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Cost and Return Analysis of Blue Tea Manufacturing Business in North 24 Parganas District of West Bengal: A Case Study

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ABSTRACT

Blue Tea is usually made from Blue Butterfly Pea Flower (scientifically called as '*Cliteria Ternatea. L*' and commonly known as 'Aparajita'). In traditional Ayurvedic medicine, Blue Butterfly Pea Flower has been used for centuries. After the outbreak of the COVID-19 pandemic, the Blue Tea consumption among the people has been on the rise not only in India but also all over world. The main objective of the study is to explore the processes and cost involved in the production of Blue Tea in North 24 Parganas District along with the prospects and challenges. For the purpose of the study, various cost accounting techniques are used to estimate costs and return. The study revealed that in spite of lack of Government patronage, absence of any kind of research and development, marketing and other promotion related initiatives, Blue Tea business in North 24 Parganas District has huge economic potential in terms of return mainly because of easy and cheap supply factors of production.

Key words: *Blue Tea, Sustainable Cost of production, Return on Capital Employed.*

JEL Classification Codes: D24, Q01.

Declarations

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1. Introduction

Health and wellness food market is expanding rapidly with the increasing level of health awareness and health consciousness among the masses, more particularly after the outbreak of COVID 19 pandemic. In 2022, the global health and wellness food market was valued at $ 841 billion and is projected to increase to one trillion U.S dollars by 2026 (www.statista.com on 18-10-2022). Popularity of herbal tea in recent times may be attributable to this mind set. Blue Tea is the latest addition to the

list under herbal tea category though the product itself is not altogether new to the Indians. Blue Tea is usually made from Blue Butterfly Pea Flower (scientifically called as "*Cliteria Ternatea.L*" and commonly popular as "*Aparajita*" or *Neelkanta*") which is a very common plant grown in most of the Southeast Asian countries.

In *Ayurveda*, we can find the reference of use of Butterfly Pea Flower. In traditional Ayurvedic medicine, Blue Butterfly Pea Flower has been used for centuries as a memory enhancer, antistress, anxiolytic, antidepressant, anticonvulsant, tranquilizing and sedative agent. (www.pubmed.ncbi.nlm.nih.gov on 04-12-2022).

Blue Tea enriches with zero caffeine, which naturally increases human metabolism. Due to this major anti-aging property, it is becoming popular all over the world as a health and wellness drink. The various wellness properties of Blue Tea in form bio- molecules and associated health benefits are given in the Table1.

Table 1**Wellness Properties in Blue Tea and Their Health Benefits**

Bio-Molecules in Blue Tea	**Health Benefits**
Antioxidant	Facilitates Digestion
Flavour	Uplift of Mood
Flavonoid	Enhances Skin Health
Anthocyanin	Stimulates Hair Growth
Phenolic Acid	Ameliorates Diabetic Condition
Fortifying Bioflavonoid	Uplifts Cardiac Wellness
Proanthocyanidin	Promotes Healthy Eyesight
Potent Aphrodisiac	Fight Reproductive Problems
Acetylcholine	Boosts Brain Health

Source: www. netmeds.com, 18-11-2022

Over the past few years, herbal tea particularly Blue Tea, has been gaining popularity in Asian Countries (such as, Vietnam and Thailand), European countries and North American Countries. After the outbreak of the COVID-19 pandemic, the Blue Tea consumption among the people has been on the rise. According to *Transparency Market Research*, during the COVID-19 pandemic period, the online purchase of Blue Tea increased dramatically. As per the *Research and Markets Report* (The World's Largest Market Research Store), the Butterfly Pea Flowers market is expected to grow at a CAGR of 5.5% from 2020 to 2027 to reach $102.4 million by 2027.

This obviously offers an opportunity to harness the full potential of Butterfly Pea Flower especially in those regions where the flower is naturally grown in abundance. West Bengal is one such

region where the flower is grown naturally almost everywhere. Even in case of farming, the Butterfly Pea flower needs minimum care and fertilizer, pesticide and irrigation requirements are almost nil. But the commercial prospect is rightly explored by Mr. Gobinda Biswas of Ghaighata Block, North 24 Parganas district when he established a small-scale unit for Blue Tea production under the banner 'Kolkata Farmers' to which about 40 Butterfly Pea flower farmers are associated (The Bartaman, p.4 dated 29th June 2022).Apart from catering the demand of the raw flower on day-to-day basis, the alternative use of the pea flower for production of Blue Tea provides these farmers not only an alternative source of income but also help them to manage the over-production of flowers, which otherwise be perished or discarded.

On this backdrop, it is quite interesting to explore the processes involved in production of Blue Tea along with an estimation of cost and return with reference to the 'Kolkata Farmers'. A survey-based case study may be an appropriate method to capture the prospects and challenges associated with the production of Blue Tea in North 24 Parganas District of West Bengal.

2. Review of Literature

Butterfly Pea Flower Tea or Blue Tea is a very new concept in India and as such is outside the purview of academic research. That's why, research works on Blue Tea have been traced at the international level only. Some of the relevant literatures are tabulated below:

Year	Author(s)	Essence of the study
2003	Gomez and Kalamani	➢ Reviewed the distribution, plant description, agronomic characteristics, genetic variation, medicinal use, chemical composition and utilization of Butterfly Pea in livestock production.
2012	Suebkhampet and Sotthibandu	➢ Determined the effectiveness of the crude extract from butterfly pea flowers on animal blood smear staining.
2018	Chen, *et al.*	➢ Demonstrated that the butterfly pea flower fermentation solution has free radical scavenging ability, a reducing power in high concentrations, a moisturizing effect, and a whiting effect. ➢ Showed that the butterfly pea flower fermentation solution not only inhibits redness, itching, allergies, and irritation to the skin, but also has anti-oxidation properties and promotes moisture retention and whitening effects.

		➢ Concluded that butterfly bean flowers may be suitable as a raw material for natural beauty care products.
2019	Bewar	➢ Using New Product Development model, the study developed a mocktail drinks using butterfly pea flower extract also determine product cost and acceptability of this mocktail.
2019	Lakshan *et al.*	➢ Developed a commercial potential blue pea flower extract incorporated beverage having functional properties. ➢ Evaluated the functional properties of Blue Tea in terms of antioxidant activity.
2021	Madukoklla *et al.*	➢ Evaluated the commercially potential of jelly incorporated with Butterfly Pea Flower extract. ➢ Evaluated the colour, pH, moisture, titratable acidity, fibre, ash, and energy value of Butterfly Pea flower.
2021	Sofiah,*et al.*	➢ Determined the addition of ginger concentration with a constant drying temperature and variation in drying time in order to obtain Blue Tea quality according to standards. ➢ Determined the physicochemical properties (moisture content, ash content and antioxidant activity) and organoleptic properties in herbal tea of Butterfly pea flower with a combination of ginger and make an herbal tea with a combination of ginger flower Butterfly pea with the Tray Dryer method.
2022	Weeransinghe	➢ Study proved Butterfly Blue plant's has various medicinal activities such as nootropic activity, antioxidant activity, analgesic activity, anti-inflammatory and antibacterial activity, which helps treating diabetics, blood pressure, retinal damage, edema, and indigestion etc.

The above review clearly demonstrates that very few research works has been conducted on the aspect of commercial viability of Blue Tea production especially in the context of India and more particularly in relation to North 24 Parganas District. On this background, the present paper attempts to capture the processes involved in the Blue Tea production along with an estimation of cost and return generated. It would also attempt to understand the commercial prospects and challenges associated with Blue Tea production and how blue tea business will sustain in the long run.

3. Objective of the Study

The prime objective of the study is to explore the processes and cost involved in the production of Blue Tea in North 24 Parganas District along with the associated prospects and challenges.

The specific objectives of the study are:

- To highlight the process involved in production of Blue Tea;
- To estimate cost and return associated with Blue Tea production in North 24 Parganas District.
- To identify the prospects and future challenges associated with Blue Tea production in North 24 Parganas District.

4. Methodology

The study is basically explorative in nature. It attempts to explore and highlight the processes involved in production of Blue Tea along with estimated cost and return. The whole range of issues were captured from the onsite inspection of 'Kolkata Farmers' production facility and interview of Mr. *Gobinda Biswas*[1], Blue Tea producer, in *Ghaigata Block*, North 24 Parganas District on 18-07-2022 and 21-11-2022. Therefore, the data and information used are of mainly primary in nature. However, various cost accounting techniques are used to estimate costs and return. In this case study, leaf Blue Tea is the main product, that's why all estimation and analysis have been done on leaf variety of Blue Tea. For ascertaining total cost for producing Blue Tea, some realistic assumptions aremade, like:

[1]**Name of the Blue Tea Producer**: Mr. *Gobinda Biswas*.
Organisation Name: Kolkata Fermars.
Address: Village- Bishupur, Block: Ghaighata, District: North 24 Parganas (West Bengal).
Produces: Mainly Leaf Blue Tea and some quantity of dust Blue Tea (a by-product).
Annual Production:2 Ton or 2000 Kg of Leaf Blue Tea.

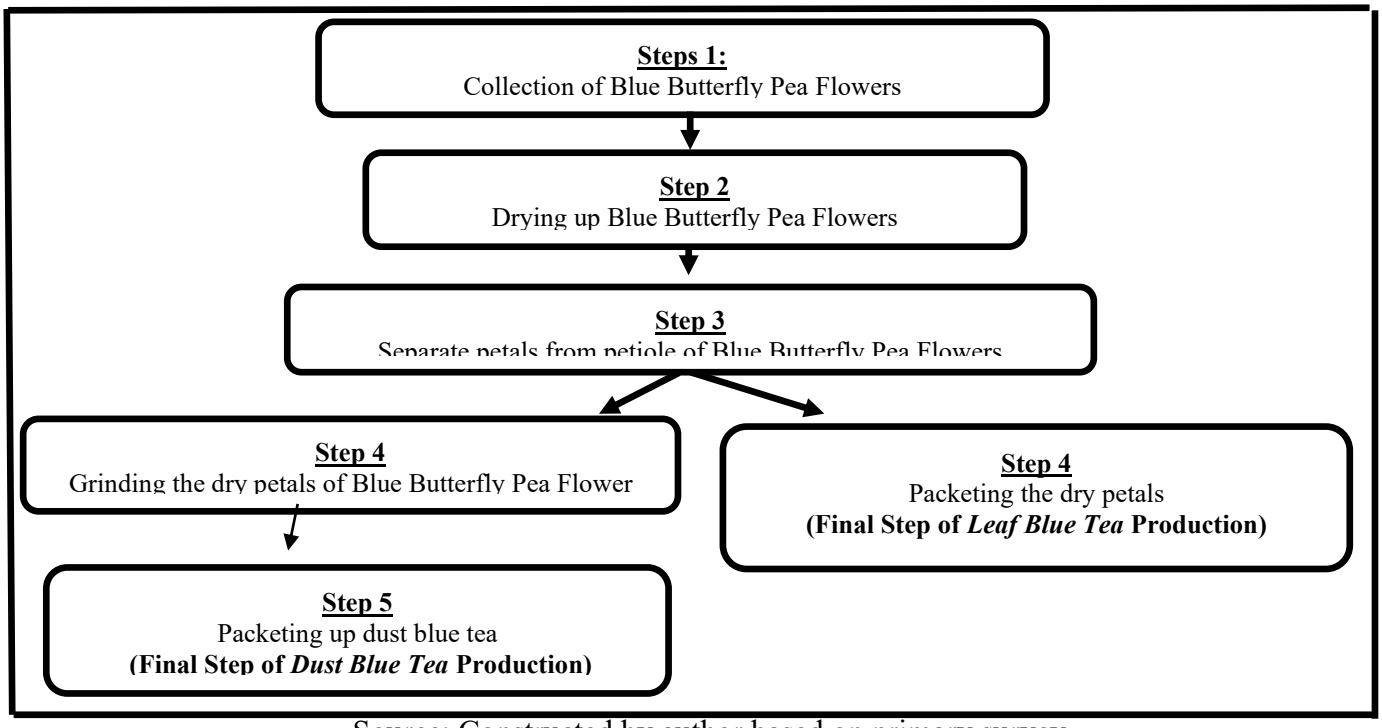
- For calculating depreciation, the life of dryer and grinder machine are assumed to be10 years and that of workshop building is 20 years. Straight line method of depreciation is used for these assets.
- For estimating the construction cost of workshop building, the valuation is based on the standard cost of construction as per the carpet area of the workshop building. In this regard, for taking the per square foot standard cost, the opinion of a construction expert is taken into consideration.
- For the purpose of comparative analysis, the market price of a popular Indian brand, named '*Blue Tea'*[2], is taken into consideration.

5. Blue Tea Production Process

The basic ingredient of Blue Tea is the petals of Blue Butterfly Pea Flower. The Blue Tea is usually consumed in two forms – leaf form and dust form. The process of making Blue Tea is basically very easy and almost non-laborious task. Main effort is to collect Butterfly Pea Flowers in abundant quantity as the process involved huge weight loss due to drying and processing. In dry season (March, April, and May), major portion of raw material (i.e, Blue Butterfly Pea Flower) has been procured for uninterrupted production process throughout the year. After collecting raw Butterfly Pea flowers, first the flowers are dried up in sunlight and separated from their petiole from petals. These two processes demand very less labour hour and capital. During the process of production, very nominal physical efforts are needed for handling of raw material and finished goods. That's why, in the case study, it is viewed that woman is engaged. The drier machine was mainly used during rainy season as the region is blessed with sufficient sunlight throughout the year and as such drying of petals does not require intervention of machine. The entire process can be conveniently presented through the figure 1.

[2]Blue Tea is an Indian brand selling 100% herbal teas across the world. Now it isspread over 12 countries. 150 plus community of various flower farmers from all over India are associated with this brand.

Figure 1: The Process of Blue Tea Making



Source: Constructed by author based on primary survey

6. Estimation of Cost and Return on Blue Tea

Table2: Standard Capital Required for Production of 2 Tonnes Leaf Blue Tea Annually.

Particulars	Amount Rs.	Amount Rs.
Fixed Capital		
Dryer Machine	3,50,000	
Grinder Machine	24,000	
Land (524 square fit, for construction of Work -Shop Building)	1,00,000	
Workshop Building (324 square fit)	4,50,000	9,24,000
Annual Working Capital		
(As per table 3)		**17,33,500**
Total		**26,57,500**

Source: Constructed by author based on primary survey

From table 2 it is reflected that for producing 2 Tonnes of Leaf Blue Tea, normally a dryer machine (specially used during rainy season), a grinder machine (specially used for production of dust blue tea) and a 27/x 12/or 324 square fit workshops building with concreate roof (Reinforcement Cement Concrete) are needed and the aggregate cost is estimated as Rs. 9, 24,000. It is termed as fixed

capital. While for maintaining day to day activities, Rs. 17, 33,000 is required as a working capital per period. Then total estimated capital required for producing 2 Ton Leaf Blue Tea will be Rs. 26,57,500.

For producing 2Tonnes or 2000 KG of *Leaf Blue Tea per annum*, using40000 KG of raw Blue Butterfly Pea Flowers, the estimated cost as in table 3 may be prepared.

Table 3: Calculation of Estimated Total Cost of Blue Tea Production

Particulars	Quantity (KG)	Per Unit (KG) Rs.	Amount Rs.	Remarks
i) Raw Material Purchase	**40,000 (Input)**	27.50	11,00,000	
ii) Carriage Inward		1.00	40,000	
iii)Power Charge: For Drying		0.55	22,000	For 3 Months (Rainy Season): (40000 x 2.2 x 3/12)
iv) Labour Charge				
• For drying petals in sunlight		3.00	1,20,000	
• For separation of petals		1.00	40,000	
v) Prime Cost (i+ii+iii+iv)		**33.05**	**13,22,000**	
vi) Factory Overhead				
• Electricity		0.45	18,000	
• Depreciation		1.12	44900	
vii) Work Cost (v+vi)	**2,000 (Output)**	692.45 (**On Output**)	**13,84,900**	
viii) Office and Administrative Overhead	**2,000**	51.00	1,02,000	Rs. 8500 Per Month
ix) Cost of Production (vii+viii)		**743.45**	**14,86,000**	
x) Selling and Distribution Overhead				
• Packing Charge		3.30	6,600	
• Carriage Outward		120.00	2,40,000	
xi) Cost of sales [For Leaf Blue Tea] (ix+ x)	**2,000**	**866.75**	**17,33,500**	
xii) Grinding Charge		10.00		

xii) Cost of Sales [for Dust Blue Tea] (xi+xii)		**876.75**		

Source: Data are collected from direct interview with the owner on 18-07-2022 and 21-11-2022

The above cost sheet (Table 3) shows the *Cost of Sales* of leaf Blue Tea and dust Blue Tea. The Cost of Sales of leaf Blue Tea is summation of *Prime Cost* (Purchase of Raw material, Carriage Inward, Power Charge and labour Charge), *Factory Overhead* (Depreciation and Electricity Charge), *Office and Administrative Overhead* and *Selling and Distribution Overhead* (Packing Charge and Carriage Inward). Additionally, for finding out the Cost of Sales (Per KG) of dust Blue Tea (a by-product of Leaf Blue Tea), exclusively *Grinding Charge* is included on Cost of Sales.

From the above table, it is clear that major amount is consumed for producing 2000 Kg or 2 Ton Blue Tea from Butterfly Pea flower is procurement of raw materials. It is almost 63% of total Cost of Sales (11, 00,000/17, 33,500 x 100).

From table 4, we can see that for production of leaf Blue Tea, most of expenditures are allocated for the mainstream activities (85.77% of total cost of sales) and only a nominal proportion (14.23%) is allocated for downstream activities. Besides that, there is no expenditures incurred for mainstream activities.

Table 4: Activity Wise Proportion of Cost of Sale (Leaf Blue Tea)

Activity	Per Unit (KG) Amount Rs.	Proportion (%) [On Cost of Sales, i.e, Rs. 866.75]
Mainstream Activities: Production	743.45	(743.45/866.75x100) =**85.77**
Upstream Activities: Research and Development	0	0
Downstream Activities: Selling, Distribution and After Sales service	(3.30+120.00) = 123.30	(123.3/866.75x100) =**14.23**

Source: Calculated on the basis of table no. 4

Table 5: Estimation Annual Net Profit, Net Profit Ratio and Return on Capital Employed (For Leaf Blue Tea)

Particulars	Quantity (KG)	Per Unit (KG) Rs.	Amount Rs.
i) Selling Price	2000	3,000.00	66,00,000

(As per the data collected from Mr. Gobinda Biswas)			
ii) Cost of sales (As per Table 4)		866.75	17,33,500
iii) Profit (i-ii)		**2133.25**	**42,66,500**
iv) **Net Profit Ratio**: (Net Profit/ Selling Price) x 100	(42, 66,500/66, 00,000) x 100= **65%**		
v) Return on Capital Employed (RoCE): (Net Profit/ Capital Employed) x 100	**(42, 66,500/9, 24,000) x100= 461 %.**		

Source: Constructed by author based on primary survey and Authors Calculation

As per the table 5, it is clearly indicated that the RoCE and Net Profit ratio of the Blue Tea production are very high due to the high profit margin. The selling price of leaf Blue Tea (i.e, Rs. 3000 per KG), that is fixed by the 'Kolkata Farmers', is still very low in comparison with the selling price (i.e, Rs.9,967 per KG) of popular Blue Tea brand, named 'Blue Tea'.

7. Prospects and Challenges Associated with Blue Tea Production

Prospects

On the basis of above discussions, the following prospects can be summarised:

- Blue Tea making business will have huge economic potential in term of profit due to easy and cheap supply of raw material, low labour-intensive process and almost monopoly condition of market situation.
- After Covid-19 pandemic world, the culture of consuming healthy foods has been increased in general public in all over the world. As a result, a sizable permanent domestic and foreign demand situation is already developed. That's why, as a nutritional supplement, there is a huge scope of commercial sustainability of Blue Tea as a product.
- If Direct to Customers (D2C)[3]e-commerce model be adopted by the manufacturer, then huge scope of profit may be earned.

[3]D2C is basically an e-commerce business model. By which manufacturers sell their products directly to the ultimate consumer avoiding various intermediaries with in the supply chain, such as wholesalers, distributors, and retailers .In D2C model, sellers offer fair-priced products to the consumers and also save packaging, shipping, and retailers' commission costs. Fair priced products attract more customers and increase the total revenue and profit margins (www.ranosys.com, 17-12-2022).

- Selling price of Blue Tea of the Unit under study is very low in comparison to well-known Indian brand 'Blue Tea' and it is easily affordable for Indian *middle class* and *upper middle-class* families.
- It is expected that Blue Tea of 'Kolkata Farmers' will gain more popularity among middle class and upper middle-class people.

8. Challenges

The Blue Tea making business in North 24 Parganas District has some challenges.

These are:

- As per table 4, weight loss during the production process is around 95%. Due to this normal loss, per unit cost of sales is talking a gigantic leap. It is an important consideration from the point of view of sustainability of the product.
- In the era of competitive world, to sustain in the market, research and development expenditure and after sales service initiatives are very much required. But from the above analysis it is found that almost nil or nominal amount are spent for those purposes. If big enterprise enters in this business, then small size business entities may face serious trouble in future.
- Blue Tea production in the district is just in infant stage. To survive in long run, the Government initiatives are essential. But in this case, no notable Government patronage is available.

9. Concluding Observations

Blue Tea production is typically a village level family enterprise, which has tremendous prospect in the domestic as well as global market. It is a product which uses village level inputs such as excess flower (which otherwise get perished or discarded) and surplus labour especially village women but has a bright prospect. Thus, Blue Tea making business is not only using the local natural resources optimally but also utilises the local human resources, especially woman. After Covid-19 pandemic world, '*Think globally, act locally* 'business model has become a popular slogan. Main features of this business model are use of local natural resources in such a manner so that natural and organic products can be produced which has universal acceptance and utility. Production of Blue Tea making in Ghaighata block of North 24 Parganas is perhaps one of such ideal case. The business model of Blue Tea appears to be silver lining for the rural people as it offers an alternative source of income for the rural women which in turn promotes women empowerment to some extent.

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