# A Model of ICT-based Mobile Application for Maize Smallholders in Loilem District

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***Abstract*— Agriculture is an important sector in developing countries where the majority of rural population depends on it. Among them, maize production is the major farming in Loilem District of Shan State. ICT based agricultural knowledge management can increase production and productivity of maize smallholders in Shan State. In the recent past, the maize farmers are difficult to get the desired information and services related to farming. On the other hand, those in change of the agricultural sector in Loilem District cannot timely distribute and updated information to farmers such as new varieties release, emergence of new threats or diseases, how to protect from bacterial attacks, weather forecast, pricing control and warning alerts etc. Nowadays, mobile devices are used by everyone, including farmers and people living in countryside. So, this paper proposes a mobile based application for maize smallholder to help them in their maize production activities which include maize production information, new products, weather update, daily market prices and news of latest information.**

***Keywords*— ICT, Agricultural Farming, Information Retrieval, Three Tiers Architecture, Mobile Application**

## I. INTRODUCTION

Information and communication technology in agriculture (ICT in agriculture), also known as e-agriculture is developing and applying innovative ways to use ICTs in the rural domain, with a primary focus on agriculture. ICT in agriculture offers a wide range of solutions to some agriculture challenges. It is seen as an emerging field focusing on the enhancement of agricultural and rural development through improved information and communication processes. In this context, ICT is used as an umbrella term encompassing all information and communication technologies including devices, networks, mobiles, services and applications. More specifically, e-agriculture involves the conceptualization, design, development, evaluation and application of innovative ways to use ICTs in the rural domain. Provisions of standards, norms, methodologies and tools as well as development of individual and institutional capacities, and policy support are all key components of e-agriculture. ICT tools such as mobile applications and data collection systems could play a critical role towards meeting the validity, integrity, precision, reliability and timeliness of data quality standards. Moreover, ICT can help the projects by making the process faster while providing higher data quality with fewer staff. Rather than spend days or weeks manually transcribing data from paper surveys into a spreadsheet or database, mobile data collection tools enable direct transfer of data to central databases where data can be immediately analyzed and acted upon. Several mobile data collection tools are now available and work in both online and offline modes. This enables field workers to collect data in remote areas and then synchronize the data into a cloud database when they return to an area with connectivity. In online mode, when the mobile device is within range of a mobile phone signal or connected to the internet that data can be automatically transmitted to the server. Mobile tools also enable regular feedback and early insights that can be applied immediately for greater impact. Using these tools also allows timely data mining to monitor trends

to inform program design and direction. The use of a mobile application for monitoring and evaluation can play dividends beyond a single project. Survey designs, data definitions and standards developed on one project can potentially be leveraged on other projects, reducing the need to reinvent the wheel on each project. In Myanmar, the people has seen massive growth in internet penetration, mobile phone adoption and social media usage in the past few years. The consumer market in Myanmar has essentially bypassed the development stages seen in other economies and moved straight to digital, mobile and internet-enabled businesses.

## II. Related Work

Some papers emphasize on their countries using their languages. Maize farmers in Loilem district, require information at the right stage of life cycle of farming to take right decision. This paper intends that user can interact with system and result back with their desired agricultural information in Myanmar language text. The agricultural experts can advise the required possible solution for infected crop. Some farmers who are living in villages' rural areas can communicate with those in agricultural sector using this system in their mobile phone. In [5, ]Bill and Melinda Gates, the founder of GLCI joined with the CRS's chief knowdedge officers, NetHope and Intel to lead to a proposal for M&E system with an ICT solution. They gained approval to shift their M&E and logistics budgets to fund an ICT component at no additional cost. The participants can complete learning assignments, quizzes and tests via Agilix Learning Management System (LMS) called Go Courses. They realized that the value of ICT was not simply to enable faster, better, paperless data collection but to analyse and derive greater meaning from the data.

## III. Existing System

In agriculture sector, there is lack of information concerning with the maize smallholder. So there is a problem to analyse the previous history under certain criteria. If this sector can get the right history dataset, they can predict the rate of maize production of Loilem district in future.

## IV. Proposed System Architecture

In this system, there are two sorts of users, the farmer and the agriculturist who will be using the system through a mobile phone or even they can use this system through a web browser in a machine or laptop. The model offers an interaction platform between the farmer and agriculturist. Three tiers architecture is based in this system which includes the mobile user, web server and database server.

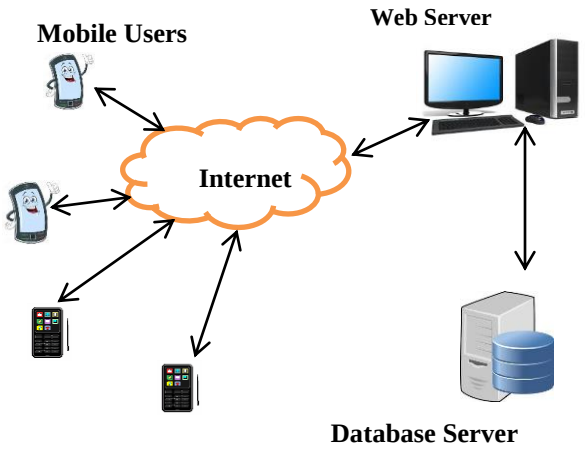


**Figure1: Three Tiers Architecture**

In this system, there are five sections which are described as follows:

1.Maize Smallholders Registration and Login
Every farmer needs to register and login into this system. Once they login they can access various features such as basic information, weather update, market price, news and how to protect from diseases via this application.

2. Notification
Notification and desired information passed from agricultural sector can be accessed, so it can be a bridge between rural farmers and the agricultural sector.

3. Weather Information and Market Price

The farmers in different townships in Loilem district can know the weather information and maize's market price in right time. Both the quality and efficiency of agricultural operations can be enhanced.

4. Prediction for Maize Production

This is the main sector of maize production for both the maize farmers and the agriculture service providers. The prediction will be based on observable criteria such as soil, rain, weather information, fertilizer and types of maize of past values or histories dataset. By analyzing these valuable dataset, the farmers and the agricultural advisors can guess the prediction of maize production in future.

5. Manage about Information

At the side of agricultural sector, they can be able to edit the information, notification and instruction for farmers. Moreover, they can view the same functions like the farmers.


**Figure2: Home Screen for Maize Farmer**

## V. CONCLUSIONS

This system will be beneficial to access the information easily and quickly in right time through this application. By using local language, the maize farmers in Loilem district can use the application conveniently. This model is the initial step not only to help maize farmers but also to give and collect the required data for future prediction of maize production. So, long-term experimental, economic and environment factors are valuable in testing and refining the prediction model.

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