

# Kisan Mitra: A Farming Assistance Application using Ionic Framework

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**Abstract:** Rural subsistence farmers across India experience difficulties in gathering relevant and up-to-date agriculture information. This research aims to develop a mobile application for broadcasting agriculture information to rural subsistence farmers. is no complete system that advises the farmers about what crops to grow and in which region prediction of suitable soil w. t to the crop type seed availability as well as an interface that connects the farmer to the supplier and vice versa. Also, this system aims to provide information regarding finance and various government policies. Through this important technology, they directly keep in touch with market suppliers and sell their products at reasonable rates. Kisan Mitra helps the farmers working with the motive of greater profitability by direct communication between farmers to supplier playing a vital role in the enhancement of farmers business of agriculture. The analysis is done for several districts of the state of Maharashtra, India.

**IndexTerms - Farming, application, marketing, schemes, loans.**

## I. INTRODUCTION

This research project undertook sought to develop a mobile application for broadcasting agricultural information for subsistence farmers in Maharashtra, India. Since mobile phones are widely used nowadays. Thus this research aimed at helping rural farmers make the use of their mobile phones more useful. Rural farmers lack agricultural information, which could be useful for their agricultural activities and development. When rural farmers lack access to agricultural information that leads them to poor farming and is out-dated to technologies and better ways of farming. The least expensive rural development method is adequate access to knowledge and information in new agricultural technologies, knowledge of crops to be cultivated as per the region, improved seeding, better fertilizers, and market products. A mobile application could be used for broadcasting the information to people through each section and also looking for available products which are sold to the nearby suppliers that could be done in the mobile application for purposes of improving communication, market access and information sharing more efficiently in rural areas. This research was undertaken in the state of Maharashtra, India. Our system intends to suggest the crops as per the regions in Maharashtra for a farmer in order to address the current socio-economic crisis faced by many farmers today. This will serve as a way for the farmers to sell their products across the state just with some basic knowledge about how to use the platform.

## II. LITERATURE SURVEY

During the development of this project, we read through papers. Sumitha Thankachan, Dr. S.Kirubakaran (2014) explored that technological importance has been a great support for making decisions in various fields, especially in agriculture. The development of agriculture has been on under development for the past few years due to lack of Agriculture knowledge and environmental changes. The purpose of this paper is to aware famers for their knowledge, utilization and perception in e-agriculture. The study used statistical survey design technique to collect data from farmers for their awareness of e-Commerce. The outcome indicated the extent of awareness is not much such that there is a need for e-agriculture for their support .E-Agriculture is a platform for supporting the marketing of agricultural products.

Santosh G. Karkhile, Sudarshan G. Ghuge explained that today mobile devices are used frequently by everyone, including the farmers and countryside people. According to observations of Information and Communication Technologies (ICT), mobile plays a vital role in the daily life of farmers. The farmers, who were dependent on clouds for rain, now are looking into the Cloud Computing (CC) for their solutions towards the cultivation of superior crops in today's modern agricultural world. The traditional methods used by the farmers, exceptionally in India, are slow and unreliable. A large amount of crop is getting damage in the field due to the bacterial attacks and lack of information resources. Annually, such loss exceeds 40% in total. So, the paper presented here suggests various ways in which a farmer can utilize Mobile Computing (MC) on their handsets using the application called "Kissan", to assist them for relatively better cultivation and merchandise. This work focuses on Indian farmers as it inscribes the major problems of market updates of various products, updates of weather and rainy season updates and also provides multilingual support. This will effectively help farmers to sell their product in the global market and earn a remarkable profit. Hence, this framework uses MC, which in effect, puts power into a farmer's hand. The experimental setup uses tools like Android SDK. In this research, Android-based mobile devices are used for testing.

Aakash G. Ratkal, Gangadhar Akalwadi, Vinay N. Patil about half of the population of India depends on agriculture for its livelihood, but its contribution towards the GDP of India is only 14 percent. One 0possible reason for this is the lack of adequate crop planning by farmers. The existing system does not provide adequate information about what crops to grow. In this paper, we present an attempt to predict crop yield and price that a farmer can obtain from his land, by analyzing patterns in past data. We make use of a sliding window non-linear regression technique to predict based on different factors affecting agricultural

production such as rainfall, temperature, market prices, and an area of land and past yield of a crop. The analysis is done for several districts of the state of Karnataka, India. Our system intends to suggest the best crop choices for a farmer in order to address the prevailing socio-economic crisis facing many farmers today.

Prof. Kumbharde et al (2015) developed a website and as well as a mob app which will help the end users (farmers) to access the information related to agricultural in an efficient and easy way. This web and mob app provide information about a prediction about the crops production, agricultural bank loan and different government schemes.

Jinal Jani and Girish Tere (2015) developed a program which gives information regarding the different government schemes to the people so that they can take benefit of the latest government information and technological innovations. Use of this program will eventually save the user's time which they wasted by visiting the government offices, money which they wasted on traveling and lengthy government processes which is time-consuming. This paper also focuses on the dissemination of different services in different Indian languages.

Suman Rani (2016) discussed the different Government services provided to the people living in rural areas by the Government of India. This paper also focuses on the nine pillars of Digital India, economic, environmental and social impact of Digital India. The author has also discussed the several challenges arising due to the establishment of Digital India.

### III. TECHNOLOGY USED

#### 3.1 Hardware Requirements:

Processor: Pentium 4  
RAM: 4GB or more  
Hard disk: 16 GB or more  
Android Device

#### 3.2 Software Requirements:

Java Development Kit  
Android SDK  
Ionic Framework  
Firebase  
Git Versioning Control System  
Xampp  
Atom

#### Java:

Is a computer programming language that is concurrent, class-based, object-oriented, and specifically designed to have as few implementation dependencies as possible. It is intended to let application developers "write once, run anywhere" (WORA), meaning that code that runs on one platform does not need to be recompiled to run on another. Java uses an automatic garbage collector to manage memory in the object lifecycle. The programmer determines when objects are created, and the Java runtime is responsible for recovering the memory once objects are no longer in use. Once no references to an object remain, the unreachable memory becomes eligible to be freed automatically by the garbage collector.

#### Android:

It provides a rich application framework that allows you to build innovative apps and games for mobile devices in a Java language environment. The documents listed in the left navigation provide details about how to build apps using Android's various APIs. Android apps are built as a combination of distinct components that can be invoked individually. For instance, an individual activity provides a single screen for a user interface, and a *service* independently performs work in the background.

#### Ionic Framework:

Is an open source SDK that enables developers to build high quality mobile apps using familiar web technologies (HTML, CSS and JavaScript). Ionic is focused mainly on the look and feel, or the UI interaction, of an app. This means that it's not a replacement for Cordova or your favorite JavaScript framework. Instead, Ionic fits in well these projects, In order to simplify one big part of your application development process; the front end. Angular is the underlying framework that powers Ionic. It is responsible for the component API that is the building block of Ionic.

#### Firebase:

Store and sync data with our NoSQL cloud database. Data is synced across all clients in real-time, and remains available when your app goes offline. The Firebase Real-time Database is a cloud-hosted database. Data is stored as JSON and synchronized in real-time to every connected client. When you build cross-platform apps with our iOS, Android, and JavaScript SDKs, all of your clients share one Real-time Database instance and automatically receive updates with the newest data.

#### Git:

It allows group of people to work on the same documents (often code) at the same time. It eliminates confusion when more than one person is making changes to the same document or code. It's a distributed version control system. Version control is the only reasonable way to keep track of changes in code, manuscripts, presentations, and data analysis projects.

**XAMPP:**

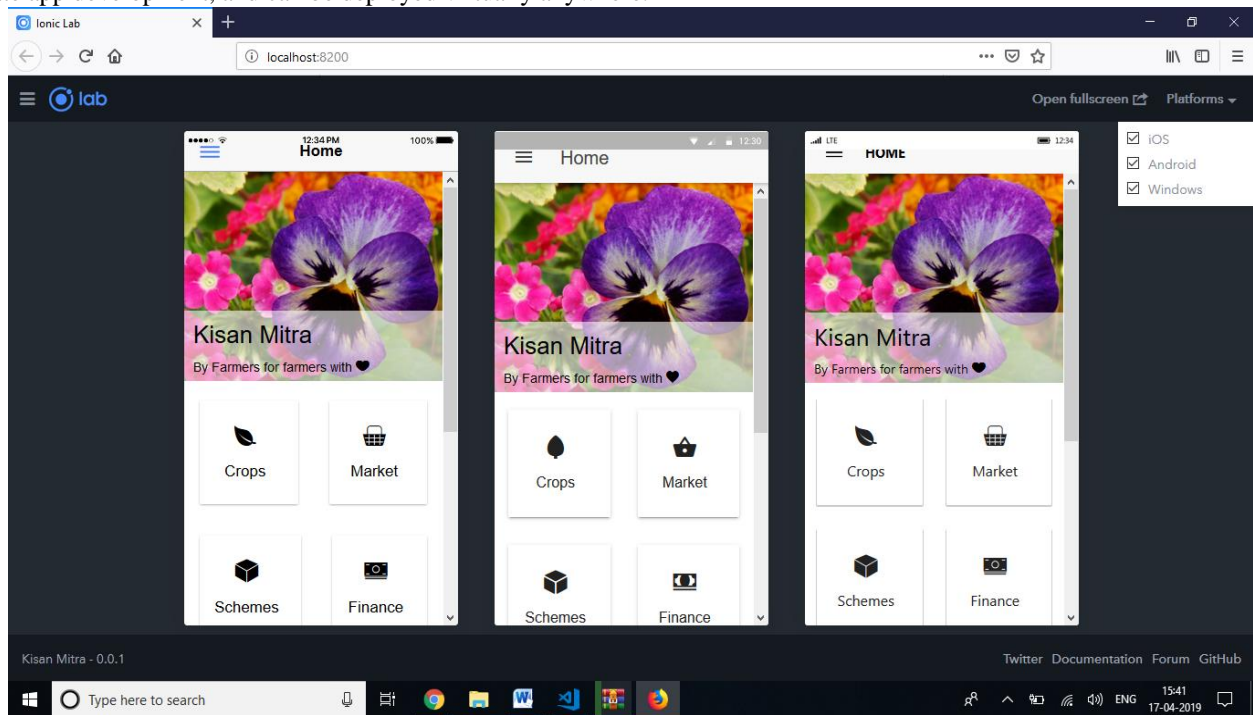
Is open source free software developed by Apache friends. XAMPP software package contains Apache distributions for Apache server, Maria DB, PHP, and Perl. And it is basically a local host or a local server. This local server works on your own desktop or laptop computer. You can just install this software on your laptop or desktop and test the clients or your website before uploading it to the remote web server or computer. This XAMPP server software gives you suitable environment for testing MYSQL, PHP, Apache and Perl projects on the local computer.

**Atom-IDE:**

It is a set of optional packages to bring IDE-like functionality to Atom and improve language integrations. Get smarter context-aware auto-completion, code navigation features such as an outline view, go to definition and find all references. You can also hover-to-reveal information, diagnostics (errors and warnings) and document formatting.

**IV. METHODOLOGY**

As Ionic Framework is the free, open source mobile UI toolkit for developing high-quality cross-platform apps for native iOS, Android, and the web—all from a single codebase as shown in the below screenshot. It is built with intuitive UI components that accelerate app development, and can be deployed virtually anywhere.

**Phase 1:**

The work here starts during the first time installation of our application. As shown in figure.1, It gathers the basic user information like Username, Password, Email, Phone number. It will be stored into server's database, Firebase database. So every time when the user tries to log in data username and password gets verified from server side.

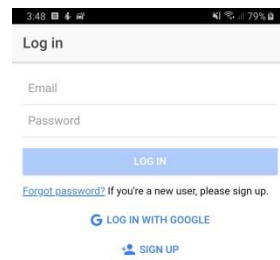


Fig.1. Username and Password Page

**Phase 2:**

As in figure.2 and Figure.3 The user has to select whether he wants to use application for Farming, Marketing, Schemes and Finances purpose as shown in figure. The Homepage also has Kisan Call Center and Agricultural department toll free number on screen for enquiry purpose.

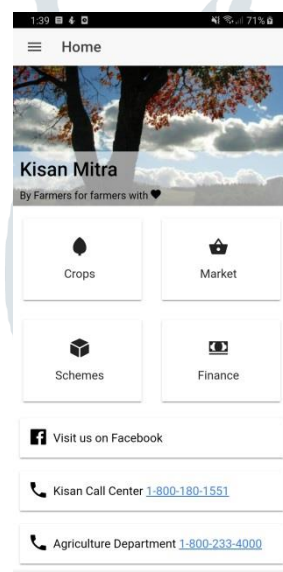


Fig.2. Home Page

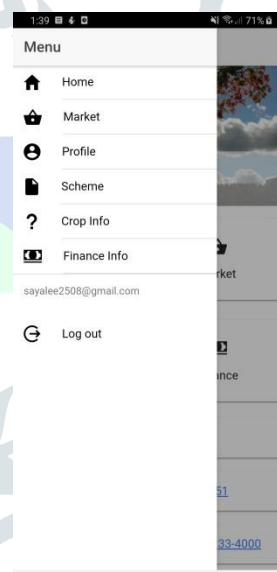


Fig.3. Side Panel

**Phase 3:**

1. User has selected Crop info as his option. In figure.4, figure.5 and figure.6, on opening Crop info section, the user searches for the desired crops for which he needs the information. The crop includes all kinds of vegetables, fruit and cereals, etc.
2. Once the crop is selected by clicking the Search Crop Info button which has dual functionality. As in Figure.7, On clicking it shows up the Maharashtra state map and the crop description.
3. For example, crop name = "Rice" on clicking on the search tab, the map section is opened with the districts where the rice cultivation takes place in Maharashtra.
4. In this it also provides crop description along with soil information.

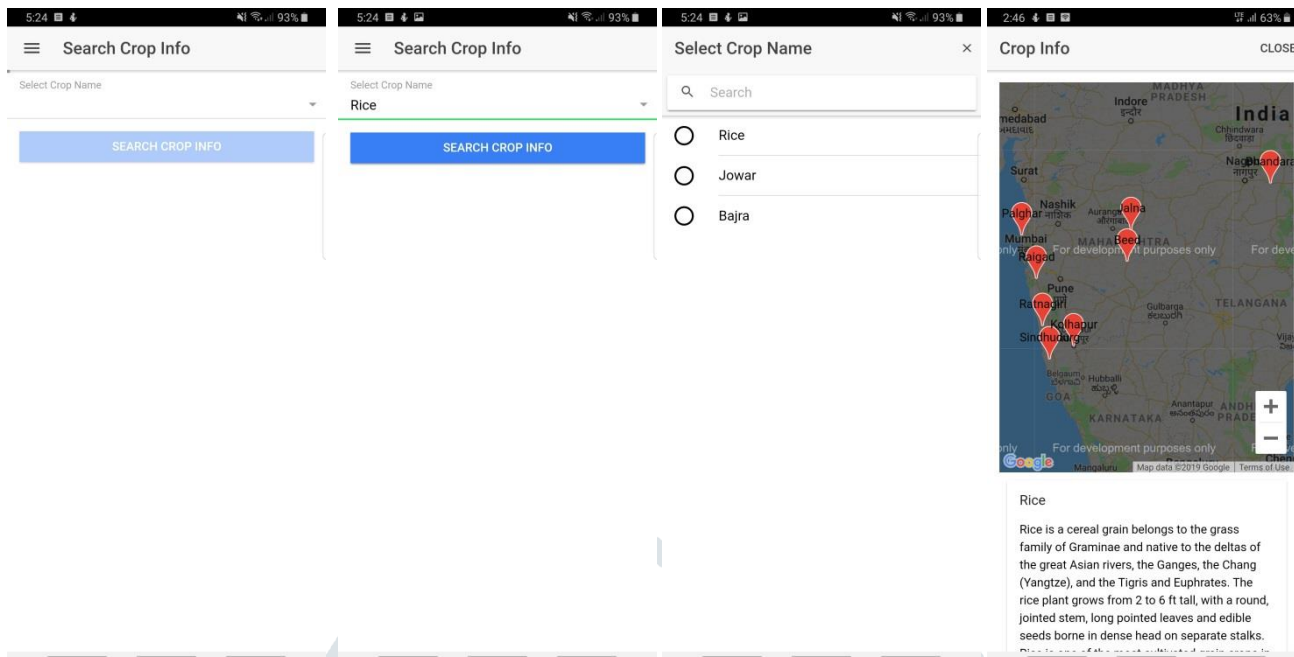


Fig.4

Fig.5

Fig.6

Fig.7

**Phase 4:**

1. User has selected Marketing as his choice from figure.2. On opening marketing section, the user is displayed with two ionic tabs “buy” & “sell”.
2. On clicking the “buy” tab as in figure.8, a user has to select his crop, select the price range at which rate he/she wants to buy and the availability on the basis of distance and on further clicking the location marker the description of the seller is shown as in figure.10.
3. On clicking the “sell” tab, a user has to fill the form which includes details about the crop, farmer’s address and price at which he wants to trade with the merchant/farmer which is shown in figure.11. As per requirements, nearby locations are shown on the map as in figure.9.

Thus the transparency between a farmer and a merchant is maintained.

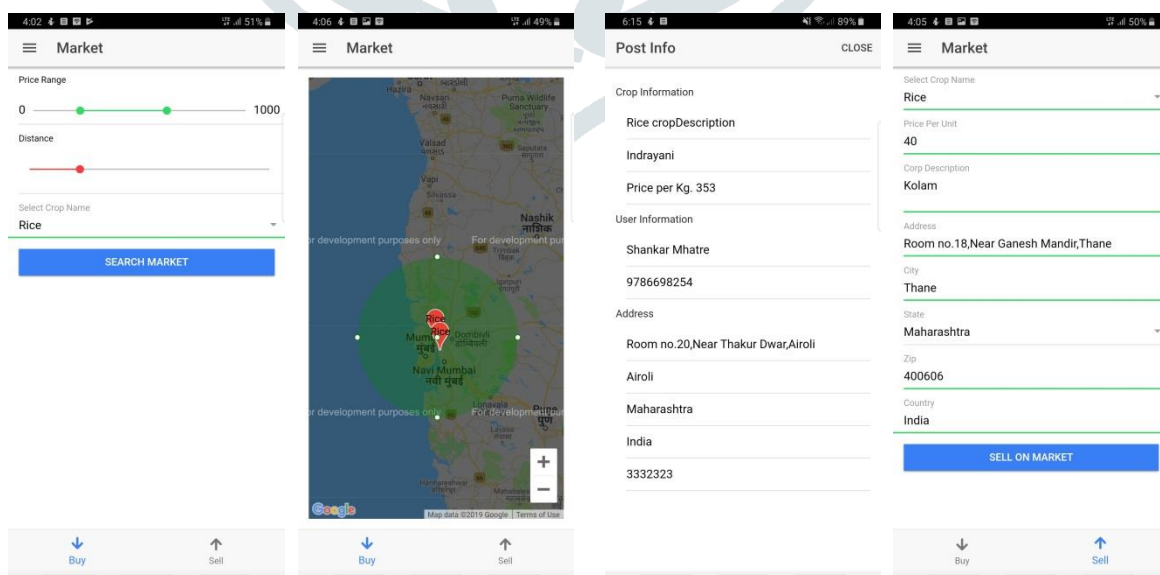


Fig.8

Fig.9

Fig.10

Fig.11

**Phase 5:**

User on clicking the scheme tab a new dashboard is opened with various government schemes as in figure 12.



Fig.12

**Phase 6:**

On Clicking Finances section, the user will get two options i.e. Insurances and Loans. On selecting the Insurances option the user will be available with all possible government insurances policies which are assured to the farmers in order to betterment of their future as well as profit in their farming production.

On selecting the Loans option the user is available with approved and verified banks that are providing loans and loan waiver for the farmers. The banks are government as well as other best private banks which are helping hand to the farmers.

**V. BUSINESS BENEFITS**

The designed system shall help stakeholders in agriculture, in the following ways:

- Enabling farmers to follow best practices in farming thus achieving higher yields in their farm produce.
- Informing farmers on key information about their area such as seeds, type of soil.
- The system also provides an advertisement platform on various farm inputs.
- Communicating with farmers in the language they best understand.
- Farmers are able to make better negotiations while selling their product to the supplier since they know the market rates of their product.

**VI. CONCLUSION**

This application intends to help farmers to make educated choices about the crop which he should plan to grow in his region. We have implemented features like information about crops, seeds; soil variety, government policies, schemes and price prediction which will help the farmer make a reasonable estimate of the price and yield they may get. The proposed application also helps the farmer in estimating crop requirements information such as water (both irrigation and rainfall), soil, humidity, pH value of soil, etc. It also makes sure that the crops suggested follow crop rotation patterns so as to make sure that the land remains fertile for long. Also, we have made sure that the farmers are suggested different crops to make sure that all the farmers are not growing the same crop leading to a drop in its price. With these features implemented we hope that the farmers will benefit from the tool and it will reduce the problem of crop insecurity and rapid fluctuations in market prices. Overall this system is faster, secure and comfortable. The profit gained from this type of information system to agricultural based state such as Maharashtra can be seen when it became operational as planters, importers, exporters, researchers, will have access to up to date information.

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