investT TRINIDAD AND TOBAGO

THE UNIVERSITY OF THE WEST INDIES
ST. AUGUSTINE CAMPUS

MANUFACTURING PROFILE 2: CULINARY DRIED AND POWDERED HERBS

The Development of Project Profiles for the Manufacturing Sector of T&T

ABSTRACT

There is presently a high demand for organically grown culinary dried and powdered herbs. This is a high valued product and Trinidad and Tobago (T&T) has a competitive advantage in that there are good, established local agronomic practices. Culinary herbs are sought after as they are used in the flavouring of foods and beverages. As they are being dried or in powdered form, they tend to have a long shelf life and are not susceptible to bacteria and mould.

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The research contained within this document was commissioned by InvesTT Limited and conducted by the UWI, St. Augustine Campus

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1 Description of the Opportunity

1.1 Summary

There is presently a high demand for organically grown, culinary dried and powdered herbs. This is a high valued product and Trinidad and Tobago (T&T) has a competitive advantage in that there are good, established local agronomic practices. In addition, there is minimal presence of significant pests and diseases associated with its growth, making the availability of the raw material plausible. Dried and powdered herbs are sought after as they are used in flavouring of foods and beverages; being dried or in powdered form means they have a long shelf life and are not susceptible to bacteria and moulds. They also have nutritional and medicinal properties. T&T has already established markets in Miami and Canada based upon the presence of its diaspora. Furthermore, the process of making dried or powdered herbs is a proven technology in food science.

Also, the availability with existing infrastructure and low cost energy would make this sub-sector attractive to investors. Spanish thyme, chadon bene and bay leaf are three of the most common herbs that are easily grown in T&T. There is a large export market for Spanish thyme and the unique flavour of chadon bene makes it a desired item in the T&T diaspora. Bay leaf already has established markets in the United States of America (USA) and Europe. As such, this profile focused on Spanish thyme, chadon bene and bay leaf products. The facility however, has the capacity to manufacture or process products from a wide variety of herbs according to raw material availability and market demand. Other herbs that can be considered would be parsley, chive, celery and moringa. Dried and powdered herbs prove to have a longer shelf life than the fresh product making it a viable export product. The

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opportunity described in this profile was assessed and the result of this assessment is shown in Table 1.

Table 1: Optimistic, Moderate and Pessimistic Scenarios

SCENARIO	INVESTMENT (IN MILLION USD)	PAYBACK PERIOD	10 YEAR NPV (IN MILLION USD)	10 YEAR IRR
OPTIMISTIC	3.6	3 yrs	6.36	57%
MODERATE	3.3	4 yrs	4.61	47%
PESSIMISTIC	3.1	5 yrs	2.77	36%

1.2 Product Mix

Table 2 shows a range of products which may be produced from the herbs selected for processing in the initial phase of this venture, namely Spanish thyme, chadon bene and bay leaf. The sizes below are suggested sizes and can be altered depending on market and customer demands.

Table 2: Product Mix

PRODUCT	QUANTITY	WHOLESALE PRICE (USD)
Organic Dried Spanish Thyme Flakes	A box of 20 x 500g paper packages	**450**
Organic Dried Bay Leaf Flakes	A box of 20 x 500g paper packages	**450**
Dried Spanish Thyme Flakes	2kg (minimum order 10)	**850**
Dried Bay Leaf Flakes	2kg paper packages (minimum order 10)	**850**
Dried Spanish Thyme Flakes (organic)	25 kg bags	**1040**
Dried Bay Leaf Flakes (organic)	25 kg bags	**1040**
Chadon Bene Powder	12 Packs of 1 OZ	**24**
Dried Chadon Bene Powder	2.5kg bags	**160**
Dried Chadon Bene Powder	5 kg bags	**320**
Spanish Thyme Powder	12 Packs of 1 OZ	**20**
Dried Spanish Thyme Powder	2.5kg bags	**150**
Dried Spanish Thyme Powder	5 kg bags	**280**
Bay Leaf Powder	12 Packs of 1 OZ	**20**
Dried Bay Leaf Powder	2.5kg bags	**150**
Dried Bay Leaf Powder	5 kg bags	**280**
Organic Seasoning Powder (Mixture of Thyme, Chadon Bene, Chive)	12 Packs of 1 OZ	**25**

Organic Seasoning Powder (Mixture of Thyme, Chadon Bene, Chive)	2.5kg bags	**160**
Organic Seasoning Powder (Mixture of Thyme, Chadon Bene, Chive)	5kg bags	**320**
Garlic and Chadon Bene Mix	12 Packs of 1 OZ	**25**
Garlic and Chadon Bene Mix	2.5kg bags	**160**
Garlic and Chadon Bene Mix	5kg bags	**320**
Ground Pepper and Chadon Bene Mix	12 Packs of 1 OZ	**25**
Ground Pepper and Chadon Bene Mix	2.5kg bags	**160**
Ground Pepper and Chadon Bene Mix	5kg bags	**320**

1.3 Description of Activities

The process of drying herbs or herbal leaves begins with the harvesting and collection of the leaves from the herbal plant. It is important that good agronomic practices (GAP) are adhered to. These leaves are then washed, sterilized and sorted thoroughly. The leaves are then pre-dried and winnowed to remove unwanted objects.

The process of shredding the leaves to size is followed. The leaves are then placed in thin layer perforated containers in a large air drying chamber where the temperature and humidity of the air is controlled. After a period of time the dried leaves are removed. Some are packaged for storage while others are destined to be processed into a powder. The dried product usually has a 12 month shelf-life. In the making of the powder the dried leaves are grinded by a hammer mill and then packaged.

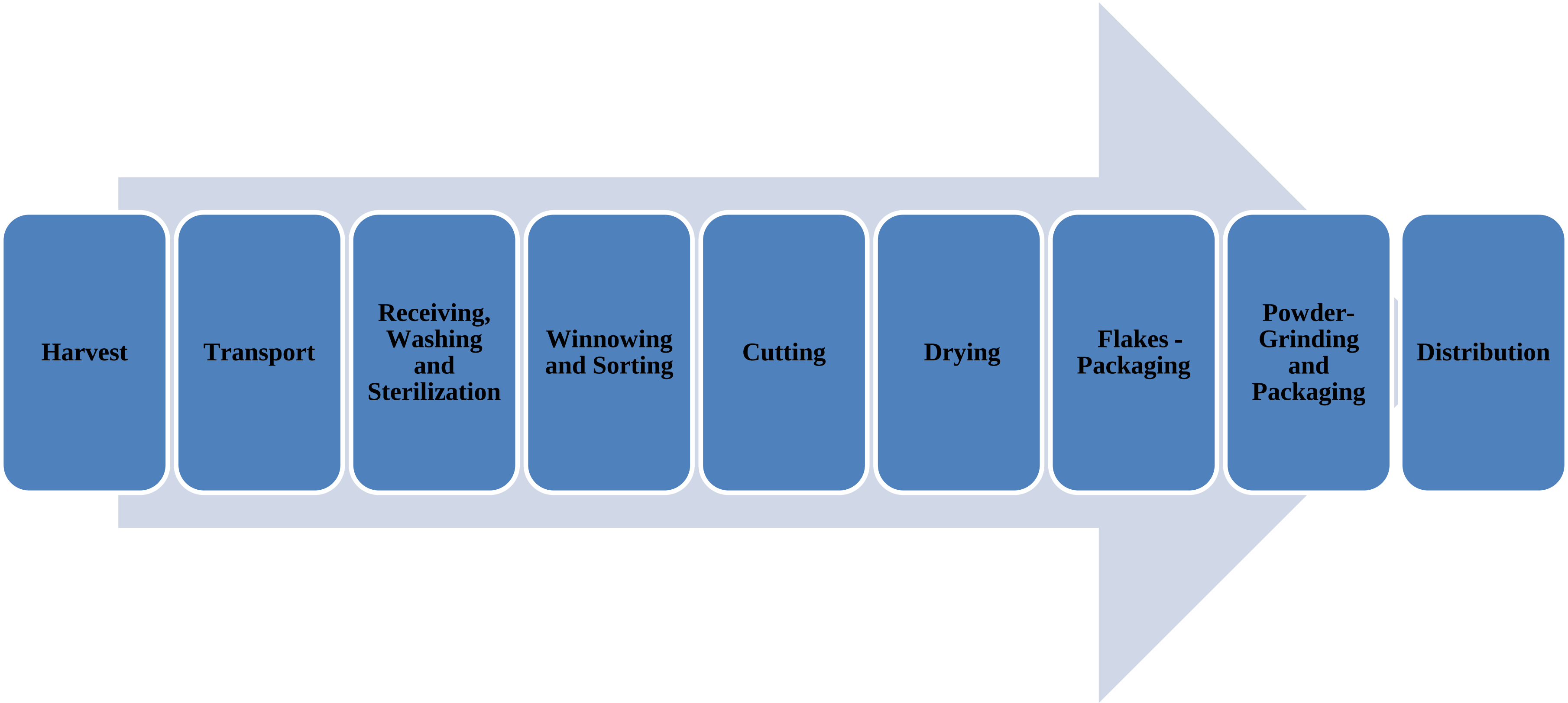

Figure 1: Basic Steps for Dried Herbs

2 Industry Overview

2.1 Industry Description

There is a growing global demand for spices and herbs. The price has been increasing an average of 1.8% from 2010 to 2014 (CBI 2016). The markets for culinary herbs include the USA, Canada and European Union (EU). The USA has been labelled the largest importers of herbs and spices although they produce nearly 40% of their spice needs. The EU has over 500 million consumers. The consumption of herbs in EU amounted to 385 thousand tonnes in 2012, with direct imports from developing countries amounting to nearly one billion euro (CBI 2016).

The global spice and herb production numbers, places Asia at the top of the list with 81% of the market share. They are followed by Africa with 12%, Latin America and the Caribbean with a 3.7% share and the EU with a 2% share. The drivers of the consumption of herbs are:

- The increasing popularity with spices and herbs as condiments and seasonings
- Health awareness and food innovation
- A demand for convenience in the form of readily available seasoning for quick meals.

The Asian countries have the economies of scale to invest in processing facilities. T&T's opportunity lies in attracting a niche market of organically grown herbs and being able to meet the strict requirements of the food safety policies of the USA, Canada and EU.

2.2 Incentives

A number of incentives are available for investors. In addition to general incentives, there are incentives related to manufacturing as well as agro-processing. (All values for incentives are in $TT where US $1. = TT $6.74 on 17 August, 2016)

- ***The Fiscal Incentives Act*** offers a waiver of income tax on dividends or other distributions, other than interest, out of profits derived from manufacture of approved products.
- ***The Customs & Excise Act*** offers investors duty free importation of plant, machinery, equipment, components and raw materials, as specified and raw materials, as specified in the Third Schedule of the Customs Tariff.
- ***The Foreign Investment Act*** allows a foreign investor to purchase land up to one acre for residential purposes and five acres for commercial use. In addition, foreign investors are allowed to purchase up to 30 percent of the cumulative shareholding in a public company.
- ***Free Trade Zones*** activities that qualify for approval include manufacturing for export, international trading in products, services for export and development and management of free zones. Benefits include exemptions from Corporation Tax, Import duties on capital goods, parts and raw materials for use in the construction and equipping of premises and in connection with the approved activity; Value Added Tax; Withholding taxes; Container examination fee; Work permit fees, and land and building taxes.
- ***Agro-processing Incentives*** offered by the government including rebates of:

  - 50% of the cost of establishing approved facilities for Agro-Processing of approved commodities to a maximum of $50,000
  - 50% of the cost refurbishing of approved facilities for Agro-Processing of approved commodities to a maximum of $20,000
  - 50% towards the cost of packaging material to a maximum of $15,000 annually
  - 40% of the cost of Hazard Analysis and Critical Control Points (HACCP) upgrade to a maximum of $40,000
- ***Post-harvest and Marketing Incentives*** are also offered and include rebates of:
  - 40% of the cost of establishing approved Post harvest facilities to a maximum of $10,000
  - 50% towards the cost of Packaging Material up to a maximum of $4,000
  - 50% towards the cost of Postharvest equipment up to a maximum of $30,000
  - 30% towards the cost of New Chill facility up to a maximum of $30,000
  - 40% of the cost of HACCP upgrade to a maximum of $40,000

3 Stakeholder Analysis

Each of the nineteen (19) stakeholders in this study was rated on a scale from 1 to 5 for degree of possession of each attribute where 1 was lowest and 5 was highest. The stakeholder was deemed to possess the attribute of power, legitimacy or urgency when given a ranking of 3 or higher. The result of this preliminary analysis is summarized in Table 3 and Figure 2. For this opportunity, Processors, the Food and Drug Agency and NAMDEVCO were deemed to be among the most important stakeholders.

Table 3: Stakeholder Analysis of Dried and Powdered herbs

STAKEHOLDER	POWER	LEGITIMACY	URGENCY	TOTAL
Farmers/Owners	3	5	2	**10**
Government Agencies	4	3	3	**10**
ASTT	4	4	3	**11**
NAMDEVCO	4	3	4	**11**
Agro-Chemical Shops	1	2	1	**4**
ADB	3	3	3	**9**
TTABA	2	3	3	**8**
IICA	2	4	4	**10**
CARIRI	1	2	4	**7**
CARDI	2	4	4	**10**
CABA	2	3	3	**8**
Processors	4	5	4	**13**
UWI/UTT Food Research Unit	1	3	3	**7**
Regional Co-operations	1	2	3	**6**
Post-Harvest Professionals	1	4	4	**9**

Food and Drug Agency	4	4	4	**12**
Retail Consumers	3	1	4	**8**
Wholesale Consumers	4	2	4	**10**
Import/Export Houses	4	2	4	**10**

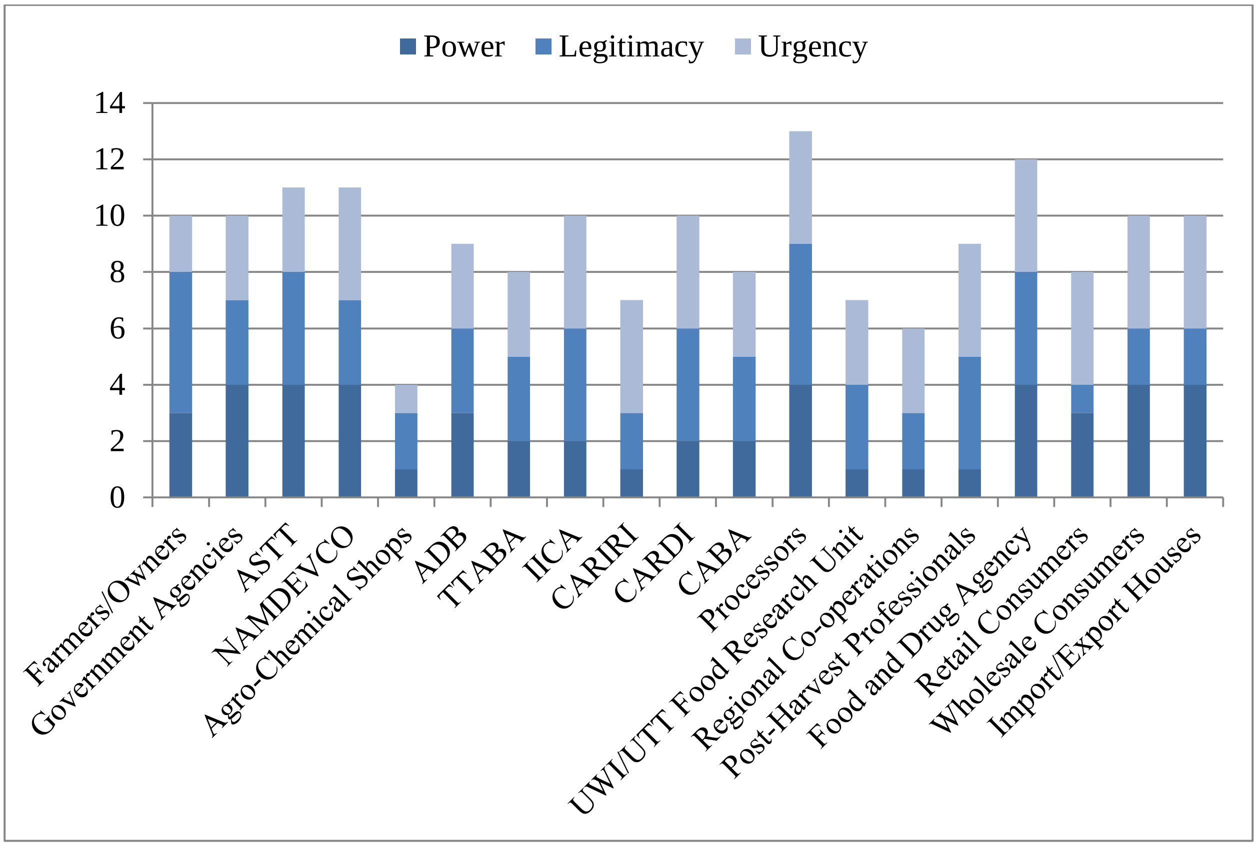

Figure 2: Stakeholders in the Dried Herbs Industry

4 Environmental Scan

4.1 External Analysis

PESTLE

The environmental scan started with an evaluation of the external environment for the Dried and Powdered Herbs. This was done using the PESTLE tool where Political, Economic, Social, Technological, Legal and Environmental (physical) benefits or concerns regarding the venture were identified and their potential impact individually assessed. This can be seen in Table 4.

Table 4: PESTLE Analysis of Dried and Powdered Herbs

CATEGORY	SITUATION	POTENTIAL IMPACT
Political	Lack of Agro-Processing incentives and no policies on herb & spice production	Lack of interest by farmers to pursue production of herbs. Hence production of herbs is in small volumes.
	No formally recognized government association	Farmers is this type of farming have many difficulties to overcome. Their concerns are not heard and hence the reluctance of farmers to enter into this type of farming.
Economic	There is no national policy on culinary herbal production. Production is not strategic	Culinary herbs are just randomly grown once land is available. Government has not considered culinary herbs as a major source of export income. Also, farming is done on small plots less than 2 hectares.
	Large local and export market exist.	Markets exists in the USA, Canada and European Union. These countries have very stringent Food safety regulations.
	Competition is fierce but a growing market for organically grown foods.	Major exporters are China, Indonesia, Vietnam, Kenya and Latin America. The economies of scale make it difficult for Trinidad and Tobago to enter

		into regular markets. However, the growing desire of organically grown foods puts Trinidad and Tobago in a better position.
Social	Lack of interest by farmers	Because of lack of government incentives, farmers move on to other ideas that can provide other means of income.
	Training and knowledge of value chain and food safety policies	Few people are aware of the food safety and quality requirements for exporting herbs to USA, Canada and EU, hence making it difficult for local farmers and processors to enter these markets. The requirements are found in the European Spices Association (ESA) and American Spice Trade Association (ASTA).
	Growth of rural communities	Larger farms and estates would give rise to a better standard of living in rural communities that house these areas.
	International branding of Trinidad and Tobago	There is the opportunity to make the country known as the flavour of our products are unique.
Technological	Herbal production and harvesting is small scale compared to other crops	Because of current small scale production, there is lack of technological input and research in this area.
	Limited funding in research for herbs	Markets are very competitive. The major exporters spend millions in research and have the economies of scale to invest in advanced processing facilities.
Legal	The General Food law in EU and food safety regulations in USA strictly dictate standards for food products in USA and EU markets.	The stringent food policies of the USA, Canada and EU make it difficult and costly to enter into these markets. Entering into a niche market is the way to go. However, organizations must implement good manufacturing practices such as HACCP.
	Different standards for USA and EU	The EU has the most stringent food safety policies. Exporters must be aware of the difference. There is a difference in the cost of equipment. For instance

		the EU is moving towards steam sterilization. This is a costly piece of processing equipment.
Environmental	Large farms having ecological effects on the environment.	Large estates can act as carbon dioxide sinks and well as oxygen producers and thus improve the local air quality. They can also prevent soil erosion at higher elevations.
	Farming on hillside	There must be terracing practiced as hillside farming could result in soil erosion.

PORTER'S 5 FORCES

The second part of the external analysis examined the competitive environment. For this analysis Porter's 5 Forces (P5F) was used. P5F looks at the rivalry among existing competitors, the threat of new entrants, the threat of substitute products, the bargaining power of suppliers and the bargaining power of customers. Using the P5F tool is superior to simply identifying competitors in the marketplace and assessing their potential threat. Because it allows for the analysis of potential threats from other products or ventures that may not be identical or even operate in the same industry but which are threats nonetheless. This analysis can be seen in Table 5.

Table 5: Competitive Issues in the Dried and Powdered Herbs Industry

FORCE	SITUATION	THREAT

Existing rivalry	There are many producers regionally and globally.	**HIGH**
Threat of new entrants	Exporting fresh herbs is a nearly saturated market. There is a market for organically grown herbs.	**MEDIUM**
Threat of substitute products	There are number of existing products such as cilantro and many other herbs that are available.	**HIGH**
Bargaining power of customers	The bargaining power of customers for this product is medium as it has many health benefits and it has a unique flavour.	**MEDIUM**
Bargaining power of suppliers	The product is not only available locally.	**MEDIUM**

4.2 Internal Analysis

SWOT

The SWOT tool was used to conduct an Internal Analysis for the venture. The first phase of the SWOT tool identified the Strengths and Weaknesses inherent to the proposed project; and major Opportunities in and Threats to the industry (see Table 6). The second phase recommends how strengths and opportunities can be exploited and threats can be mitigated and weaknesses addressed respectively; this is addressed elsewhere in the report.

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Table 6: SWOT Analysis of Dried and Powdered Herbs

STRENGTHS	**WEAKNESSES**
• Herbs are not seasonal. • Short term crop if it is transplanted. • Sturdy crop as there is no known serious pests and disease. • Potential for greenhouse production. • Drying & packaging technology exists. • Easily cultivated.	• Lack of research in the area of cultivation, postharvest, etc. • Lack of support from extension officers. • Low production capacity to supply international market. • Lack of processing facilities. • Farmers' knowledge in food safety and handling.
OPPORTUNITIES	**THREATS**
• High demand of the unique herbs. • Value chain potential. • Health benefits. • Large export possibility. • Organic product market.	• Unknown diseases and pests. • Lack of research on climate/weather conditions. • Lack of coordination policy development.

5 Sub-sector Assessment

Dried and Powdered herbs, as an investment opportunity was assessed on various criteria including demand, raw material cost and availability, energy use, investment value, finished product value and availability of labour. This was based on a factor rating method developed by subject-matter experts. On each of the criterion, the venture was given a rating from 1 to 10. These were weighted according to the relative importance of the criteria and a final score calculated. The final score for dried herbs was 7.066 out of a possible 10, which was above average among the potential investment opportunities. See Table 7.

Table 7: Sub-sector Assessment Table: Dried Herbs

CRITERION	ASSESSMENT	WEIGHT	RATING 1-10	SCORE
Demand	There is a great demand for these valued added products both locally and internationally.	19.6%	9	1.764
Finished product value	The finished product fetches a considerable price on the market of 10 US cents/gram.	17.4%	7	1.218
Raw material (availability)	Raw material is available for domestic market.	13.0%	5	0.65
Raw material (cost)	The cost of raw material is relatively low.	13.0%	8	1.04
Legislation/regulation/ government focus	There are incentives provided to farmers and processors.	10.9%	6	0.654
Energy	The cost of energy is low. Drying of the product is the only unit operation that may require some energy but this is in small amounts.	8.7%	8	0.696

Labour market	Labour is available.	8.7%	4	0.348
Investment value	The investment value would be about 3 USD.	6.5%	8	0.52
Technology	The technology has been proven and there has been considerable research and development in the area.	2.2%	8	0.176
Job creation	Jobs in numbers of 25 to 50 could be created directly and indirectly.	0.0%	6	0
Total		**100%**	**69**	**7.066**

6 Identification of Value Added Services

For this section, value stream analysis (VSM) was used. VSM has its genesis in the Toyota Production System of Lean Manufacturing. It essentially shows, on a single page, how value is created along the extended value chain from suppliers to customers for a single product type. When the value stream is mapped and assessed, opportunities for improvement may only then be identified. The value stream indicates other services that will be necessary for the successful realization of the venture. See Figure 3.

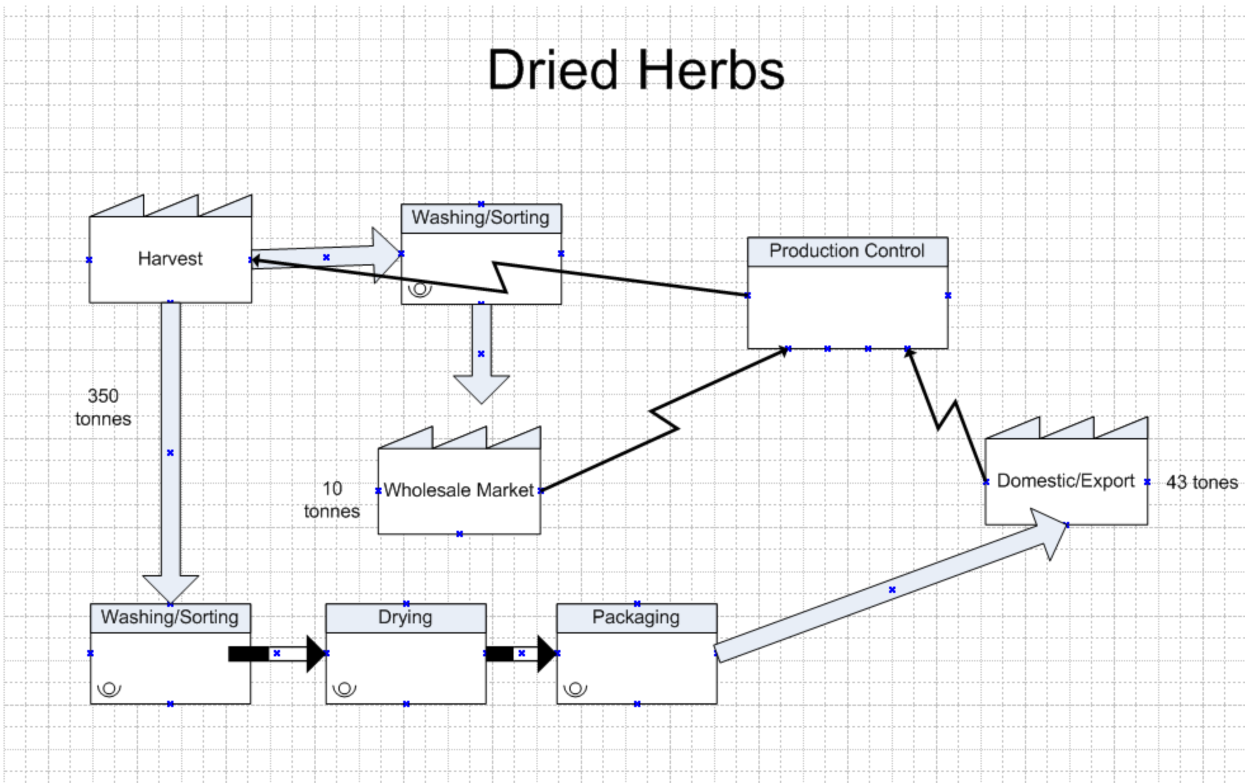

Figure 3: Value Stream Map -Dried Herbs

6.1 Supply Chain Issues

Raw Material Volume

Dried herbs, by their nature, require large amounts of raw material, as when they are dried, their volume decreases greatly. The farmers that produce these herbs are usually small scale farmers, who produce moderate amounts. Therefore, it is possible for the plant to have problems sourcing raw material locally if it ramps up production. In this case, material may have to be imported from other regional territories.

Agricultural standards and practices

As mentioned in the previous point, many of the farmers producing these herbs are small scale, and they do not use cutting edge technology, nor do they keep to any international standard, which would be required internationally for the export of food products. This means that these farmers need to be trained in agricultural best practices and technology needs to be invested in.

Quality Standards

The quality of the raw material can also be called into question when considering the previously mentioned problems. One particular egregious example is the improper use of manure by these farmers. This can result in the contamination of the raw material and thus, result in a subpar final product. Training of these farmers will also assist in this matter.

7 Plant and Equipment with Estimated Cost

7.1 Infrastructure

The estimated size of the production plant is 465m^2 and this includes parking, a 24kV electrical kiosk, special loading bay area and special raw material storage facility. The approximate cost is shown in Table 8.

Table 8: Approximate Cost of Infrastructure

DESCRIPTION	COST (USD)
Renting/Leasing (Annual) of a 465 m^2 warehouse/factory	45,000.00
Installation of fire and security systems, air conditioning, plumbing, electrical works etc. to make buildings ready of occupation	100,000.00
Cost of installing a 24kV electrical kiosk	8,000.00
5-8 Acres Land Purchase and development for construction of 3 greenhouse facilities	300,000.00
Construction of three greenhouse facilities by the end of year 2	500,000.00
TOTAL	**953,000.00**

The facility is assumed to have a production capacity of 40- 60 tonnes annually. It is estimated that at the end of year 3 that the factory will have a reliable supply of herbs due to the acquisition of land and construction of greenhouses for herb production.

7.2 Annual Utilities Usage

Table 9: Annual Utilities Cost

DESCRIPTION	COST (USD)
Electricity – 3,700,000 kWh per year at 0.025USD per kWh	92,500.00
Water – 50,000 m^3 of water a year, at $1.80 USD per m^3 (Usage include Processing facility and Greenhouses	90,000.00

TOTAL	**182,500.00**

7.3 Salary

Annual salary costs for this opportunity is expected to be US $259.6 K. See Table 10.

Table 10: Salaries

POSITION	NUMBER OF EMPLOYEES	ANNUAL SALARY (USD)	TOTAL ANNUAL SALARY (USD)
General Manager	1	27,000.00	27,000.00
Administrative Officer	1	21,600.00	21,600.00
Accountant Assistant	1	13,500.00	13,500.00
Marketing Assistant	1	13,500.00	13,500.00
Production Supervisor	1	21,600.00	21,600.00
Buyer	1	15,000.00	15,000.00
Quality and Food Safety Officer	1	16,000.00	16,000.00
Production Assistants	3	15,000.00	45,000.00
Production Workers	8	10,800.00	86,400.00
TOTAL			**259,600.00**

7.4 Legal/ Statutory Fees

Raw materials and salaries and wages represent the biggest expenses regarding base operational costs. Legal and statutory fees are estimated at $10.1K USD/yr. This is included in administrative expenses.

7.5 Operational Costs

A summary of the base operational costs is shown in Table 11.

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Table 11: Operational Costs

COST CENTRE	COST (USD)	DESCRIPTION
Marketing/Promotion/Product Development	603,881	15% of expected annual Income
Security	25,000	
Telecommunication	47,000	(Phone and Internet Services)
Miscellaneous	40,484	2% of expected annual income
Vehicle Rentals/Leases	20,000	(Delivery Trucks, Material Handling Vehicles e.g. Forklifts)
Insurance/ Export	404,838	10% of expected annual income
Raw Material (Herbs)	437,500	
Raw Material (Garlic and Ground pepper)	250,000	
TOTAL	**1,828,703.00**	

7.5 Equipment and other costs

Table 12 gives the wholesale prices of the equipment (Shipping and Freight cost have been estimated and included). Most of the equipment can be purchased on ALIBABA.

Table 12: Equipment Costs

DESCRIPTION	COST (USD)
Herb Washing machine (Model Chinese LDHB, 2 sets)	6,000
Herb Dehydrator machine (Xuanhua, 240kg/h capacity, 220V 6 units)	10,000
Herb sterilizer, continuous belt type tunnel dryer machine	50,000
Winnower and Sorting machine	20,000
Commercial Shredder for herbs	15,000
Herb Grinder (2 ton/ hr capacity stainless steel 30kW Milling machine)	15,000
Herb Bulk Packaging machine	20,000
Herb Mixing Machine	10,000
Herb Packaging (small packets, 500g) machine	6,000
Vehicles/ Material Handling	50,000
Storage facility	50,000

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Miscellaneous	30,000
TOTAL	**282,000**

7.7 Investment Summary

The Table 13 is a summary table of the cost that is required to create and develop this profile.

Table 13: Investment Summary

COST CENTER	COST (USD)	FREQUENCY OF COST
Utilities	182,500.00	Recurring
Rent	45,000.00	Recurring
Salaries	259,600.00	Recurring
Legal/Statutory Fees	10,100.00	Recurring
Operational Costs	1,828,703.00	Recurring
Subtotal	**2,325,903.00**	
Plant/Equipment Cost	$282,000.00	Initial
Infrastructure	$953,000.00	Initial
Subtotal	**1,235,000.00**	
TOTAL	**3,560,903.00**	

Total Investment = $3,560,903.00 USD

It was found that based on the pessimistic estimate, this project would pay back in 5 years with an annual return of 36% and a positive net present value of 2.77 million USD. The moderate estimate of the market will yield a project that pays back in 4 years. The ten year return on this project is 47% and the net present value is 4.61 million USD. With innovative and creative product development and targeting moderate but lucrative markets, the optimistic forecast is possible. This scenario pays back in year 3 with an annual return of 57% and net present value of 6.36 million USD.

8 Human Resources

8.1 Organisation Chart

The organisation would permanently employ eighteen (18) individuals. In charge would be a General Manager with a Production Supervisor and Administrative Officer reporting to him. See Figure 4.

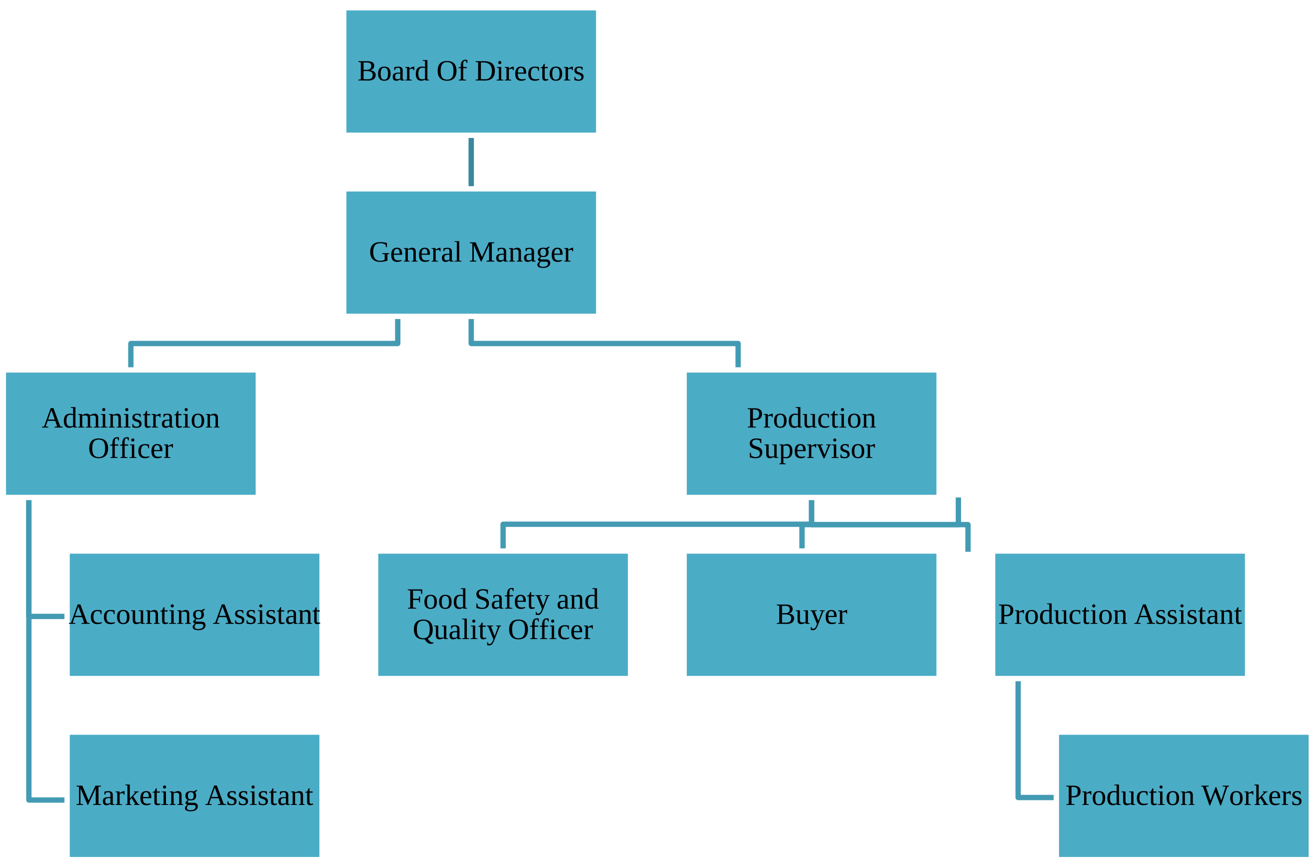

Figure 4: The organizational structure of the Dried and Powdered herbs factory

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8.2 Job Descriptions for Key Positions

Brief descriptions for the key permanent positions in the Dried and Powdered Herbs Factory are shown in Table 14.

Table 14: Job Descriptions

POSITION	RESPONSIBILITY
Board of Directors (BOD)	The Board of Directors will comprise the Chairperson who is knowledgeable in business and food industry sector, Secretary/Financial Controller, Food Safety Consultant, Food Engineer, Legal Advisor, a Business Development/Marketing Professional and a Major Investor.
General Manager	The general manager has an overall responsibility for managing both the revenue and cost elements of a company's income statement. They also oversee most or all of the firm's marketing and sales functions as well as the day-to-day operations of the business.
Administration Officer	The Admin. Officer will be responsible for controlling the company's finances and for reporting to the board any variances from the targets established. The Admin. Officer will produce regular Management and Financial Reports and will perform internal audits on the company's operations on a regular basis.
Accounting Assistant	The assistant are responsible for processing of bills, invoices, accounts payable and receivable. Also responsible for handling and maintaining the accounting records of company, filing them properly and updating the company's accounting database.
Marketing Officer	The Marketing Officer is responsible for planning, advertising, public relations compiling and reporting on consumer feedback.
Buyer	The buyer will go out to various raw material suppliers on the island (farmers etc.) and secure quality raw material for the operation of the company.
Production Supervisor	The production supervisor communicates job expectations as planning, monitoring, and appraising the organizations production staff. He also has overall responsibility for all aspects of food safety

	and quality in the factory and Field Stations.
Food Safety and Quality Officer	The food safety and quality officer is responsible for implementing and monitoring HACCP and food safety management systems in the organisation.
Production Assistants	The production assistants will work along-side the production supervisor to manage the production workers and any contract workers that may be hired. One production assistant is assigned to the field while two others are assigned to the factory.
Production Workers	The production workers are involved in the cleaning, drying and packing of the product.

8.3 Labour Availability

Table 15: Potential labour pools for proposed positions

CATEGORY	UNEMPLOYED	EMPLOYED	POTENTIAL EMPLOYMENT POOL
Professionals ▪ Accounting Assistant ▪ Production Supervisor ▪ Production Assistants	900	36700	Graduates from any of the sixteen (16) Universities of the West Indies Open Campus locations in the Caribbean, and/or any of UTT campuses in Trinidad.
Legislators, senior officials, managers ▪ Board of Directors ▪ General Managers	400	61300	Sourced from the existing pool of unemployed and employed persons through interviews and the subsequent process of filtering.
Clerks ▪ Administrative Officer ▪ Marketing Officer	5100	67100	Can be sourced from several training centres in Trinidad registered under the Accreditation Council of

▪ Food Safety and Quality Officer			Trinidad and Tobago (ACTT) E.g. Crane Safe Technical Institute, Advanced Solutions Technical Institute and Technical Institute for Learning just to list a few.
Production Workers	600	57700	

9 Location

The assessment of the most suitable locations for the establishment of the proposed facility, was determined using a factor rating method. Fourteen (14) rating criteria were used in this particular instance. These criteria can be found in the first column of the table.

Table 16: A general assessment of locations in T&T

	Weight	Trincity	Aranguez	Central	Diego Martin	South	Arima	Tobago		
Availability of services and supplies	0.048	80	80	80	80	80	80	60		540
Environmental considerations	0.010	75	75	75	75	75	75	90		540
Infrastructure - land availability	0.095	65	70	90	60	60	75	60		480
Infrastructure - land/construction costs	0.105	60	60	80	50	60	60	40		410
Infrastructure - roadways/access	0.124	80	80	60	70	70	80	50		490
Labor availability experience/skills	0.067	90	70	75	75	80	80	60		530
Labour cost	0.048	75	75	75	75	75	75	65		515
Proximity to emergency services	0.000									0
Proximity to port	0.086	80	80	80	80	70	75	60		525
Proximity to raw materials	0.057	80	80	80	60	60	60	50		470
Utilities - electricity	0.105	90	90	90	90	90	90	90		630
Utilities - gas	0.086	90	90	90	90	90	90	80		620
Utilities - telecom	0.086	90	90	90	90	90	90	90		630
Utilities - water	0.086	75	75	70	60	75	70	50		475
Total	1.000	1030	1015	1035	955	975	1000	845		6856

The locations considered were those that have previously been identified for national economic development, i.e., key economic zones. These locations were considered as they are well positioned for the establishment of new businesses. Accordingly, access to the necessary infrastructure, services and other critical resources would be more readily available, as compared to most other locations across the country.

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As in other similar assessments, the results of the assessment indicate that the seven locations in Trinidad are all relatively well positioned to setup the proposed manufacturing facilities. Of these seven, Central and Trincity areas have emerged as the locations with the greatest comparative advantage. This is primarily a result of their relative proximity to Port of Spain and/or Piarco, where the key ports and many of the critical supporting services are located. As in previous assessments, Tobago has emerged as a location that is least suitable. The primary reason for this is the lack of a container port in Tobago. Port access is a critical requirement, if the exportation of the products is required. Accordingly, the construction of a container port would be critical to improving the suitability of Tobago as a location for the proposed industry.

Best Locations based on rankings are:

1. Central Trinidad: 1035
2. Trincity: 1030
3. Aranguez: 1015
4. Arima: 1000
5. South: 975
6. Diego Martin: 955
7. Tobago: 845

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10 List of Potential Investors and Partners

Table 17 gives a list of potential investors and partners together with contact information. The list is not extensive, but could be used as a guide to contact similar potential investors and partners.

Table 17: List of Potential Investors and Partners

ORGANISATION/INSTITUTION	CONTACT INFORMATION
Chief Brand Products Ltd.	144-150 Ackbar Road, Charlieville, Chaguanas 500529, Trinidad & Tobago, W.I. Tel: 868-665-4144 Fax: 868-665-5006 Email: admin@chief-brand.com
Massy Stores Head Office	39A Wrightson Road, Port of Spain, Trinidad, W.I. Tel: (868) 609-4456 Fax: (868) 625-1760 Email: customercare.tt@massystores.com
The National Agricultural Marketing and Development Company (NAMDEVCO)	S.S. Erin Road, Debe, Trinidad, W.I Tel: 647-3218/3467/3866/7576/1340/7907/2368 Fax: 647-6087
Agricultural Development Bank (ADB)	#87 Henry Street, Port of Spain. Tel: 623 - 6261-5

	Fax: 627-7493/ 624 -3087 E-mail: northoffice@adbtt.com
The National Export Facilitation Organization of Trinidad and Tobago (EXPORTT)	151B Charlotte Street, Port of Spain Tel: (868) 623-5507 Fax: (868) 625-8126 Email: info@exportt.co.tt
Caribbean Agricultural Research and Development Institute (CARDI) University of the West Indies	University Campus St. Augustine Trinidad and Tobago. Phone: 1 (868) 645 1205/6/7 Fax: 1 (868) 645 1208
Trinidad and Tobago Agri-Business Association (TTABA)	Unit 13, Freeport Warehouse Complex, Eagles Crescent, Mission Road Tel: 673-6429
Inter-American Institute for Cooperation on Agriculture (IICA)	#10 Austin Street, St. Augustine Trinidad, West Indies Postal code: P.O. Box 1318, Port of Spain, Trinidad, West Indies Tel: 1 (868) 645-4555 / 645-5020 / 645-8886 Fax: 1 (868) 662-8253 Direct phone: 1 (868) 645-4555
The University of the West Indies (UWI)	University Campus St. Augustine Trinidad and Tobago. Phone: 1 (868) 662-2002
Agricultural Society of Trinidad and Tobago (ASTT)	#52 Penco Street, Penco Court,

	Lange Park, Chaguanas, Trinidad Tel: 672-8995, 672-0521 Fax: 671-9688 Email: info@agrisocietytt.org
Ministry of Agriculture, Land and Fisheries	Head Office Ministry Food Production St. Clair Circle, St Clair Tel: 622-1221 (PBX) Fax: 622-8202
McCormick & Company, Inc.	Phone: 410-771-7537 Fax: 410-527-8222 E-mail: investor_services@mccormick.com
Majestic Spice	6433 Canning Street Commerce, CA 90040 Phone : 323-303-3324 Fax : 323-767-8957
AKO GmbH	Chemnitzer Straße 14 - 16 3O952 Ronnenberg GERMANY Phone +49 (O) 511 94685-O Fax +49 (O) 511 94685-55 Mail: info@ako-gewuerze.de
Rocky Mountain Spice Company	3850 Nome Street, Unit A Denver, CO 80239 Phone: (303) 308-8066 (888) 568-4430 Mail: sales@rockymountainspice.com

Manufacturing Profile 2: Dried and Powdered Herbs

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11 Concluding Remarks

Organically grown dried and powdered culinary herbs, with the initial focus on Spanish thyme, chadon bene and bay leaf were added to the list of sub-sectors under analysis, after consultation with industry stakeholders. There is a particularly large export market for Spanish thyme. Furthermore, there exists a strong market in the T&T diaspora for chadon bene. An estimated 36,000 tonnes of fresh herbs and spices are produced annually in the Caribbean. This is valued at 71 million USD (FAO 2009). The technology and knowledge for creating these dried and powdered products is readily available, as there has been some work done in the area locally. By adding value, there are opportunities that can be capitalized upon, both intra-regionally and extra-regionally. Organically grown dried and powdered herbs are high valued commodities and therefore have a high export potential. There exists a raw material base that is likely to grow as the demand grows. The key factor for success in this industry is the adequate investment in marketing and ensuring that producers and farmers adhere to the stringent food safety policies of the USA and EU.

The profile is limited by the amount of raw material that can be harvested on the island and the economies of scale are factors when considering exports from China and Indonesia. Organically grown herbs that are processed under stringent USA and EU food safety laws will appeal to a niche market. As the company grows, it is possible for one looking into importing fresh herbs, or establishing another company to process other herbs on the island, besides thyme and chadon bene.

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