Pre-Feasibility Study

POTATO CHIPS MANUFACTURING INDUSTRY INVESTMENT IN KENNYA

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potato chips manufactury

1. Executive Summary

The project involves investment in setting up a potato chips manufacture in any big city of Kenya which will produce premium quality potato chips,competing with a few existing brands. All the processes of the industry are equipped with automated machinery to ensure quality check through out the production line.

Potato chips stand a good chance in the snack food market, as there are few industries producing potato chips or only industries in limited scale. The existed potato chips industries can not meet the increasing demand of potato chips in Kenya due to lack of regular supply of raw potatoes and proper potato crisp machinery. Although the potato processing industry in Kenya can not even meet the domestic demand, the potato crisp processing industry is growing rapidly and also the market demand. Chips processing is a rewarding, lucrative and remunerative investment to meet the domestic market and import to inter-regional countries.

The total project cost for setting up this plant is estimated at USD 6.170 million. The project is financed through 50% debt and 50% equity. The net present value of the project is around USD 2.049 million, with an Internal Rate of Return of 45% and payback period of 4 years.

The overall proposed production capacity of the plant is 150kg potato chips per hour. The plant will work in two shifts and operate at 50% capacity in the first year. The maximum capacity attained is 90% and the plant operates at this capacity sixth year on wards.

1. Introduction to Potato Chips Industry

Potato chips industry is a plant equipped with automatic machinery to produce potato chips in large scale. Under normal conditions, potato chips industry is aimed at doing production in an organized way to save cost and labor.

Under normal conditions, the plant should be equipped with potato washing and peeling machine, potato chips machine, potato blanching machine, potato chips dehydration machine, potato chips frying machine, potato chips de-oiling machine, potato chips seasoning machine, and Nitrogen filled potato chips packaging machine,

which form a completed potato chips line.

As the plant is equipped with suitable potato chips machines, potato crisps are of high quality which meet the consumers' demand of premium chips. High quality potato chips is determined by color, taste, water content, oil content of the final products. Only with the right equipment can get the premium potato chips.

2. Purpose of the Document

The major objective of the pre-feasibility study is to facility the potential entrepreneurs to make an investment in Kenya to develop a processed potato industry. The pre-feasibility study may compose the major factor of an essential investment decision. For the sake of serving this objective, the study covers different aspects of project concept development, setting up, and production, marketing, finance and business management. Local information and international scenario which have some bearing on the project itself are provided in this document.

Coming up with pre-feasibility reports attain great eminence as such reports reveal certain implications, best experiences and practices formed by existed enterprises through trial and error. Some industrial norms become a guiding source related to various aspects of business start-up and successful management.

3. Crucial Factors & Steps in Decision Making for Investment

Following are some factors that play an important role on setting up potato chips industry:

4.1 SWOT Analysis

When one is planning to set up a potato chips manufacturing plant or making the decision to invest in the potato chips production line, the associated risk factors should be noticed, carefully analyzed and studied. A SWOT analyses can help in analyzing these factors that play a major role in making the decision of investment.

STRENGTHS

- Continuous availability of fresh potatoes all year round.
- High automatic production line, efficiency and saving cost and labor.
- Easy availability of relatively cheap labor.
- Favorable government policies for investment and importations in the ECA countries
- Urbanisation, the proliferation of fast-food restaurants, growing tourism, and a significant change in eating habits among both high- and low-income groups in urban areas is raising the demand of potato chips
- Affordable prices of chips for the young and the income groups

WEAKNESS

- Inexperienced technical staff when compared with the existed potato chips industries in operation
- The expected loss at the beginning period of the operation
- Labor efficiency and material waste at the initial time

OPPORTUNITIES

- Improvement and changes on the living and eating habits of nowadays people

- High demand of potato chips and lack of supplement in the local market
- Inter- regional trade in goods and services in the ECA region
- Increasing tourism industry accelerate the demand of potato chips and become a new chips market
- Increasing urbanization and urban population increase the demand for potato chips
- About 50% of the potato chips market share comprises of un-brand chips, mainly in restaurants, hotels, outlets and so on, it can be gained through heavy marketing campaign.
- The attraction of youngsters towards products identified with western lifestyles and tastes and general trend towards more snacks.

THREATS

- The already established industries nowadays in the business of potato chips manufacturing
- Fluctuation in the prices of fresh potatoes because of lack of storage device resulting large quantities of potatoes wasted
- More conscious on health and safety issues urge producers produce high quality chips
- Strong competition and lots of promotion activities by the competitors

4.2 Key Success factors

One of the practical tips for success for the proposed project would be to cautiously monitor the whole production line and increase the working efficiency and reduce the high waste.

Besides the said factors, another essential aspect of this pre-feasibility study is the marketing and promotion of the products, potato chips in the local market and the foreign market. In order to do that, a heavy budget towards promotion activities should be allocated.

Currently, the potato chips market of Kenya is already occupied by small scale processors which contain a total of 24 brands of potato chips earlier identified from supermarkets and kiosks in Nairobi city. The remaining market share belongs to the unbranded potato crisps. This market share can only be captured through an aggressive marketing campaign. Hence, in order to enter into the market for the new brand of potato chips, heavy investment towards marketing and promotion activities and advertisement.

Key success factors will be:

- When selecting potatoes, utmost care should be taken as only the best quality can make the high quality potato crisps.
- Keep the waste production to a minimum range.
- Carefully and cautiously monitor the production process in order to increase the working efficiency and increase the utilization of the raw material.
- It is important to delicately slice the selected potatoes, quickly fry the slices in the food grade vegetable oil and season with delicious flavours.
- Different kinds of flavours should be introduced.
- The advance sale orders can make the production more fluently and can ensure

the success of the business.

- For the sake of securing from the fluctuation of the prices of potatoes, estimating the potato requirements for the year and in advance contacting with the suppliers is quite important.
- Quality maintenance of the potato crisps is a hot issue as the general consumers pay more attention on the health issues.
- The financial system and the cost accounting system should be optimized so as to reduce the cost of the entire process and determine the reasons for major variances inthe process.

5. Project Profile

5.1 Opportunity Rationale

In recent years, urbanizaton and urban population are constantly increasing in Kenya, and because of increasing urbanization and the corresponding expansion of service sectors, the consumers' taste and eating habits are also changing towards consuming value added products, such as chips. Besides that, the increasing tourism industry also bring a big market for the potato chips. More and more foreign tourists who prefer potato chips as an easy fast snacks on the go. Due to the said information the potential market size of potato products is also increasing at an exponential growth rate.

Recently, the potato crisps processing industry in Kenya is largely dominated by small scale processors. They can not produce high quality and internationally recognized potato chips as poor quality and limited raw potatoes. Though there are a few potato chips industry in the market that the consumers are aware of, the potato chips market is thus still in the growth stage and new players can enter the market. A new premium-quality brand can capture considerable market share in the current growing market, depending on their marketing strategy and product quality.

5.2 Project Brief

The project describes setting up a potato chips industry in any big city of Kenya. The plant will produce different kinds of flavored, high quality potato chips in different standard packet sizes.

5.3 Proposed Business Legal Status

Referring to the business legal status of the proposed project, it can be sole proprietorship or partnership.

5.4 Project Capacity and Rationale

It is a critical factor to decide the project capacity. Through market research, the production capacity of this pre-feasibility is decided to be 150kg per plant hour. There is huge demand of potato chips in and outside Kenya, such as Uganda, Tanzania and Zimbabwe. So a large scale production is quite needed. The proposed project can also be started with production capacity of more than 150kg per plant hour. The unit will be working in two shifts.

5.5 Project Investment

Total initial cost of the project is worked out as USD 0.7million; capital investment requirement is USD 0.358 million, and working capital requirement is USD 0.342million.

The proposed pre-feasibility is based on the assumption of 50% debt and 50% equity. However, this composition of debt and equity can be changed as per the requirement of the investor. The project pay back period is about 4 years. The IRR is about 45%. The NPV is about USD 2.05 million.

5.6 Proposed Location

When talking about industry location, it is always recommended to establish the plant in an area where raw material is easily available and convenient transport. It maybe any industry area of Nairobi, Nakuru. For this proposed project is Nairobi.

6. Market Information about Potatoes

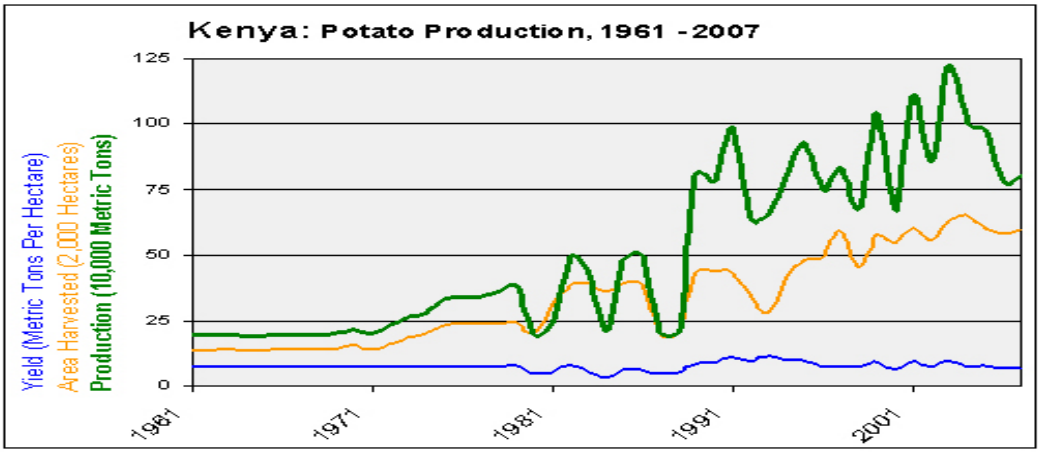
Potato is an important food and cash crop that plays a major role in food security in Kenya. However, because of limited adequate storage and processing facilities, a substantial proportion of production is wasted. Inadequate storage facilities and an under-developed processing industry leads to fluctuation in prices, given that not all of the excess production can be stored or processed for consumption during the off-season. Following studies will make clear the current state of the potato production in Kenya.

6.1 Potato Production in Kenya

Potato is a staple food in Kenya. It is rated second to maize in terms of production and utilization and has a status of a strategic crop in Kenya. It is cultivated by over 800,000 growers who are mostly small holder. Potato production in kenya is currently worth about KES 50 billion. This figure can be increased if production and processing (Crisps, wine, starch etc.) is optimised.

Production in the country is confined to highlands,where the crop performs better in terms of yield in comparison to other staple foods including maize. Many potato varieties are currently grown and marketed in Kenya.

Potatoes are improperly stored in Kenya as lack of storage device. Most of farmers store potatoes in saw dust nowadays. The established potato varieties used in processing crisps in Kenya are Dutch Robjyn, Tigoni and Sangi, and also there are new varieties, such as Kenya Mpya and Sherekea now.



6.2 Potato Whole-Sale Prices Trends

At the time of harvest, there is a huge supply of potatoes. As it is in the absence of adequate storage facilities, prices are driven down. If storage facilities are available,

the prices are stable through consistent supply all year round.

7. Marketing Information about Potato Chips

7.1 Potato Chips Manufacturing Industries Currently in Operation

Not very long ago, the snacks market of Kenya supplied mostly of biscuits, corn-based and other non-potato snacks. Recently, with the advent of globalisation and increasing unbanization and urban population and increasing tourism industry, potato chips have become a major part of the snacks industry.

The potato chips market comprises of 24 brands of potato crisps which had been identified from supermarkets and kiosks in Nairobi city. The number of employees ranged from 2 to 250 and 60.9% of the processing industries had 5 or less employees, 21.7% employed 6 to 10 people while only 4.3% had over 100 employees. A total of 4.3% pointed at lack of and poor raw potato quality while 42.5% cited lack of finances to increase volume of production.

The potato chips market in Kenya is largely dominated by small scale industries who are faced with a myriad of problems that are prices fluctuation of materials, unavailability and poor quality of raw potatoes, and lack of storage facilities.

Common potato products marketed in Nairobi and their characteristics.

Product	Ingredients	Price (Ksh/kg)
Chips	Potato, soil, salt	68.10 ± 15.30 (n=47)
Crisps	Potato, oil, salt, flavoring	200.30 ± 34.60 (n=36)
Bhajia	Gram flour, potato, salt, spices, oil	117.80 ± 36.10 (n=14)
Frozen fries	Potato, oil, salt	-
Chevra	Peas, gram flour, spices, potato pieces, salt, oil	225.00

7.2 Market Research, Trend & analysis

With the changing of lifestyles and traditional eating habits, Kenya's food sector is changing. The demand for premium and international quality snacks is growing, especially among the educated, middle and upper income urban consumers owing to changing lifestyles and tastes change of consumers and the influence of foreign media and attraction towards western tastes. Besides the above factors, other factors that influencing the demand of crisps are as follows.

- Increasing urbanization and urban population which creates an increasing demand for food, including potato chips. Urban population in the age groups below 30 accounts for more than 70% of the population and this category demands chips more than the older age categories.
- Increasing tourism industry over the years which help expand the potato chips market as tourists need fast food and chips are a suitable snacks that can eat on the go.

- Affordable prices of chips compared with prices of most other food items is suitable for people of various income groups, especially youngsters who like chips very much.
- Increasing incomes of urban households which contributes the increasing demand of value added products, such as chips.

8. Kenya & Snacks Industry

The Snacks Industry of Kenya is experiencing an high rate growth each year. The target market of this product are children, teenagers and young people and even the foreign tourists. Potato and corn snacks are considered as a meal replacement, and being a light fast food are becoming popular among Kenyans.

Another fact for the investors is that with urbanization the life style is improving in Kenya and owing to satellite invasion and influence of foreign media, the demand of snacks, particularly chips is increasing rapidly.

In Kenya, potato chips not only have the domestic market, but also the foreign market as the existence of East African Community (ECA) trade policy which favors inter-regional trade in goods and services.

Some common foods served in snack bars, restaurants, and hotels.

Accompanying foods	Competing foods	Other snack foods
Sausages	Bhajia	Kebab
Chicken	Rice	Samosa
Fish	Kienyeji (beans, potato, maize, green vegetable mash)	Cakes
Hamburger	Chapati (unleavened flat bread)	Mandazi (Kenyan doughnut)
Meats (stews, curries)	Ugali (thick cooked meal paste)	Hot dogs
Meat pies	Mazie and beans (githeri), Bananas (matoke), Pasta	-

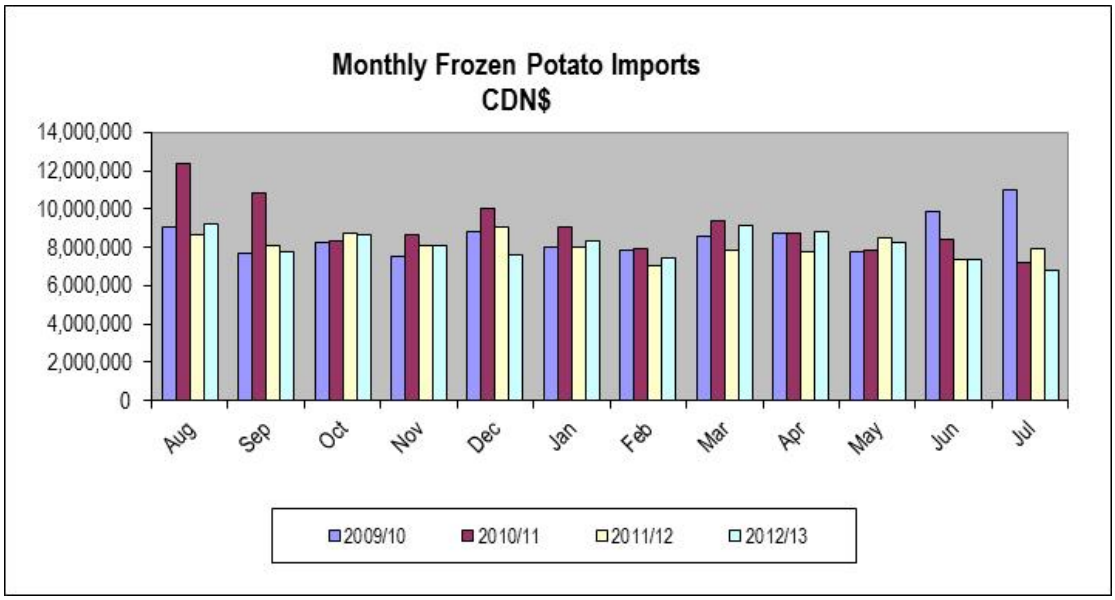
8.1 Demand and Supply

The top three of Kenyan crisp producers process about 10,000 tons of potatoes per year into 2,500 tons of crisps. Half of crisps production is bought at supermarkets by consumers, especially citizens in cities such as Nairobi, and 20% through other distribution channels. Crisps are partly exported to Tanzania, Zimbabwe and Uganda.

Transport distances of voluminous, lightweight products such as crisps are limited and expensive, so the international trade of crisps is rather exceptional, which indicates that it is more favorable to produce potato crisps locally. In the short term, the production of potato crisps is the best way to add the value of potatoes.

There are about 75% of all restaurants and hotels process their own French fries and about 25% get fresh fries supplied by processors on a daily basis in Kenya. The French fries industry is smaller than potato crisps industry. Almost all the French fries processors are not registered and operated informally. No export of frozen French

fries is reported in Kenya. The French fries market is global and the frozen French fries supplied in the international market are with low price and high quality, and the Kenyan frozen French fries have no competitive advantages at these aspects. Therefore it is better to produce fresh cooled French fries locally for Kenyan potato processors.



8.2 Target Customers

According market reaserch, the target customers of potato chips n Kenya are youngsters, the middle income people, and the rich and the foreign tourists. With the urbanization, the life style and the income of people have improved a lot. So people pay more attention on their diet and demand high quality potato crisp. With the development of globalization and the media, the western life style and taste have influenced the native a lot and have a big attraction towards them about the western things. Besides those, the increasing tourism industry has bring a big market for the potato chips as crisp are a fast and tasty food which can be eaten on the go.

9. Production Process

The potato chips (French fries) production process is as follows:

9.1 Production Process Flow

The potato chips manufacturing industry should b equipped with the following machinery:

- Washing & Peeling Machine - For washing and peeling fresh potatoes. Equipped with soft brush, potato washing and peeling machine can remove the thin peel

completely and efficiently. High peeling rate ensures a good start and normal working speed in the whole potato chips line. Washing and peeling functions in a single machine avoids repetitive labor and saves time.

- Potato Chips Machine - For slicing potatoes into chips or slices. The potato chips machine can cut peeled potatoes into slices, chips and shredded potatoes. Rollers and cutters can be adjusted for potato slices and chips in different thickness.
- Potato Chips Blanching Machine - For pre-cook the chips. Potato chips blanching machine, a pre-treatment device, is used to kill harmful bacteria and keep original flavor in food. Blanched potato chips has fresh color and vegetable scent while active enzyme is restrained for easy reservation.
- Potato Chips Dehydration Machine - For drain the water on the surface of chips. Potato chips dehydration machine, taking advantage of centrifugal dewatering methods, can remove the surface water on blanched potato chips. Potato chips and strips processed by this dewatering machine can be fried easily in the following frying machine. Equipped with a shockproof device, this dehydration machine can stand steadily in high rotating speed.
- Potato Chips Frying Machine - For frying the chips. There are two heating methods in potato chips frying machine -- Heated by Electricity and Heated by Coal. You can choose anyone according to your energy resource. Potato chips frying machine heated by electricity is much more clean than coal. Fried potato chips and French fries have attractive luster and flavor.
- Potato Chips De-oiling Machine - For drain the oil on the surface of chips. Similar to potato chips dewatering machine, this potato chips de-oiling machine adopts centrifugal principle to remove extra oil on fried potato chips and French fries. Eating too much oil has no benefits on people's health. And at the same time de-oiling technology reduce production cost.
- Potato Chips Seasoning Machine - For flavoring the chips. Potato chips and French fries can be added with various sauce for different taste. There are three flavoring ways: disc type, octagonal type and drum type. The drum type potato chips seasoning machine is very popular while for lare potato chips production, the disc type has more output.
- Nitrogen Filled Potato Chips Packaging Machine - For packaging the chips. Flavored potato chips need to be packaged quickly before going bad. Potato chips sealed in bags full of nitrogen would not react with oxygen. Packaged potato chips can reserve for a long time without any taste losses.

9.2 Raw Material Requirement

Kenya is a potato growing country and potato is a staple food in Kenya. Owing to the climate of Kenya, potatoes is availability and in low price year round. Kenya is the ideal place to produce potato chips which have a large market there.

Raw material used in potato chips manufacturing plant includes:

- Fresh potatoes
- Food grade vegetable oil/cooking oil

- Flavors
- Packing/packaging material

10. Land & Building Requirement

- Land Requirement

For building a potato chips industry, the total land required is approximately 20,600 Sq.ft.

- Utilities Requirement

Utilities requirement for a potato chips plant require electricity, gas, water and telephone.

- Building Requirement

The total space requirement of the building is 20,600Sq.ft. The total cost is USD 75 thousands.

11. Conclusion

With high demand and limited supply, the Kenya potato chips market is a potential market for business. Owning to the increasing tourism and its highly increasing urbanization which improve people's life and income , the market of the crisps is expanded. The new brand crisps can captured the market through promotion activities and aggressive campaign which has a large market.