Human and Environmental Health in Africa: Problems and Solutions
Innovation Challenge

ROLLIN' IN MAJI SAFI (Safe Water)

Abbey Keh, Mitchell Huffman, Kendra Rebal, Michel Sousa, and Destinie Triplett

"*Water is one of the earth's most precious and threatened resources*

Health is one of each person's most precious resources

We need to protect and enhance them both

Water for Health"

-World Health Organisation Motto

Executive Summary:

Our Mission: At Rollin' in Maji Safi, we are leaders in diminishing the clean water crisis by empowering those in Rural Kakamega with the tools to retrieve and maintain clean water.

Our Model: With the purchase of a rolling water barrel, families receive their own at-home water filtration kit including a natural sediment filter and waterguard. With the help of partners, we are

able to operate locally and develop personal customer relationships that contribute to the overall success of our operation.

Our Vision: Rollin' in Maji Safi will provide families in rural Kakamega with more than just safe water - it will provide them with opportunity! Through time saved retrieving water and not spent at home being ill from water-borne illness, families will be able to spend more time working or attending school.

Introduction

In Kenya, 19 million people die each year due to lack of access to clean water (waterfortheages.org). In Kakamega, rural people are consuming unsanitary water because they cannot afford access to clean water, thus they are suffering from poor health. The average distance that women and children walk for water in Africa is about 3.7 miles and carry an average of five gallons of water on their head per person (waterfortheages.org). This task is a daily duty for most women and children in Africa. This process not only takes up most of their time in a day but can also take a serious toll on their bodies. The idea of providing easier access to water and the means to make it safe for drinking purposes to rural communities in Africa is a sustainable development goal for the World Bank Group right now. We are providing a solution to this problem by providing a service that uses rolling water barrels, water filters, and water purification to provide clean water to rural communities, which will improve their health.

Customer Segments

There are 400,000 people in rural Kakamega (Mark Lung). Our customer segment includes people in rural Kakamega that cannot afford access to clean water. We contacted locals

in Kakamega to understand what barriers currently exist to those seeking clean water. Those barriers included access to water and sanitation. Our service is targeted toward people who currently travel long distances to get water - water that is often unsafe for consumption. We anticipate our market size to be 20,000 customers by the end of our first year and potential demand to be moderate.

Value Proposition Model

Our Business Perspective Goals:

Product/Service	Gain Creator
- Collect filter materials	- Fast access
- Buy rolling barrels	- Easy access
- Assemble kits	- Safe Drinking water
- Install filter	- Increased Health

Pain Relievers

- Save time
- Less water-related diseases

Customer Activities:

Activities	Gains
- Get to water source	- Fast access
- Collect water	- Easy access
- Carry back	- Increased health

- Boil to clean (still risks)

Pains

- Travel long distances

- Carry heavy containers back

- Polluted water

- Poor health

To elaborate further, Kenyan children walk 3.7 miles everyday to collect water with jerry cans. On the way back, they have to trek home carrying these 5 gallon jugs. In addition to that, even after boiling the water, they still get viruses and diseases that were not effectively killed (Manyonyi & Atulo, 2018). So, in our proposed kit, the rolling water barrel will make it easier for Kenyans to transport more water because they will be pulling or dragging (instead of carrying) 24 gallon barrels. The natural sediment filter and waterguard will provide effective filtration and purification so that the water is safe to drink and prevents them from suffering from waterborne illnesses.

Micro-Financing Plan

All the segments of the toolkit are currently available for people to purchase but it is currently too expensive for people to afford. We will be providing a five month payment plan to allow the locals to afford these products. A five dollar payment will be made every month to us by the customer. At the first payment we would provide the rolling water barrel. We would build

the filter in the last month of payment. Our employees at local hubs would insure monthly installments are paid by the customers.

Key Resources and Activities

The relationship with our customers will be personal. We will have hubs in rural communities surrounding Kakamega that will serve as the base of operations and our workers will be going to the customers home to install the filter. From these hubs the customers will be able to purchase our toolkit and also be able to come back and ask any questions. The key resources are the rolling water barrel, the filter ingredients (gravel, coarse sand, fine sand, container), the water guard, our employees and our facilities. The key activities are building the filters, retrieving the resources from the land, buying and transporting the rolling water barrels and buying the water guard. Our employees will collect the resources and build the filter. The purchase and transport of the rollers and water guard will also be done by our employees.

The Design Thinking Process

In the beginning, we brainstormed different ideas including a community rainwater collection system; individual rainwater collection; filtration/purification kits; and a rolling water barrel, filtration, and purification kit. We initially started planning our business around rainwater collection; however, due to unequal amount of rain and dry spells we shifted towards a purification and filtration kit to make the water they already collect safe to drink. This idea then evolved into including rolling barrels to make transportation and collection of water easier. We also thought it was more important for people to be able to properly clean the water they gather from streams rather than collecting rainwater which may be unreliable.

Costs and Revenues

The costs of our operation will include 3 employees salaries, rent for the facilities surrounding Kakamega, the water guard, the rolling water barrel, the filter container, as well as transportation costs associated with getting the rolling water barrel. The revenue we would receive would be from the rolling water barrel and the water guard. For further information see the attached spreadsheet.

Key Trends - Technology, Regulations, Culture and Socioeconomics

Although Kenyans in town have access to piped, safe drinking water, rural populations cannot afford it. Thus, they collect water from ground sources. According to Professor Lung, the rural population in Kenya is currently using jerry cans that carry approximately five gallons of water to collect and transport water. The locals originally get the jerry cans from purchasing oil, making jerry cans an available reusable household item. However, carrying the jerry cans of water home is a burden because of the weight. Furthermore, rural people boil water which kills most bacteria, viruses, and protozoa. However, the ground sources of water further contain chemicals and raw effluents due to industrial pollution that cannot be removed from boiling methods.

Competitors and Other Products

There are numerous organizations currently working to end the clean water crisis in Kenya. Some of the existing water projects in Kenya include Water.org, Charity Water, LifeStraw, and the Water Project. Water.org and Charity Water use micro-financing and donations to provide clean water to Kenyans at a lower price. The Water Project works with local partners to fund water projects and LifeStraw provides water bottles that filter water. However, feedback from Kenyans have said that existing projects such as LifeStraw are not

accessible to all people, they experience “ignorance by those supposed to be beneficiaries,” and due to cultural beliefs and taboos. For example, there is a taboo on LifeStraws because some rural Kenyans believe that using them will give people diarrhea due to stomach complications that have occurred after its use (Manyonyi & Atulo, 2018).

Market Forces

Market forces are factors that affect the supply, demand, and prices of products. This may include unmet customer needs, competitors, mergers and acquisitions, and changes in supply chain and distributors (Underwood, 2013). For example, before deciding what service we wanted to provide, we considered current water project competitors in Kenya and what their specific services lacked and how much they cost. Furthermore, we had to discuss the prices of our key resources such as the transportation roller barrel. Because the roller is expensive for Kenyans, we hope to partner with a company similar to rolling water barrel who currently makes them in South Africa - this would allow us to drive down the costs and increase profit margins.

The Role of Macroeconomics

Macroeconomics is mainly concerned with forecasting national income through analysis of factors that show predictable trends such as the economic growth, fiscal monetary policies, rate of consumption, rate of employment, rate of inflation, money supply, [and] the level of government debt.” Macroeconomics plays a role in businesses as companies change to reflect the economy, For example, the rate of employment is one of the factors that helps determine how many employees we will hire; the rate of inflation, money supply, and product supply and demand help determine how much our service costs; and the level of government debt helps

determine how much the government can subsidize our product to make it more affordable for our customers.

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