Statistical validation

233 million people in sub-Saharan Africa were hungry/undernourished in 2014-6. **40% of all children in sub-Saharan Africa are stunted** specifically **28% of <u>children</u> under age five in Zimbabwe are stunted** as a result of chronic malnutrition. Zimbabwe has a total land area of over 39 million hectares, of which 33.3 million hectares are used for agricultural purposes. Although Zimbabwe has some **<u>4.3 million hectares of arable land,</u>** only **<u>2.8 million hectares of land were cultivated</u>** during the 2014/15. (World Hunger.org)

Agriculture in Zimbabwe

Agriculture, the backbone of Zimbabwe's economy contributes only 11-14 percent of GDP but the sector provides employment for 70 percent of the population, and about 60 percent of all raw materials for the industry. About 45 percent of the country's exports are of agricultural origin. (Statista). The issue of figuring out how to provide adequate nutrition future populations needs urgent attention making agricultural technology the next opportunity for disruption.

Problem

Once revered as southern Africa's breadbasket, Zimbabwe's agriculture has struggled. In Zimbabwe, there is lack of market information for agricultural produce leading to post-harvest spoilage. There is also low agricultural productivity resulting in food desserts due to lack of efficient tools and information about better agricultural methodology. This cumulation of events led to a famine of historic proportions in 2008 which occured in the absence of a drought or floods as a trigger. Thus, we pondered on how to make sure there is enough food on the market and farmers have access to resources that maximize their harvests. We created Shiri, a mobile application to create digital resources for agricultural innovation. Our approach is building a digital agricultural system for African countries starting with Zimbabwe.

Solution

Shiri's application enables peer-to-peer communication between farmers and stakeholders. This builds a strong agricultural network. Farmers can also make profits by cutting down middlemen in the sale of their produce. Seed and agrochemical companies can advertise and reach farmers directly. Drivers can make money by transporting farmers. Shiri gives farmers opportunity to sell their produce directly or buy from others which solve post-harvest spoilage and let farmers earn money. Microfinance agencies can become more easily accessible to all farmers. Farmers check weather forecast and do planning beforehand. Farmers can share tools by renting them out, especially tractors. Additionally, farmers have emergency support from veterinarians or ask for advice on agro extension and financing.

App development

The application is already designed to determine functionality and features, visual design and navigation. Since, most of the people in Zimbabwe and countries with poor tech infrastructure use android to use internet, we will make a native application, using React Native, which will be available in both Android and IOS. We will use weather api, google calendar api, push api for weather checking, planning and event reminder services. Furthermore, in the future, we want to add services like EcoCash, Google pay, BKash and javax.crypto for easier and secure payment. We also want to use Google Maps and ClearPathGPS API for real time tracking service which can help both the farmers and the transporter track the orders fast and easy. The database we will use is the IBM Cloud management software.

Mobile phones

With the abundance of mobile phones because of the use of mobile money, implementing the application is not the challenge, people already have phones and bringing the application to them is what they await. Low IT literacy required to operate apps. At national level the proportion of households with at least one household member with a mobile cellular telephone at home was about 89%. (ZIMSTAT). With the expansion of mobile money, EcoCash, a fast, secured money transfer system users can send or receive money through their mobile number. We will work with large seed companies, local farmers' union and local media (radio, television, newspaper) to publicize Shiri. We will get help from local educational institutes to teach people how to use Shiri and get the best out of it.

Why shiri

Using Shiri, we want to help farmers increase productivity, have better financing, get emergency veterinary help and above all, fight food deserts and famines. With a strong network, farmers will be able to organize events, local markets and increase market scope and opportunities. Our target market is farmers, consumers, drivers, food processing plants, Nonprofits & Development Corporations, Agricultural Banks, feed & seed companies, genetic experts and agricultural consultants among others.

Go-to-market strategy

Radio Stations: 100% of the population had listened to the radio in the past year, 92.8% in the past seven days, and 73.7% as recently as the day before (InterMedia, 2005). The 2002 census showed that about half of households (49.2%) in the country reported that "word of mouth" was their main source of information, followed by radio (47.8%).

Newspaper and magazine advertisements: 44% of urban dwellers read the newspaper at least once a week.

Television talk shows.

Bulk message advertising.

Expansion

After working on initial product delivery in Zimbabwe we hope to use the same application, modify and customize a few things for example the language and initiate it in other African countries, Bangladesh and perhaps India. The model is universal and can be used in any country where farmers are disconnected from resources that help them maximize their harvests.

Community Engagement

To engage communities, Shiri is dedicated to working with schools and universities to inspire a new generation of people who understand the importance of agriculture. We host agricultural days at various institutions where students get to plant their school garden and learn about agriculture. Shiri works with local african farmers and various regional and international universities to create partnerships for on the ground agricultural research. As youth, agriculture determines our food supply thus we must be willing to engage in that conversation. Researches show by 2050, Africa's population will double, with 1 billion projected to be under 18 years old. How will we feed the population and can we employ these people in agriculture? The youth are the future of food production and we are hopeful about the role of youth in agriculture, particularly in Africa. In the future, we plan to create local farmers' union where farmers from the neighborhood can come to talk with each other, hold events or meet potential stakeholders as well as have agricultural and technology education.

Community Agricultural Education

Student Engagement

Team

Our team is made up of Tatenda Ndambakuwa, the Founder and CEO of Shiri and Sumaiya Shrabony the Technology Lead.

Tatenda, a citizen of Zimbabwe, is a senior Applied Mathematics and Urban Planning (Geospatial) major at Virginia Commonwealth University. She is a 2018 Chicago Council Global Food Security Next Generation Delegate. She is a previous intern of the USDA where she worked in the nutrition and agriculture department, and the USAID where she worked in the Securing Water for Food Division. She was part of the winning team at the Clinton Global Initiative University Codeathon where she created a food waste application. She survived a famine in 2008 when she was 15 and she has made it her commitment to see childhood hunger eradicated in her lifetime. Tatenda was a speaker at TedxRVA, a Grace Hopper Scholarship recipient for 2017 and is a 2018 Women Rewriting the Code Fellow.

Sumaiya is a citizen of Bangladesh and currently a junior Computer Science major at Hofstra University. She has been working with Bangladesh Woman and Child Ministry to improve education system for child domestic workers and street children. Sumaiya is an International Peace Ambassador for Asian Pacific Children's Convention and is currently working towards making educational application for children in countries with poor tech infrastructure. She volunteered to teach programming to middle school students last semester. Last year, she got Palantir WiT Scholarship for best application idea and design. Sumaiya is a 2018 Women Rewriting the Code Member and an active member of Systers.
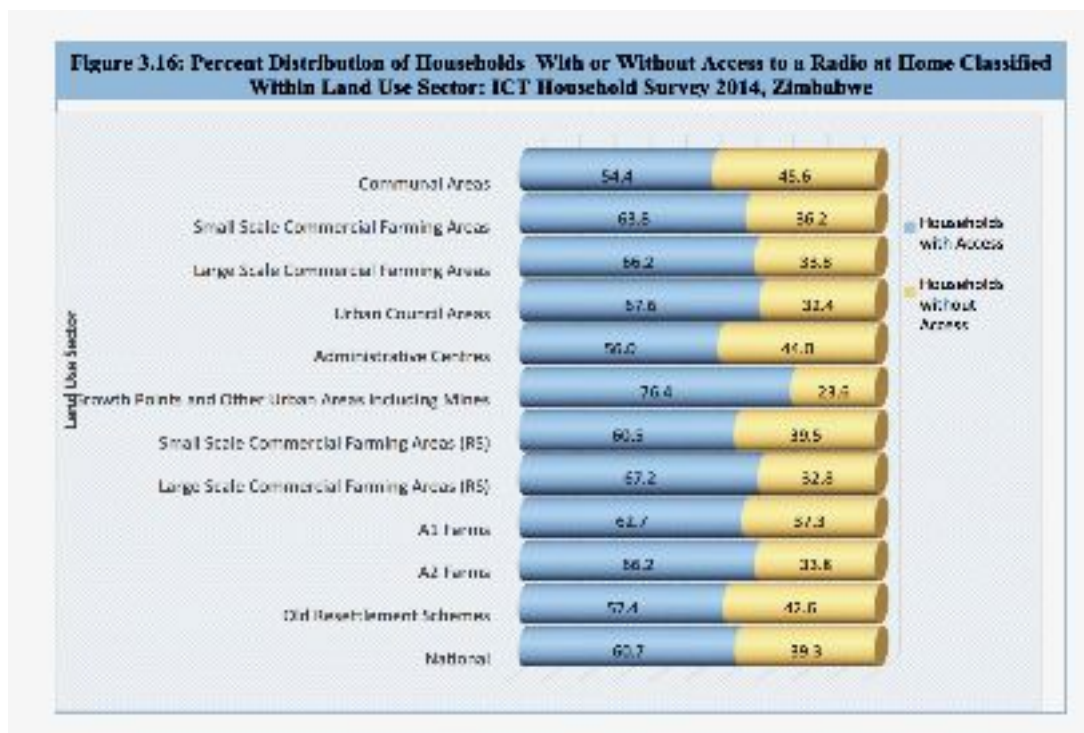

Figure from ZimStat

Potential partners

Universities

Great Zimbabwe University

University of Zimbabwe

Chinhoyi University of Technology

Africa University

<u>Seed companies</u>

Seed Co

Prime Seeds

Pannar

National Tested Seeds

<u>Agrochemical companies</u>

Agrochem

Agricura

<u>Microfinance agencies</u>

Kiva

Grameen bank

FINCA

Agribank