CONCEPT NOTE:BEAN-TO-BAR CHOCOLATE

ABSTRACT

In 2018, Liberia exported 18 million dollars' worth of raw cocoa. In the same year, Liberia imported $875,000 worth of chocolate products. (https://oec.world/en/profile/country/lbr, 2018).

Authored by Stanford Peabody

Project Name:	**Chocolate (Bean-to-Bar)**
Proponent:	Stanford Peabody
Sector:	Cocoa (Agriculture Sector)

Background

Liberia aggregates 30,000 MTs of cocoa a year for export. ACPEC has exported up to more than 150 tons of cocoa per season since the 2019 period.

Since its participation in the Center for the Promotion of Exports from Developing Countries, (CBI) in the Netherlands, ACPEC has been preparing to diversify its portfolio by engaging in the addition of value to cocoa by the production of chocolates for sale within Liberia to bakeries and ice cream makers.

Rationale of the Project

The rationale is simple. If the main ingredient of chocolate is cocoa and we do import chocolate to the tune of about $900,000.00 a year, then why do we not produce, and substitute imported chocolate made from our own cocoa.

To produce this concept note, the consultant visited seven bakeries, ice cream makers and supermarkets in and around Monrovia to understand how they obtained chocolate for their operations, and the cost overhead of importing chocolate made in Europe or parts abroad.

Bakeries and Ice Cream Makers Visited:

- Kaldis Coffee
- L'Oven Bakery
- Wood Bakery
- Nice Cream
- Pinkberry

There is no information on the per-capita consumption of chocolate in Liberia, but data gathered shows that Africa consumes .44 lbs. of chocolate a year. Though we export approximately 30,000 metric tons of cocoa, we do consume a small amount of the finished products and produce only a small amount of chocolate here in Liberia.

The Liberian International Christian College School of Agriculture, opened in late 2018, began then to produce chocolate from locally farmed cocoa beans. This is bean to bar chocolate. The volume of chocolate produced nor sold at this time is unknown. Efforts to obtain this information from the school proved futile.

However, it is still important to initiate the competitive production of chocolate in Liberia.

Brief Description

Except for the Liberia International Christian College, there are no other Bean to Bar operations in Liberia.

Bean to Bar operations or Chocolate Makers are those who work with cocoa beans – hence the phrase Bean to Bar. They purchase bags or even large consignments of cacao beans from farmers and make chocolate that is high in cocoa content. Supermarket chocolates contain many other ingredients like milk, sugars, etc.

In order to be considered bean to bar, makers need to start with raw cacao beans, and those beans need to be roasted, cracked, winnowed (removing the shell), and ground into chocolate to be considered bean to bar.

Considering that Liberia is a cocoa producing country and the cost of acquiring cocoa beans is not as high as if beans were being imported, it is understandable that ACPEC can make quality chocolate for the Liberian market. Being bean to bar means that every stage of the making of the chocolate is controlled and the outcome chocolate is from a careful formula.

What is required by ACPEC is how to produce a flavor profile that it can market is uniquely belonging to the company and marketed under its brand. To do this will require that the company practices centralized fermentation with the groups from which it is purchasing cocoa. That formula should be set up and cocoa being collected for chocolate making should only be sourced via the members of the centralized facility.

Chocolate Imports

The only viable chocolate maker in Liberia is the Liberia International Christian College. According to the college, in the past 12 months, the LICC has purchased approximately two tons of raw cocoa and sold $14,280.00 worth of chocolate each month. The chocolate produced are currently being sold in supermarkets and delivered to customers. So far, chocolate in its different forms are not being sold to bakeries and ice cream parlors.

Obtaining financial information from the bakeries and ice cream parlors has been difficult. Pinkberry provided information on its import of chocolate. The CEO and owner, Ike Kyei notes that Pinkberry procures approximately $6000 worth of chocolate every quarter.

Wood Bakery on the bypass indicated during the interview that he imports only about a $1000.00 worth of chocolate which he uses over a period of 4-6 months. The manager notes that his purchases may increase when he opens the new bakery, but at this time, consumption is down.

Cocoa Export versus Chocolate Making

According to information collected, Atlantic exported 150 tons of cocoa over the last shipping period. At $1800.00 per ton, Atlantic accumulated annual revenue of about $105,500.00 after expenses.

To export one container, Atlantic currently spends about $4,669.00 per container and exported 30 containers in 2018-2019. There are 15 tons per container.

Dealing in cocoa export also require a heavy investment in infrastructure in several areas where the cocoa is aggregated. Warehouses must be rented, trucks must be purchased, labor, fuel and other overhead must be expended. There is also the issue of shipping and quality assessment costs.

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The LICC currently has a small hand grinding machine of 10-pound capacity. This is used as the first round of grinding. The dried beans are usually cracked by 3 women to remove the core.

The beans are then put in a mélange where it is finely ground into a paste. It is then tempered and put into a mold

The LICC produces 4.5 kg batches of chocolate at a time up to about 20 kg. The 4.5 kg batch is composed of 30% sugar and 70% cocoa. The institute has bought about 2 tons of cocoa over the past year and made a monthly revenue of about $14,000.00. This operation can be defined as mainly bean-to-bar and does not incur all the expenses as export of cocoa does.

The main market is higher class Liberians, expats and supporters of the LICC effort. The LICC is now looking to start selling to bakeries, ice cream parlors.

Recommendations:

It is recommended that Atlantic gradually diversifies its operations and move into chocolate making. Statistics show that Liberia imports about $900,000.00 worth of chocolate and chocolate products a year. That includes cocoa butter, pastes, powders. With aggressive marketing, Atlantic can substitute these imports.

Processing

Atlantic is uniquely positioned to produce high quality cocoa since it is currently engaged in the aggregation and buying of different grades of cocoa. To make chocolate requires that cocoa is processed using a particular formula. Atlantic is positioned to guarantee that it can have cocoa harvested, fermented, and processed to make the best chocolate. For example:

Here is a simple breakdown of the steps involved in the cocoa-chocolate making process.

1. Harvesting

Ripe pods from the cocoa tree are harvested for the making of chocolate. Unripen pods yield beans with low cocoa butter content and low sugar content, so they cannot be included. Atlantic as an aggregator of raw cocoa bean is in the position to ensure that suppliers adhere to the above requirement.

Once harvested, the seeds are separated from the pods and pulp and allowed to begin the fermentation process.

2. Fermenting

Raw cocoa beans have a bitter and undesirable flavor. Fermentation transforms this bitterness making it into the more complex and classic cocoa flavor we are familiar with.

Fermentation is achieved with natural yeast and bacteria that are present in the cocoa beans. The beans are simply left out in the heat and moisture to ferment for approximately seven days. After fermentation, the beans are quickly dried to prevent mold growth.

The fermenting process is where the flavor profile is determined. Atlantic should guide this process according to the prescribed formula. All cocoa fermented at a central facility should be positioned, turned a certain amount of times. All actions should be uniform during every process. This is done to ensure the profile and uniqueness is maintained.

3. Roasting

After fermentation and drying, the beans are thoroughly cleaned and any sticks, stones, or other debris are removed. Cocoa beans are typically roasted using the dry roast method, which employs constant stirring to ensure even heating. Dry roasting does not require the addition of extra oils or fats, which allows the flavor to stay pure. This is the final step in creating the classic cocoa flavor that we are all familiar with.

4. Processing

After roasting, the hull is removed from the bean and the inner nib is extracted. The nibs are then ground into a fine powder, which contains cocoa solids and cocoa butter. The cocoa butter usually liquifies from the frictional heat while grinding the nibs. This liquefied form of pulverized cocoa nibs is referred to as cocoa liquor.

Cocoa liquor is then poured into molds, allowed to cool, then sold and transported in these blocks. These blocks are known as unsweetened or bakers' chocolate. Alternatively, cocoa liquor can be separated into two products, cocoa powder, and cocoa butter. These are the products that Atlantic should market under its brand.

5. Blending

Cocoa liquor, baking chocolate, cocoa powder, and cocoa butter can be blended with various ingredients to create an endless number of cocoa products.

To produce the chocolate candies which we are all familiar with, cocoa liquor is combined with extra cocoa butter (for smoothness and mouthfeel), sugar, milk, and sometimes vanilla, emulsifiers, or stabilizers. The ratio of sugar and milk to cocoa creates varying degrees of milk or dark chocolate. The specific ratio in which ingredients are blended creates signature recipes, which specialty brands often guard closely.

Cocoa powder, cocoa butter, and cocoa liquor are also used to make many products besides chocolate candy. Cocoa butter is a prized ingredient in many skin products because of its skin-softening qualities.

As you can see from this description, the possibilities of processing many products is very lucrative.

Machines

The facilities for making chocolate does not require heavy overhead expenses as compared to exporting cocoa. A modest processing floor, a consistent source of energy and supply of cocoa, sugar and other ingredients. The machines do not run on a 24-hour basis.

Here are recommendations for machines: The SPECTRA Models are tested and are very efficient. Here is a video of the demonstration of the full line with options at a trade show in Brussels, https://youtu.be/Cgr81gYWqZ8. The person in the video is Marc Bloem. He is the contact person http://marcbloem.com/#products.

Market

Data shows that all the bakeries and ice cream parlors import chocolate on a periodic basis. According to research, it is estimated that they import about $25,000 worth of chocolate on a bi-monthly basis.

LICC in Nimba currently make chocolate bars and sell to supermarkets and specialty buyers. They have not yet moved into the wider markets.

LICC intimated that they have a problem finding Grade A cocoa. Atlantic will have no problem sourcing Grade A cocoa for their processing.

Training

To produce initially, it is recommended that Atlantic connects with CBI or Equipoise. Either group can assist in the development of a signature brand for the Atlantic Brand.

There is also a group in Ghana called #57. It is a firm managed by two Ghanaian females. They currently produce one of Ghana's well-known chocolate brands. To see what they have done, visit https://www.57chocolategh.com/.

SPECTRA can also provide training for the use of the equipment and Daarnhouwer can provide help with flavor profiles and taste.

A full market penetration operation will be required once the project is approved.