International Journal of Recent Technology and Engineering (IJRTE)
ISSN: 2277-3878 (Online), Volume-8 Issue-4, November 2019

M-Commerce for Agriculture Commodities using Android Application

R. Poorni, V. Sai Kumari, V. Sunitha, S. Bhuvaneswari

Abstract*: Agriculture is the art of cultivation on soil. Agriculture acts as the evolution in the rise of human civilization, whereby farming local species created food supplies that enabled people to live in cities. E-agriculture is recent term in the field of agriculture and rural development practices. It is the global body of practice where people exchange information and ideas related to the Information and Communication Technologies (ICT). The issue faced by the farmers in today's world is that they are not getting enough credits for their own crops. The middleman takes all credits in between the communication. Here, we develop a mobile app that establishes direct communication in between the merchant and the farmer with no middleman in act.

***Keywords*: E-agriculture, Information and Communication Technologies (ICT), M-Commerce, One Time Password (OTP).**

I. INTRODUCTION

The Indian economy is grappling with inflation, with the Reserve Bank of India trying to curb the problem through continuous monetary tightening. In the quarter to June, inflation has remained at an elevated level, resulting in a 75 basis points (bps) hike in the repo and reverse repo rates.

Food inflation continues to remain a key worry and a check on the food supply chain reveals structural problems that are unlikely to go away in the near term.

But over the years, the system has created several layers of intermediaries, lengthening the supply chain and increasing the opportunity for cartels to form, which in turn drive prices down for farmers and up for consumers. Removing fruit and vegetables from the control of these committees would allow the produce to find its true market value and damp down inflation, according to analysts.

Many of these intermediaries provide money in advance to the farmers to cover cultivation costs and recall their loan in the form of produce after the harvesting. Unless the big retailers decide to take the same approach and provide advances in terms of credits, equipment and seeds to the farmer, the dominance of middlemen will continue.

Our proposed solution aims to solve this issue by establishing a direct contact between the farmer and the merchant, so that the requirement of a middleman is removed. The solution aims to do so by providing an application which connects farmers to the sellers directly by providing information with respect to the nearest farmer and also determined by the type of goods they sell.The main idea is to establish the communication between the farmer and the merchant. The effective communication will take place between the farmer and the merchant without any involvement of the middleman or the agents. The merchant deals with the farmers regarding the crops and its cultivation details. In this application, the farmer enters the details of his crops and it is posted on the application. The merchant can get access to the crops details along with the details of the farmer if needed. The farmer enters the cost for the crops grown and it is communicated directly to the merchant.

The application deals with the OTP verification for both the farmer and the merchant so as to verify the users. The details of both the farmer and the merchant are stored in the MYSQL QUERY processor. The main issue with the current system is that the farmers are not getting enough paid for their commodities.

II. LITERATURE SURVEY

Shalinda Adikari[2], et al (2010) through their paper, "*Using a dynamic smarm of intelligent agents for advising farmers-agro agent*", International Conference on Computer and Automation Engineering (ICCAE) put forth the objective to develop an AI that makes farmers aware about the quality of fertilizers, pesticides used for cultivation. Here, in this system they used E-SAGAR and Expert system. Networking was used to bridge all agricultural information system. JADE test suite was also used to check the quality of the system. If a farmer opting a particular fertilizer the agro agent also advice to use the same fertilizer then the accuracy is 100%. Lack of standard of the products like fertilizer, pesticides has become an issue for the farmers. Scarcity of sources of information is the real issue.

S Sivakumar[1], et al (2016), through their paper, "*Indian Agricultural Commodity*", Science Direct Modern Agriculture put forth the objective to make farmers aware about the prices of their commodities. Due to the change of market price for crops, the farmer keep on selling products for the lower rates which results in the loss.

Manuscript published on November 30, 2019.
* Correspondence Author
Ms. R. Poorni*, Assistant Professor, Department of Computer Science and Engineering, Easwari Engineering College, Chennai-600089 , Tamil Nadu, India.
Dr. V. Sai Kumari, Professor, Department of Management Studies, Easwari Engineering College, Chennai-600089, Tamil Nadu, India.
Mrs. V. Sunitha, Assistant Professor, Department of Management Studies, Easwari Engineering College, Chennai-600089, Tamil Nadu, India.
Ms. S. Bhuvaneswari, Assistant Professor, Department of Computer Science and Engineering, Easwari Engineering College, Chennai-600089, Tamil Nadu, India.

In this project SQL developer, SQL DBMS tool, NCDEX, APMC techniques are used to develop databases and to fix the daily market price for the crops. The main idea is to develop farmer network by carrying out a detailed survey and creating a database.

Even though there are many more advancements in the field of agriculture, making technology reach farmers has always been the major issues. Soil test not done properly, Estimation of materials to be used for the production of crops is wrongly calculated are the major issues faced.

H. Erden[4], et al (2015), through their paper, "*A unique model for mobile registry*" Fourth International Conference on Agro-Geoinformatics, Istanbul, put forth the objective to develop a Mobile registry application to maintain records on farmer's lands, crops, livestock, assets, machinery equipments, buildings and warehouses. This system is managed by FADN, to daily update the details using mobile app. Identification and classification of the farm, Breakdown of the farm area: owned, rented or sharecropped.

Uwe A. Schneider [7], et al (2011), through their paper, "*Impacts of population growth, economic development, and technical change on global food production and consumption*", Science Direct on change of global food production propounded the statement that the humans will be demanding food from the limited water and land resources. This research found that the food impacted four different development cases from the Millennium Ecosystem Assessment. Partially and jointly considered are land and water supply impacts from population growth, and technical change, as well as forest and agricultural commodity demand shifts from population growth and economic development.. The income plays a major role in impacting food demands. Simulations with a global, partial equilibrium model of the agricultural and forest sectors show that per capita food levels increase in all examined development scenarios with minor impacts on food prices. Global agricultural land will shot up to 14% between 2010 and 2030.

James W. Jones[6], et al (2015), through their paper, "*Brief history of agricultural systems modeling*", Science direct on developing the agricultural systems propounded the objective that agricultural systems science provides knowledge that permits researchers to consider complex problems or take decisions in agriculture. The history of the science explains the diversity of systems on which they operate. Modeling has been done by scientists across various disciplines, which have developed systems and tools for the past six decades. Agricultural scientists considering the "next generation" models, data, and knowledge products currently should study the complex systems problems faced by the mankind. In the end, we summarize the history of agricultural systems modeling and identify the lessons learnt that can help to design and develop the next generation agricultural system tools and methods. Characteristics of agricultural systems models are different across the current systems, their scales and different purposes that motivate their development and it is used by the researchers in different streams. Recent trends in broader collaboration across institutions, across disciplines, and between the public and private sectors suggest that the stage is set for the major advances in agricultural systems science that are needed for the next generation of models, databases, knowledge products and decision support systems. The lessons from history should be considered to help avoid roadblocks and pitfalls as the community develops this next generation of agricultural systems models. To show Characteristics of agricultural systems models have varied widely depending on the systems involved, their scales, and the wide range of purposes that motivated their development and use by researchers in different disciplines.

Dr. D. Ashok Kumar [3], et al (2014), through their paper, "*A Survey on Data Mining and Pattern Recognition Techniques for Soil Data Mining*", Science direct on data mining in the modern agriculture systems implemented the objective that data mining has become the major research domain in the recent times. In the past years researches were computed manually. It also led to the advancement of storage where it provided a larger data storage capacity. The analysis of the data sets acquired in the recent researches will yield outcomes useful for the researcher.

Geoff Kuehne [5], et al (2016), through their paper, "*Predicting farmer uptake of new agricultural practices*", IEEE Transactions on tool for research, extension and policy, propounded the objective that there are many advancements in the field of agriculture over the years that also includes agricultural practices but still only few were able to ADOPT to that. ADOPT (adoption and diffusion outcome prediction tool) influences major factors such as the rate and peak level of adoption. It helps in framing a conceptual framework that includes economics, risks and farmers networks, practices they carry out. It provides prediction and analyze the speed and the peak level of adoption. It is designed in order to increase the concept behind the process which might as well includes agricultural research development extension and policy.

III. PROPOSED SYSTEM

In the proposed system, the farmer has to register on the application by entering the required personal information is shown in Figure 1.. Information is stored in a centralized server which the application is connected by a network. The farmer then logs into his/her account by entering the phone number and receiving the OTP. The farmer then inputs crop information such as cost, location and name of product. This data is stored in a SQL CLOUD. From the merchant's side, the information is readily available on the client side and the merchant is routed to all the farmers nearby to his/her location. This is achieved through mobile interface connected to a centralized server. The application is written in Eclipse with the codebase as JAVA, which covers about 80-90% of the market. The form factor is set to lowest possible version, so that it can cover older versions of the OS.

Cost of the product is set and controlled by farmers, and verified by the system. The cost is regularly updated based on quarterly change in demand and supply. This updation can be viewed by both the farmer and the potential merchant.

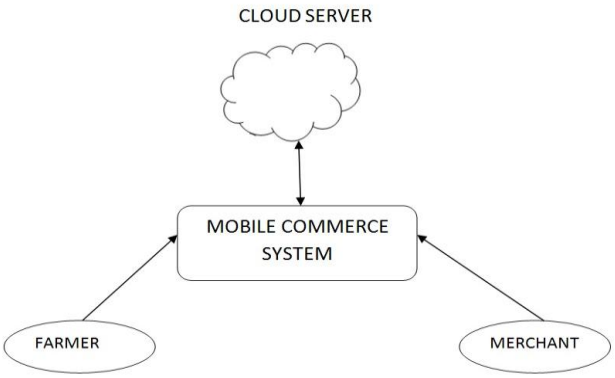

Figure 1. System Architecture

A. Functional Architecture

The farmer should register his details in the android app using his contact details. The OTP is generated every time the user login to the system to ensure privacy and security. Two seasons are given as choice for the user to register his/her crop details.

The database keeps on getting updated and can be seen through MY SQL QUERY BROWSER.

The details are shown to the end users/merchants for their convenience of purchase is shown Figure 2.

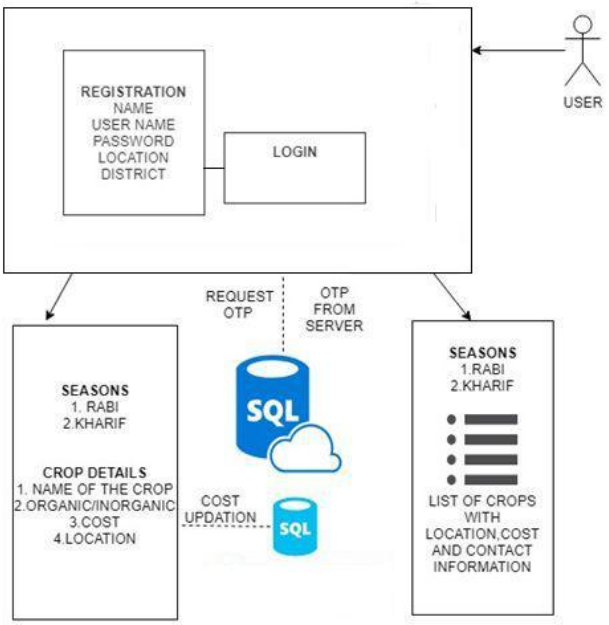

Figure 2. Functional Architecture

B. Farmer

The android app named as FARMER was developed in order to establish a connection between the farmer and the merchant without any intervention of middle man. The main purpose of this app is to get the right price for the agricultural commodities. The price of the crops is fixed by the farmer himself. The farmer registers his name and te contact details along with the details of the crops. During registration the farmer shares his location of the crops so that it becomes easy for the end user to locate the crops. The farmers himself fix the price for his commodities. In this application, the farmer during registration is allowed to enter details of the crops and also his information. This application is developed in eclipse is shown in Figure 3 and Figure 4.

At the time of registration to avoid confusions the farmer are given OTP number for the login credentials. In this app there is special call feature is added so as to inform the prices fixed by the government for selling purposes.

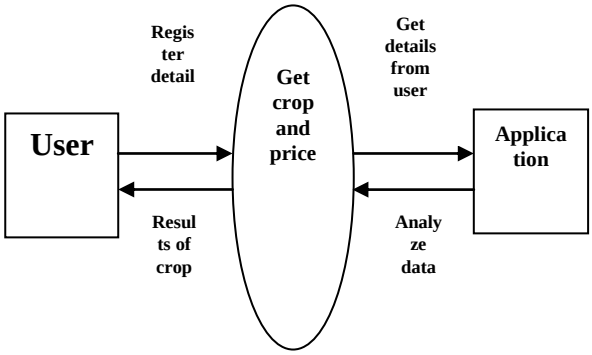

Figure 3. Farmer

C. Merchant

The end user or the merchant is the person who searches for the crops for the reasonable cost. This app provides details about the crops and its cost.

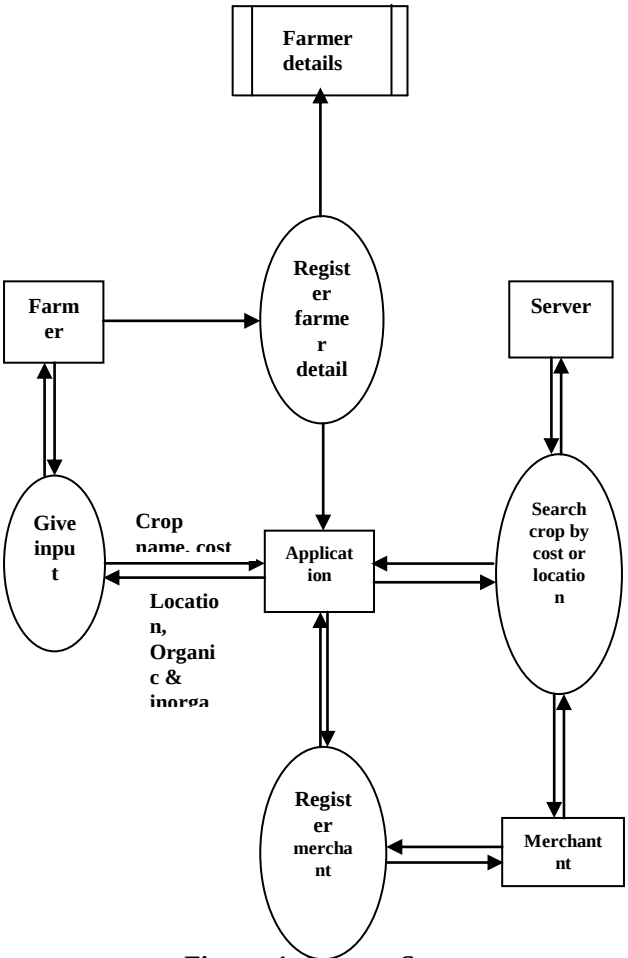

Figure 4. Farmer System

The location is however shared by the farmer himself it becomes easy for the merchant to locate. The merchant fetches the contact details in order to have a direct communication with the farmer. The merchant details are stored in the MYSQL QUERY BROWSER along with the credentials. In order to enhance the security the merchant is also given OTP during his login. Here the communication is taking place directly in between the farmer and the merchant. So any grievances can be directly communicated in between them. This app was developed in order to provide a comfortable trading between the farmer and the merchant without any middleman.

IV. SYSTEM IMPLEMENTATION AND PERFORMANCE ANALYSIS

In the proposed system, the farmer enrolls his details into the system database and then he logs in to the system using the registered mobile number. Then farmer receives an OTP from the server for the verification purpose. The farmer then enters the details of the crop along with the price and its location. To know the exact market price of the crops, the farmer uses the toll free call option. Merchant enters his details in the system database and logs in to the system using their registered mobile number. The merchant receives an OTP from the server for verification. Merchant after logging on to the system successfully, searches for the location and he gets the information about the crops available in that particular area.The performance analysis is based on a comparison between existing systems and the proposed system. The comparison takes three metrics into consideration, namely Prediction rate- The rate at which the algorithm is able to perform sequential predictionsIn this comparison, the proposed system is compared with the existing system is shown in Figure 4 and Figure 5.. Both the systems were developed in order to help farmers understand the value of their crops in the market. Both the systems showed a drastic difference in terms of performances such as the speed on which the application performs. The following graph was developed based on the comparison between how both the systems perform inside the application.

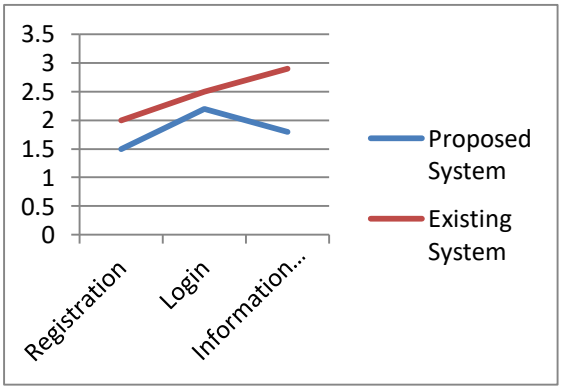

Figure 4. Merchant

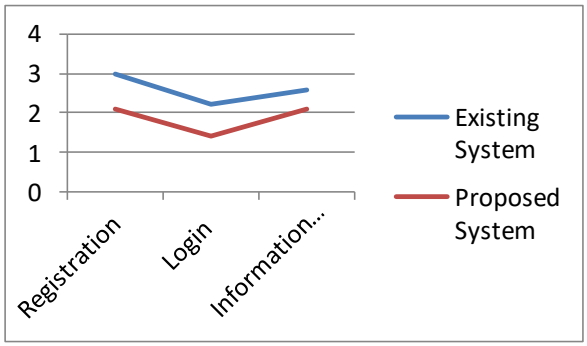

Figure 5. Farmer

V. RESULTS

This mobile application based on Android system was developed in order to facilitate farmers in such a way that they are earning the profit for their own commodities without any intermediate agent involving in the trade. The merchant can easily find the crops he requires and this interface allows the merchants to directly communicate with the farmers directly as the contact details of the farmer is shared when searching for the required crops. This mobile application fills the void that had been created for years with the involvement of the agents and stealing their cost. The farmers directly communicate with the customers regarding the cost of the crops and the quantity available.

VI. CONCLUSION

In this system, the application is created in such a way that there is no middleman involvement in the trading process. As a result, the profit is directly reached to the farmers. The contact details are shared between the farmer and merchant for the business purpose. The farmers are the backbone of the country they say, but they are the ones getting paid lesser because of the people involving in the middle of the transaction. This needs to be changed. Our aim is to provide the basic interface for the farmers so that they can sell their own commodities for their own fixed cost and the deal is done directly between the farmer and the merchant.

REFERENCES

1. S Sivakumar, et al (2016), “Indian Agricultural Commodity”, Science Direct Modern Agriculture, pp 145-148.
2. Shalinda Adikari, et al (2010), “Using a dynamic smarm of intelligent agents for advising farmers-agro agent”, International Conference on Computer and Automation Engineering (ICCAE) on Smart Agriculture, pp 261-268.
3. Dr. D. Ashok Kumar, N. Kannadasan, et al (2014), “A Survey on Data Mining and Pattern Recognition Techniques for Soil Data Mining“, Science direct on data mining in the modern agriculture systems, pp 17-19.
4. H. Erden and C. B. Özcanli, et al (2015), "A unique model for mobile registry," Fourth International Conference on Agro-Geoinformatics, pp 237-239.
5. Geoff Kuehne, Rick Llewellyn, David J. Pannell, Roger Wilkinson, Perry Dollingd,, Jackie Ouzman, Mike Ewing, et al (2016), “Predicting farmer uptake of new agricultural practices”, IEEE Transactions on tool for research, extension and policy, pp 75-78.

6. James W. Jones , John M. Antle , Bruno O. Basso , Kenneth J. Boote , Richard T. Conant , Ian Foster , H. Charles J. Godfray , Mario Herrero , Richard E. Howitt , Sander Janssen, Brian A. Keating , Rafael Munoz-Carpena , Cheryl H. Porter , Cynthia Rosenzweig, Tim R.Wheeler, et al (2015), "Brief history of agricultural systems modeling", Science direct on developing the agricultural systems, pp 251-264.
7. Uwe A. Schneider a, Petr Havlik b, Erwin Schmid c, Hugo Valin b, Aline Mosnier b, Michael Obersteiner b, Hannes Bottcher b, Rastislav Skalsky d, Juraj Balkovic d, Timm Sauer a, Steffen Fritz et al (2011, "Impacts of population growth, economic development, and technical change on global food production and consumption", Science Direct on change of global food production pp 625-628.