**AgriTeck**

**Scope of The Project**

**Problem Statement**

Food is one of the basic necessities of human beings and it stands first among all the basic needs. Men and women struggle to feed their families and nutritious meals. According to the UN biochemistry humans depend on plants for most of them are foods. This has made plants one of the main targets for improving food security in every economy. Majority of the working population in developing countries grow crops for living.

Despite all the struggles of men and women to get a nutritious meal. 690 million people still go to bed on an empty stomach each night as a result of low food productivity and post harvest loss. Unfortunately the food we produce in our farms are declining in productivity or quantity. Some major reasons for the low productivity are improper agricultural practices from the farmers' side, inability to detect pests and diseases at its early stage, announced climate changes,natural crises such as covid 19 and many more.

More than 60% of the population of sub-saharan Africa is smallholder farmers and about 23% of sub-saharan Africa’s GDP comes from agriculture. Yet, the majority of the people who live in extreme poverty are the smallholder farmers due to the conditions such as unstable market prices, cost of farming, lack of internal and external support from investors for farm in large quantities and many more.

There is no stable market for the farmers after harvesting. Farmers have direct links with middlemen only. The middlemen always cheat the farmers by proposing their own prices on the products and threatening the farmers with the harvest being waste without them. This forces the farmers to sell their products at a very low price and at the end they get few or no profit at all.

There are not enough officers to monitor farms and farming practices. In Ghana there could be only one officer assigned to a whole district. They just inspect a few farms and submit false reports. Farmers do not get enough support from the NGO’s and investors. There is no proper information on farms for stakeholders to track and invest in the farms.

According to the WHO 60 million people fall ill after eating contaminated food and 420,000 die every year. Children under 5-years carry 40% of the food borne diseases burden with 125,000 deaths every year. Research shows that the main source of food contamination is the farm practices and chemical applications.

Lack of financial support forces farmers to buy cheap chemicals from unlicensed vendors. Again, due to the ineffective monitoring and education for farmers they apply wrong and hazardous chemicals to the crops at the wrong time. Most of the food we produce is contaminated with chemicals which are applied to crops to boost productivity.

**Solution**

Agriteck is an all round user friendly tool built to reduce poverty, hunger and improve the health of good people in Ghana, Africa and the world at large.The system is segmented into two main subsystems that is the Web Dashboard and the Mobile App.

The Web Tool is a dashboard that will be used by **Agricultural Officers** to manage and monitor farmers and their activities, track farms and farm inputs, and respond to complaints from investors and marketers.

The mobile app is used by three categories of users thus the **Framers, Investors and market/vendors.**

The system will link the **Farmers**, **Investors**, **Market** and the **Agricultural Officers** on one platform**.** Upon several analyses and feedback from the users, we believe linking them on one platform will allow officers to monitor farms remotely with ease.

Linking farmers to investors is a way to improve the support farmers get. Investors will be able to track farms and request to invest in a chosen farm. They will be able to track the farms as they invest to avoid cheating from the farmers. Agricultural officers will also be able to track the investments and manage them.

Again farmers will not have to deal with the middlemen again. The get direct access to the market to sell their product at a monitored good price. Our aim here is to help the officers to control the prices of crops to avoid cheating and greediness from the market and the farmers as well.

We believe that controlling crop diseases will boost productivity and solve hunger. Due to the unannounced climate changes in recent years, new diseases have emerged at unusual places. Farmers will be able to detect crop diseases with the phone in **offline mode.** The app will then show details of the disease and then give the farmer the steps to control and manage the disease.

**Providing value across platforms**

Farmers: Detect crop diseases with low or no internet connection. Farmers can post farm harvest on the market to get a good price from market vendors. Make farms visible for investors to see and request for investment.

Market/Vendors:

Investors:

Agricultural Officers:

**Technologies**

**Flutter**: Flutter was used to build to frontend of the project. Flutter helped us to build the app within a short time. Flutter helped us to create a web app and a mobile app in the same codebase.

**Tensorflow**: AI session of the project was our major headache until tensorflow came in. With the dataset download from plant village, we used tensorflow to train the AI Model

**Firebase**: Firebase is also a google cloud technology that is used to handle all the cloud stack. It integrates;

* Authentication for validating users and given access the feature
* Storage for storing files in the cloud
* Cloud messaging for sending real-time messaging and notifications.
* Firestore for storing real time data in the cloud