COMP493 PROJECT PROPOSAL TITLE: E-EXTENSION WEB PORTAL

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ABSTRACT

The E-extension web portal is a responsive web application that connects both the extension officers and farmers. It allows the sharing of relevant information from the extension officers and also allow farmers to ask questions on the platform and receive the accurate response. The application is aimed to complement the traditional extension model in the country by accelerating access of relevant needful information to farmers. This applies especially to the information that does not need in person training on the farm. Through this application, the information can be spread throughout the country even to those farmers in the remote areas.

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Chapter 1: Introduction

E-extension, also known as Cyber extension, is the use of the Cyber space to deliver agricultural extension services. While Agricultural extension is the delivery of agricultural information, knowledge, innovations and prompt advisory service to farmers. Agriculture is a major pillar in Kenya's economic development directly contributing 26% of the Gross Domestic Product(GDP). The sector also employs 70% of rural labor force in small scale farming yet most of them still live below the poverty line.

According to the government report, Republic of Kenya(2010), agricultural sector extension service plays a key role in disseminating knowledge, technologies and linking farmers with other actors in the economy. The report further notes that extension is one of the critical change agent required in transforming subsistence farming to a modern and commercial agriculture to promote household food security, improve income and reduce poverty. The International Food Policy Research Institute (IFPRI)-(2018) also posits that agricultural extension (also known as agricultural advisory services) plays a crucial role in promoting agricultural productivity, increasing food security, improving rural livelihoods, and promoting agriculture as an engine of pro-poor economic growth.

The project aims to build an interactive agricultural extension and advisory services web consultation portal. The platform will allow extension officers distribute the necessary information to farmers and also allow farmers to ask questions about their farming issues and challenges and receive response from the extension officers.

Overview and Literature Review

On the section of interactive agricultural extension and advisory services provision, very few companies exists offering the same information. The companies that exists currently are weFarm which is a global company with country branch also in Kenya and another one is M-Omulimisa which is Ugandan based. Both companies currently operates only through the free based mobile SMS services with farmers in the exchange of information.
M-Omulimisa in Uganda connects extension officers to farmers and provide a room for extension officers to disseminate necessary information to farmers and also allow farmers to ask questions and receive replies from extension officers. weFarm on the other hand connects farmers all over the world and allow them to share information, tips, ideas, ask and answer questions among themselves based on their experiences through free mobile SMS.

This project's approach integrates both the use of extension officers in the nation for the dissemination of necessary information to farmers and also responding to farmers queries but also allow farmers to share knowledge, tips and even answering some general questions based on their experiences over the web and

soon also through the use of free SMS. This application will be Kenyan Based and therefore, most likely to meet the immediate needs of Kenyan farmers.

Problem Statement

Access to extension services to farmers is one of the key reasons why Kenyan smallholder farmers are still producing low quality yields and living below the poverty level. Smallholder farmers are in dire need of extension services which have not been met by the present extension model in the nation. This has been as a result of very few public extension officers with very many farmers, one extension officer is approximated to serve 1500 farmers spread in an area. With this scenario, most farmers lack access to personalized extension services that would help them grow through agriculture.
Further more, farmers in remote areas and those areas with low potential yields are starving of the extension services as those areas are too far and will be highly costly for extension officers to travel to even especially with poor transport system.
Continuation of this scenario will be a major hindrance to the achievement of Kenya's Vision 2030 which puts agriculture among the priority areas in an effort to bolster the country as a middle income economy.

Justification

The project is necessary to complement and boost the currently available extension service model delivery in the country so as to accelerate the transmission and reception of relevant, actionable and timely information between farmers and the extension officers. The project will allow farmers to easily access extension services hence will scale up their productivity with increased yields, enhance food security in the nation and provide employments and income generation opportunities to many more farmers in the nation.

Objectives

1. Allow extension workers to distribute information that farmers need over the platform for example about the right seedlings for the season, modern methods of farming, both physical and virtual training sessions for farmers.

2. Allow farmers to ask questions and receive accurate and appropriate replies from a pool of both extension officers and other farmers who might have encountered the same situation and succeeded in solving it, for example about appropriate method of storage and preservation of a particular yield.

Chapter 2: The Proposed Solution

Kenya has an internet penetration rate of 85%, and therefore the use of internet as a tool for agricultural extension service delivery will reach many farmers. The project intends to provide a web platform that can be accessed by farmers via

both personal computers and mobile phones in accessing extension services especially those that doesn't need one on one on farm training but is needful for their farming ventures.

The projects aims to pool together extension officers from both the government and private sector together with farmers all over the nation to allow ease exchange of agricultural information for the national development. This will allow farmers to have access to accurate information as per their locality without much confusion as extension officers from their locality will be their to ascertain the information shared.

The current competitor in this model are the WeFarm which uses SMS services to connect smallholder farmers in sharing information globally. The newly to be created platform make use of extension officers who can ascertain information shared for accuracy of use in different locality in the nation.

The Methodology

The e-extension portal aims to meet the information needs of farmers in the country especially from the extension officers. Remote farmers who could not benefit from the extension officers in the nation will now have access to the agricultural extension services online which are personalized as per their needs.

The e-extension portal will be implemented using agile methodology incorporating both digital agriculture researchers in the nation, extension officers from the national government and private sector and farmers within the nation.

Project Scope

The e-extension portal to be developed will be focused only on the interactive exchange of information between agricultural extension officers and farmers via multimedia format. The public extension officers will be able share extension information that are of a concern in a particular county, sub-county, ward or even of a national concern to the respective farmers; farmers can make inquiries both privately or publicly to either a public extension officer of the locality or any in the nation, or to any of those in the private sector or to any one in the platform and will be responded appropriately.

Resources

The e-extension web portal will be developed using the open source resources available to the public. The front-end will be developed using the React framework integrated with bootstrap; the back-end will be developed with the Django web Framework and the PostgreSQL for its DBMS.

The System will also need incorporation of the digital agriculture researchers in the country, both public extension officers and private extension officers with support from their respective firms or agencies and also farmers who will be the

primary beneficiary of this system in its development to be able to meet the market needs appropriately.

Standards

The E-extension portal is expected to be accessed over the internet, as it will be a responsive web application via any operating system in a Personal Computer or on the mobile phones. The first version will support only PCs and smart phones, but soon through the SMS services, any phone will be able to access the portal. Basic computer skills will be needed in accessing the portal.

Chapter 3: Preliminary Results

1. Broad-based delivery of extension services as many farmers will be reached by the extension officers with the information as compared to the use of only the traditional approach. Both farmers from the very remote and low yield areas which have often been neglected will be reached.

2. Farmers will receive quick responses to their information needs. As they can freely post their questions and receive responses immediately from extension officers and farmers online.

3. There will be reduced operational cost for extension officers especially the transport costs and the daily usage like lunch for just delivering information that can be delivered virtually online without the necessity of the in person approach.

4. There will be increased yields to smallholder farmers because of the ease access to the relevant, accurate and timely information to farmers. This will also lead to food security in the nation without us having to import basic agricultural products like maize.

5. Agriculture will become a good source of generating income to farmers due to access to proper production techniques and information of the market to sell their products from the extension officers.

Chapter 4: Challenges, Obstacles and Risks

1. Poor or complete lack of mobile coverage, electric power and internet in some regions of the country. This may hinder farmers from effective use of the e-extension portal. We believe that with continuous government's efforts and companies in the private sector to increase the coverage of mobile network, electricity and internet, all farmers will come to enjoy the benefits that comes with the e-extension portal.

2. Illiteracy among some farmers in the country which might hinder them in the usage of the application. In the efforts to market the application, we'll also make

efforts to spread the basic digital literacy among the farmers in the remote areas to allow them use the application comfortably in accessing the information they need.

3. Ensuring harmonious collaboration of the extension service providers both from the government and private sector in achieving a common goal while still maintaining their income stream from the farmers' market share. Clear consensus with the providers on how all of them can benefit especially from the data analytics from the farmers queries and necessities shared on the platform will allow the interested parties to work together. Also, there will be policies and guidelines on the use of the platform to ensure standards on service delivery to farmers without exploitation of any form.

Chapter 5: Schedule and Budget

Project Schedule

E-extension Project Schedule
Read-only view, generated on 30 Aug 2021
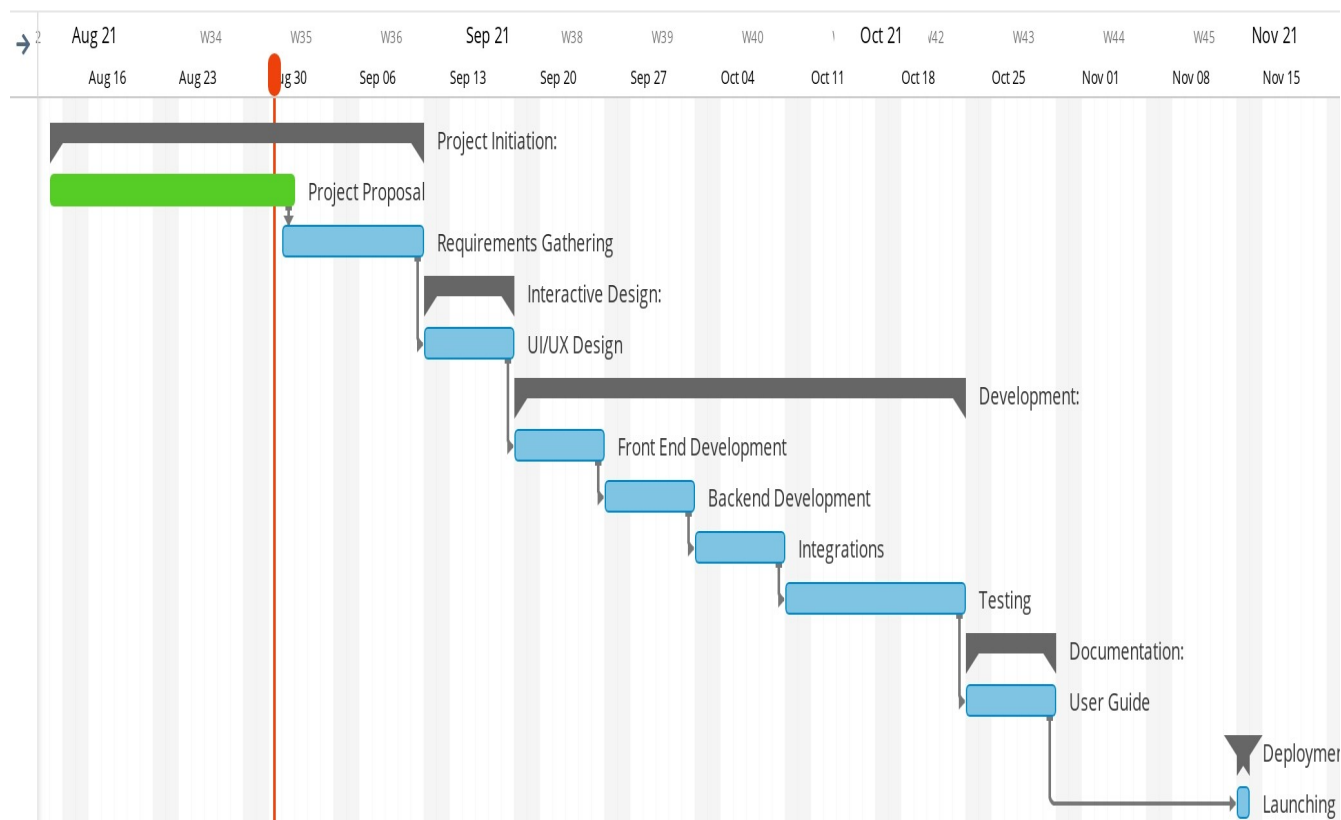
Budget

The development of this first release e-extension portal is estimated to take a total Sh 25000.

Research and traveling expenses – Sh 5000
Internet Bundles – Sh 5000
Upkeep – Sh 15000

Chapter 6: Conclusion and Future Works

The first initial version of this project will be implemented as a responsive web based application accessible by both personal PCs and smart phones.
In the future the project is expected to be improved in the following ways:

1. Creating a separate area for extension officers also to connect in asking questions to agricultural researchers. Who also can be sharing with them information on technical training pertaining extension as per development.

2. Creation of a mobile version of the application. (android, ios or flutter).

3. Having an SMS Gateway connected with the application which can supports texts from farmers through SMS as they ask questions and receive answers from experts around.

4. Use of Natural Language Processing to allow multilingual support use of the system especially for Kiswahili language in order to reach many farmers.

References

Republic of Kenya. (2010). Agricultural Sector Development Strategy 2010-2020. Nairobi: Ministry of Agriculture,Agricultural Sector Coordination Unit (ASCU).

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[Online]Available:http://www.ifpri.org/topic/agricultural-extension