sell their stock to the retailers and end customers. But for the farmers who live in the remote areas, it is not possible for them to come to the cities do frequently and sell their stock directly in their quoted price. Hence, they have no other option but to contact the wholesale vendor for selling their products in the market. To provide a platform for the farmer where the produce from the farmer can be easily sold at better rates, pooling or sharing of the transport to take the produce to the markets and to help farmers in terms of crop precaution based on the forecast of weather. All the function will be available in one single application.[1-5].

2. Problem Statement

To provide a platform to the farmers where the produce from the farms can be easily sold at better rates, pooling or sharing of the transport to take the produce to the markets and to help farmers in to take precautions based on the forecast of weather.

2.1. Purpose of Study

Android has an incredible ability to solve real life problems. Problems are mainly based on two factors, time and money. The problem encountered was to create a provide a platform to the farmers where the produce from the farms can be easily sold at better rates, pooling or sharing of the transport to take the produce to the markets and to help farmers in to take precautions based on the forecast of weather. Since it is an android application, it is supported by all android devices or smart phones which are easily accessible to the users. The availability of various functionalities like buy/sell, transport and weather forecast helps farmer to get what they want saving their effort and money. This android application will help the farmer to sell their produce quickly under the right price. The transportation feature will help the farmer to transport the produce from one place to another because the transportation cost will be shared. The freshly cultivated product can be bought directly from the farmer at the right price. It is indeed a very long process to grow crop. They expect to get some profits. For this the e-market system where the farmer can upload his produce details and can directly contact the customer is developed. Sharing of transport can help in reducing the overall transportation cost for farmers. Precautions based on weather forecast of rainfall can prevent loss of stored produce. Also, crop guidance based on seasons will be provided in this application.[6-10].

3. Benefit to farmer community

Many of the farmers are uneducated and don't understand the technology quite like us. As government or India has launch site for farmer but as they are quite uneducated, they don't know how to open a browser and search about it. But they know how to open the application directly from their mobile. Also, the application contains single modules which work for a single functionality only. Like, the app will only perform buy/sell or transportation, so we have created such

An application where all the functionalities will be in a single unified application. But the problem does not end here many applications are there where they have provided the buy/sell at a larger scale like Big Basket and National Agriculture application they take the produce from farmer and then sell it to the people directly.[10-13].

4. Historical Survey/Study

The applications are used by many users and has help many farmers to sell their produce.

4.1. National Agriculture Market

National Agriculture Market or eNAM is an online trading platform for agricultural commodities in India. The market sells the produce directly taken from the farmer by taking commission from them. More than 100 commodities including staple food grains, vegetables and fruits are currently listed in its list of commodities available for trade.

On the ENAM platform, farmers can opt to trade directly on their own through the mobile app or through registered commission agents.

Drawbacks of E-Nam-

a. Lack of storage facility: there is no proper storage or warehouse facility for farmers in villages where they can store their agricultural produce. Because of this, 15–30% of the agricultural produce is eaten or spoilt by rats and other pests or rains annually

b. Distress sale: most Indian farmers are extremely poor and have no capacity to wait for a better pricing on their produce in the absence of proper credit facilities

c. Lack of poor transportation: farmers cannot reach the markets due to poor transportation facilities.

4.2. Big Basket

Big Basket is the largest online food and grocery store of the country. They are taking vegetable from various farmers and store them and sell the produce directly to the customer through home delivery. They sells product like grains, pulses and other daily needs through their application.

a.Big Basket delivers the products very quickly on the next day. Also many shops has started the delivery services which deliver in an hour.

b.The business runs at a very high variable cost due to hiring the number of delivery people, wastage of food when stored or supplied from other source.

c.Big basket does not allowed delivery for purchase below 100rs; hence people are forced to add more product in cart which cost them.

Table.1.   Comparison   between   similar applications

Sr No	Similar App	Advantage	Disadvantage
1	Big Basket	Sell fresh product to the customer at home	Preserved or Stored food. No benefit to farmer
2	National Agriculture Market	Large number of buyer is buying from them and have fresh produce	The farmer has to pay the commission to sell produce

4.3 Real Time Survey

Farmer does not know how to use browser and search through it, but they know how to use a single application which government has provided but doesn't gain enough profit for them to stay financially stable. Too confusing for them to navigate through different app for different work.

5   Problems Faced By Farmer

a.Farmer does not get enough profit from these applications as a mediator is in between them and takes commission for each selling.

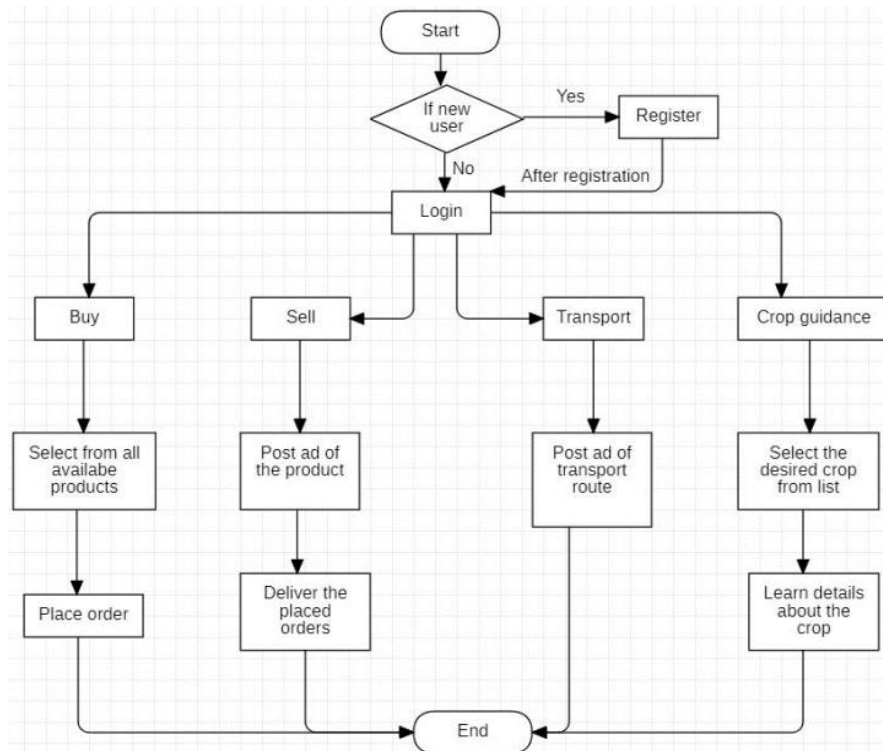b.Farmer does not have any source to get the weather for tomorrow and next further days. So, there is a lot of destruction of crops due to it.

c.Transportation of produces causes them too much, so they have to pay from their pocket. It is a measure problem for them to pay for the transportation.

6   Proposed Work And Solution

a.Our application is based on direct interaction and transaction between the people and the farmer. The farmer will set a price for his own produce which will improve the profit problem for the farmer.

b.The application has a weather module which shows the weather forecast for today and the next days. When the farmer will know about the weather, he can start preventing the crops for getting destroyed early.

c.Our app also provides with a feature with solution called shared transportation where the farmer will be able to share the transportation with the person who is visiting the same destination.

d.Using our application, the problems will be fixed, all the functionalities will be in one unified in one single application so they doesn't have to go through different types of application

6.1 System Flowchart

Fig.1. System Flowchart

The above flow chart Fig.1.shows us the working of the system; the different modules working process are also shown in the flow chart. The above is the system flowchart which shows the flow of the chart and tells us how the chart works in the above diagram, the user needs to login first and he will get four option i.e buy, sell, transport and weather. In the buy option the user will get to buy the available produce and in the sell option the user will get to sell product along with the decided price and in the weather forecasting the weather will be shown.

7. Modules:

7.1 Buy/Sell Module

In the buy/sell module the farmer will be able to post an advertisement for the crops as well as can decide the price for it. When the farmer will post an advertisement on the application it will shown in the sell section where the user can buy the product. The profit the farmer will get from selling this product will help them in improved financial condition

7.2 Transportation Module

In the transportation module, the concept of shared transportation concept comes in where the farmer can share the transportation. The person who has a loading vehicle and wants to go the city he will post an advertisement and tell that he is going to this city and hence the farmers who are also going to the same city will contact him and will share the transportation cost. This will also help the farmers so that their transportation cost will be reduced

7.3 Weather Module

In the weather module, weather forecast up to 10 days will be shown. The weather module will help the farmer in such a way that they will know about the weather early and hence they will start to prevent crops destruction as early as possible. Because weather is an essential component for growing crops and hence this will help them to prepare themselves for future.

8. Implementation

Module 1 – Buy/Sell Module
Module 2 – Transportation Module
Module 3 – Weather Module

We have developed the models and have added into respective fields.Fig(2) In our main screen the user will sign in if he/she does not have an account then they will have to register in our app. In the

registration page (fig(3)) he/she will be asked to add in their details like name, e-mail address, phone number and their address for registration purpose. We then register the data of the user and create an account for them to use the application. Because an account is necessary to place an order, buy an order and then put an advertisement on order.
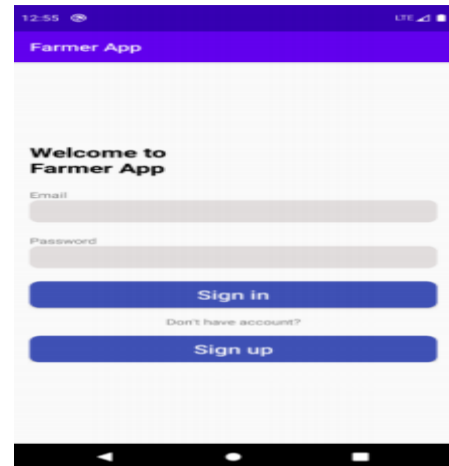

Fig.2. Login Page

Signing in or registration is a necessary process to use the app. Signing in helps us to identify a person individually. When an individual sign into our app only then he/she can post an advertisement for their product or a transportation request

Fig.3.Registration Page

After successfully registration in the application the user will be given four option to sell, to buy, transportation and in the weather option (fig(4)), if the user select the buy/sell section he will be given a form to fill the details along with the image. The option page also has another two option at the bottom of the page, which is the profile page, where the individual personal information is available. You can also change password and sign out from there.

Fig.4.Menu Page

The person has to add the name of the product its weight and image which will help the buyer to get what it is. The weight is necessary so the buyer would know how much he can buy and how much is left. There will be a confirm button after filling out the details which will post an advertisement on the buy section. (Fig(5)). In the profile we also have contact or query page (fig(6)) which will help the people in need or have any query regarding the application or other concern issue. There are icons which are provided their so they can contact us if they have any application. For example, they can WhatsApp us or they can just send a direct message. Or simple just call us.

The call option work such that they don't even has to type a number because when they click on it the number will already be there. If all the above still does not work, they can directly fill the form below which will send us the query.
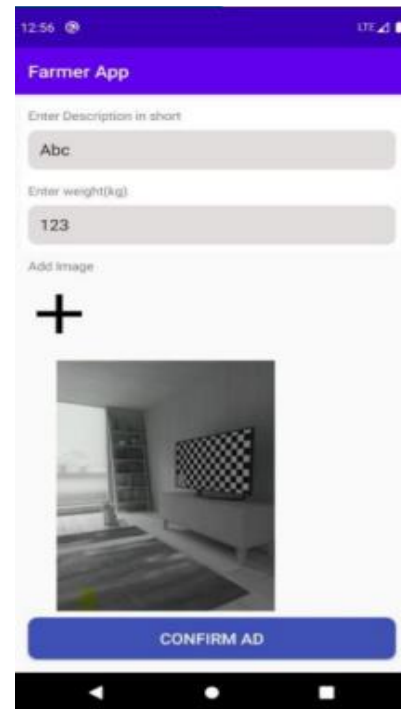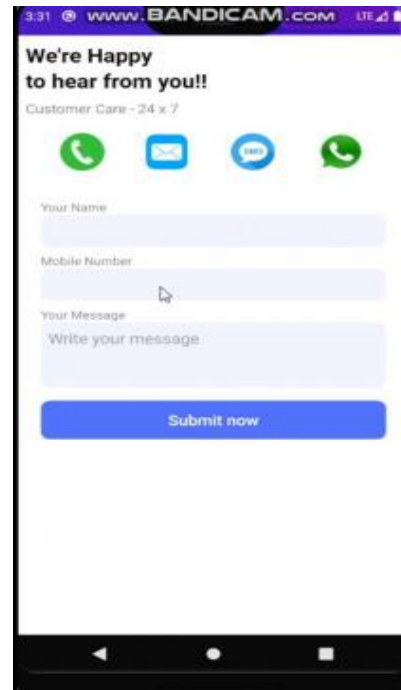

Fig.5. Sell Page

Fig(6): Contact Page

When click on the weather option the weather for that day is given and forecast for the next 10 days is also given. This help the farmer in such a way that after getting the weather for the next day if they found out that tomorrow will be heavy rain

they will harvest the crop early and protect them. This is the task of the weather module which will help the farmer and prepare them for future consequences
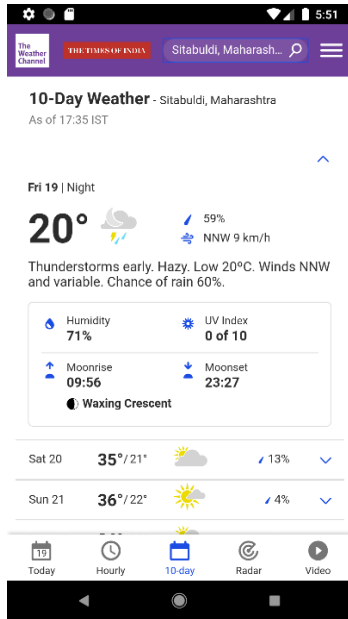

Fig.7 Weather module

In the above fig(8) the user can register the vehicle in our application in order to post an advertisement in the transport section.
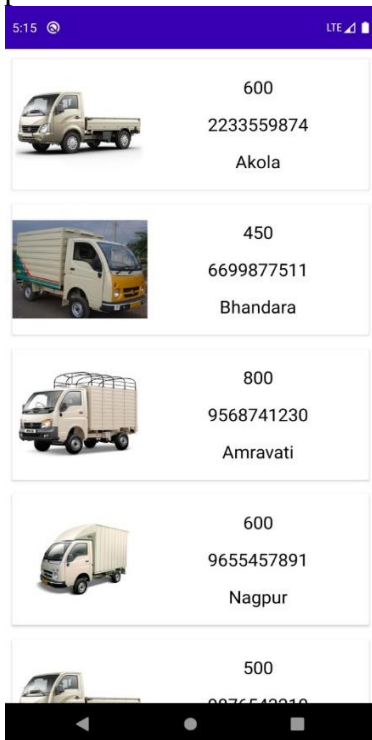

Fig.8 Vehicle Registration

Conclusion

We have designed a mobile application and completed its development, by applying engineering knowledge we have analysed the societal problems in the agriculture sector. It would assist in protecting the crops in different weather and the main approach is for buying and selling of the crops, which help the farmer to sell the product and get a better profit rate than the markets. The transport feature helps the farmer to share a ride with other people which are taking the same route. The compensation is distributed resulting in profit to the farmer. We have used modern tools and platforms like android studio and firebase. During the development we have understood the importance of individual and teamwork while project development and management. While presenting our project in various seminars we have enhanced our communication skills and displayed professional ethics which will result in lifelong learning.

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