BVFP 365S Preparation of Food Processing Plant Proposal (Skill based) *report on,*

Tea Processing Unit (Mini Factory)

Submitted by,

Pawale Dhanshri Sanjay

ROLL NUMBER 10

Submitted to,

M.V.P. Samaj's

Arts, Science & Commerce College, Uttam Nagar CIDCO, Nashik 08

(Affiliated to SAVITRIBAI PHULE PUNE UNIVERSITY, PUNE *Under the guidance of*

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Academic Year

2020- 21

Arts, Science & Commerce College, Uttam Nagar CIDCO, Nashik 08

(Affiliated to SAVITRIBAI PHULE PUNE UNIVERSITY, PUNE

CERTIFICATE

This is to certify that,

MS. Pawale Dhanshri Sanjay Roll No.10 of VI semester, of B. Voc. (**Food Processing Technology**) has completed the necessary work for the requirement of Course No. **BVFP 365S** Course Title: **Preparation of Food Processing Plant Proposal (Skill based)** in the year 2020-21. he has undergone fair exposure to start new industry on food processing and agro based includes present market position and expected future demand, market size, statistics, trends, SWOT analysis and forecast

Course Teacher	Head of Department	Co-ordinator	Principal
Prof. A.K. Tiwari	Prof. Manoj Kumar	Dr. Prof. M.S. Girase	Dr. J. D. Sonkhaskar

Date : 24/06/2021

Place : Nashik.

DECLARATION

I' am hereby declare that this report is record authentic work carried out by us during the VI th semester and has not been submitted to any other university or institute.

Pawale Dhanshri Sanjay
Regn number

ACKNOWLEDGEMENT

I have great pleasure in presenting Preparation of Food Processing Plant Proposal report that I convey my sincere thanks to Course coordinator Prof. Dr. M.S.Girase for their valuable guidance & motivation throughout Preparation of Food Processing Plant Proposal report. I pay my deep sense of gratitude to Prof. Manoj Kumar (HOD Department of Food Processing Technology), Prof. Tejas Muthal (Assistant Professor Department of Food Processing Technology) for the valuable guidance. Without their valuable suggestions & support this project would not have been a success.

Finally, I immense pleasure in expressing my deep sense of gratitude & sincere thanksto Prof. A.K. Tiwari, Course teacher M.V.P. Samaj's Arts, Science & Commerce College, Uttam Nagar CIDCO, Nashik 08, providing me help to undergo Food Processing Plant Proposal report.

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The Project at a Glance

Sr. No	Particulars	Description
A. Project Description		
1.	Proposal Project	Mini CTC Tea factory Unit
2.	Capacity of the Plant Unit (At 100% capacity)	• Processed CTC Tea: 100 ton
3.	Year wise Capacity Utilisation	Yr01 Yr02 Yr03 Yr04 50% 60% 70% 70% Yr05 70%
B. Project Cost		
1.	Land	Rs. 4,00,000.00
2.	Civil works & Building	Rs. 27,44,000.00
3.	Plant & Machinery	Rs. 26,40,000.00
4.	Fixed Assets	Rs. 3,39,000.00
5.	Pre-operative Expenses	Rs. 3,96,000.00
6.	Contingency & Escalation	Rs. 3,06,000.00
7.	Margin for Working Capital	Rs. 1,75,000.00
8.	**Total**	**Rs. 70,00,000.00**
C. Means of Finance		
1.	Equity @ 40%	Rs. 28,00,000.00
2.	Loan from Bank @ 60%	Rs. 42,00,000.00
3.	**Total**	**Rs. 70,00,000.00**
D. Financial Benchmarks		
1.	Break Even Point (at Operating Capacity on Third Year)	42.50%
2.	Average DSCR	1:1.80
3.	Internal Rate of Return	18.00%

E. Basic Assumptions		
1.	Power Connection and Rate per Unit	40 HP: Rate: Rs. 6.00/- Per Unit
2.	Interest Rate	Term Loan: 8% ; WC Loan : 12 %
3.	Repayment Period	6 Years including moratorium period of 1 year

1.Introduction and Current Status

1.1 Introduction

- Tea Processing is a crucial industrial activity in India. This is so because the country is one of the major producer, consumer and exporter of tea. Tea is a natural beverage brewed from the young leaves of an evergreen plant Camellia sinensis.
- Tea gardens and tea industries are largely scattered covering a major part of India. The crop is grown in the certain districts located in Assam, West Bengal, Kerala, Karnataka and Tamil Nadu and to some extent in Tripura, Uttar Pradesh and Himachal Prasad. Though, tea is commercially cultivated in 16 states in India, of which , Assam (52.0%), West Bengal (21.9%), Tamil Nadu(14.6%) and Kerala (7.1%) are accounted for more than 95% of the total tea production. Other traditional and non-traditional states where tea is produced in small extents are Tripura, Karnataka, Uttaranchal, Sikkim , Odisha and Bihar. Tea production in small holding has been growing worldwide.
- The Tea Board has recently decided to approve setting up of mini and micro factories by the small tea growers within their plantation areas, with an aim to improve plucking standards and retain garden freshness. This is excepted to help the quality of tea processed from green leaves of small tea gardens, as the time needed for transporting green tea leaves from the gardens to factories will be reduced. It will also help retain the garden freshness of the green leaves.
- Considering the potential market opportunity of such units, the present detail project report has been developed. The main objective of such initiative is to productively utilize the abundantly available resources of the local area and to enable uninterrupted supply of the products to market throughout the year.
- A detailed analysis has been carried out considering mainly the aspects mentioned below:
- Market and demand of the products.
- Requirements of miscellaneous assets for the projects.
- Estimation of installed capacity and operation pattern.
- Consumables, power and utilities and manpower requirements etc.
- Estimation of the cost of the project and working capital requirements.
- Means of Finance
- Estimation of cost of operation, profitability and fund flow statements etc.
- Implementation Schedule.
- The total Project cost is estimated at RS. 70.00 Lakhs which includes margin money for working capital @25%.
- The various profitability estimated and other financial indicators worked out as given in the following pages are up to the satisfaction level.

1.2. CURRENT STATUS

The tea market in India is being driven by the healthy production and consumption of the beverage. In 2020, nearly 1.10 million tons of tea was consumed in the country.

The market in the country is projected eto witness a further growth in the forecast period of 2021-2026, growing at a CAGR of 4.2%. In 2026 the tea industry is expected to attain 1.40 million tons.

India is the second largest producer of tea, globally, after China. The country is also a leading consumer of the beverage and accounted for nearly a fifth of the global consumption in 2016. India attained the highest exports of tea in 2017 in almost four and a half decade. However, the annual growth of the exports from the country was only moderate due to the high domestic consumption. Almost 80% of the total output in India is consumed domestically. The per capita consumption of the beverage in the country has witnessed a significant increase in the last decade.

North India is the leading region for the industry in India, accounting for over three-fourths of the industry. Assam is the major tea producing state in the country followed by West Bengal. According to the place of origin, Assam and Darjeeling types are globally the most recognized types of the beverage. South India accounts for nearly a fifth of the industry with the production concentrated in the Nilgiris. While the region has a significantly lower output than North India, the industry in the region is being driven by its production of premium varieties of superior quality. By types, black tea is the largest segment in the tea industry in India. Between 2008-2017, the black variety of the beverage witnessed a moderate annual growth of 3.3%. The consumers are increasingly choosing packaged over unpackaged varieties, due to the perceived superior quality of packed tea. Currently, nearly 80% of the households in urban India and almost 75% of the households in rural India prefer buying its packaged product types.

Table no.1 :- State/Region and Month wise data Tea production Data for 2019-20…Qty. in M. kgs

State	Aug 19*			Apr-Aug19*		
	BG	SG	Total	BG	SG	Total
Assam valley	49.22	42.25	91.47	187.14	169.73	356.87
Cachar	5.83	0.07	5.90	23.83	0.38	24.21
Total Assam	**55.05**	**42.32**	**97.37**	**210.97**	**170.11**	**381.08**
Dooars	18.17	13.59	31.76	70.19	55.94	126.13
Terai	5.80	16.32	22.12	23.13	67.56	90.69
Darjeeling	1.41	0.03	1.44	5.44	0.09	5.53
Total West Bengal	**25.38**	**29.94**	**55.32**	**98.76**	**123.59**	**222.35**
Others	1.47	2.96	4.43	5.74	11.32	17.06
Total North India	**81.90**	**75.22**	**157.12**	**315.47**	**305.02**	**620.49**
Tamil Nadu	4.21	6.04	10.25	27.22	41.98	69.20
Kerala	3.37	0.84	4.21	20.82	5.50	26.32
Karnataka	0.29	0.02	0.31	1.91	0.11	2.02
Total South India	**7.87**	**6.90**	**14.77**	**49.95**	**47.59**	**97.54**
Total All India	**89.77**	**82.12**	**171.89**	**365.42**	**352.61**	**718.03**

2. Different Types of Tea and Health Benefits

2.1Different types of teas:

- Black tea- Black tea is a type of tea that is more oxidized than oolong, green and white teas.
  Black tea is generally stranger in flavor than the less oxidized tea.
  100% fermentation is done.
- Instant tea- Instant teas are produced from black tea by extracting the liquor from processed leaves, tea wastes, or undried fermented leaves. Concentrating the extract under low pressure, and drying the concentrate to powder by freeze drying, spray-drying or vacuum-drying.
  Low temperature used to minimize loss of flavor & aroma.
- Herbal tea- "herbal tea'' are single or blended infusions of leaves, fruits, bark roots or flowers of almost any edible , non-tea plant.
  Most herbal teas are naturally caffeine-free.
- Green tea- Green tea is made from the leaves from Camellia Sinensis that have undergone minimal oxidation during processing.
  These varieties can differ substantially due to variable growing conditions, horticulture, production & harvesting time.
- Oolong tea-The processing of oolong tea requires only a partial oxidation of the leaves.

  Here, only 50% fermentation is done.

- Ice tea
- Scented tea

Black Tea

Figure.1.

Green Tea

Figure.2.

Oolong Tea

Figure.3.

Herbal Tea

Figure.4.

Ice Tea

Figure.5.

Scented Tea

Figure.6.


The Tea Journey
Withering
Maceration
Steaming/Roasting
Semi-fermentation + tumbling
Fermentation
Rolling / Shaping
Drying
Drying
Drying
Grading
Green
Oolong
Black
Flavonoids
Catechins
oxidation
Catechins & Black Tea Flavonoids
oxidation
Black Tea Flavonoids
Theaflavins / Thearubigins

Figure.7

2.2HEALTH BENEFITS

- Tea contains antioxidants.
- Tea has less caffeine than coffee.
- Tea may reduce your risk of heart attack and stroke.
- Tea may help protect your bones.
- Tea may keep your smile bight.
- Tea may boost the immune system.
- Tea may help battle cancer.
- Herbal tea may soothe the digestive system.

3.PROJECT DESCRIPTION AND TECHNOLOGIAL PROCESS

3.1 Project Description

- The proposed project is that of setting up of a Tea Processing unit at suitable location.
- The key products of the proposed project are as follows;
  - Processed CTC Black Tea
- Mini tea processing factories would reduce difficulty of marketing green tea leaf. The mini and micro factories will open up a huge chain of employment opportunities at the garden level.
- The proposed project would procure the raw material locally. After processing, the products would e supplied to the market through distributors / wholesalers/retailers.

3.2TECHNOLOGICAL PROCESS

The process of manufacturing CTC tea companies of the following different process.

- Spreading the leaf on Withering Trough: The collected green Leaf is spread upon the withering trough, while spreading due emphasis is laid upon to remove source and old dried leaves so that it will help to minimize the presence of stalks and help in producing fine tea.
- Withering: The process of withering involves partial removal of moisture from fresh leaf and is carried out in order to condition the leaf physically for subsequent processing. Besides, some chemical changes also take place during withering and these are independent of the physical process. Thus, withering involves (a) Physical wither and (b) Chemical wither. While the physical wither can be completed even in 3-4 hours, however for completion of the chemical wither, a period of 12-16 hours is required as such the withering trough can't normally be used more than once a day. Withering is carried out either by Natural Withering or by Trough withering system. The green leaves that are spread upon the wire mess of withering trough are charged with cold and warm air through an axial flow fan so that the moisture content is reduced to the desired level. Generally, the level of reduction in moisture depends upon the grands and quality of tea, which is to be manufactured.
- Rolling/ Rotorvane: The withered leaf are rolled to rupture the leaf cells and release of enzymes and to give a twist to the leaf. It is achieved by processing withered leaf in Rotorvane. During rolling operation chemical changes among the principle constituents of leaf start as soon as the juice of leaf is squeezed out in contact with the air. The chemical changes are caused by the enzymes present in the leaf. The enzymes brings about chemical changes but it does not changes itself. Generally, leaf is rolled in rotorvane before send to further processing.

- Operating on C.T.C Machines: After the leaves are rolled, they are put into the C.T.C machine (i.e. cutting tearing and curling machine). This machine cuts the leaf into uniform size with maximum cell distortion leading to quicker and more even oxidation during fermentation. The C.T.C machine is comprised of two rollers rotating in opposite directions at the arranged speed. The speed of the two rollers are different, one of the roller is fast rotating at a speed of around 675 revolutions per minute, where as the slow roller rotates at a speed of 60 to 73 revolutions per minute. Generally, a constant clearance between the rollers is maintained. The roller segment is in sharp conditions, which cut the leaves three times. During the process it is specifically seen that leafs are not heated as it destroys briskness and quality.
- Fermenting: After processing in the C.T.C machine the leaf are fermented. Fermentation of the tea leaf is a very important process in Tea manufacture for briskness, strength, colour, and quality largely depend upon it. The duration of fermentation varies according to rise and fall of temperature.

  A temperature of 76'F to 78'F represents the ideal temperature of the fermenting room and it takes roughly between 1 to 2 hours in the fermenting process. The leaf process in C.T.C is spread on the fermenting floor or fermenting bed of fermenting machine. Generally, they are spread at a thickness of half in inch. Fermentation beings as soon as the juice of the leaf come into contact with the air enzyme present in the leaf being about chemical changes among the constituents of the leaf cell such as latechins (polypheno's) and caffeine. When the leaf become bright red in the fermenting room it is the best time to transfer to the drying room for firing.

- Drying: After the requisite level of fermentation CTC leaf is transferred to the drying room where the leaf is fed on the trays of mechanical dryers and fermented leaf is fired at an inlet temperature of 200'F to 220'F to arrest fermentation process and to remove additional moisture present. The exhaust temperature being 120'F to 135'F. The thickness of spreading CTC leaf being one fourth of inch. The fair revolution of the quality drying machine should be 350 and the tray speed is 200. The final moisture content of the tea is kept at around 3%.

Sorting: The sorting process of the CTC leaf is very simple. At first tea allowed to pass through the sorter of separation of grades, during this process tea is also made free from any foreign material, fiber and other proper grading which depend largely on size (granule) of tea. After grading tea is packed in tea chest/jute bags of standard size and sent to the auction centre.

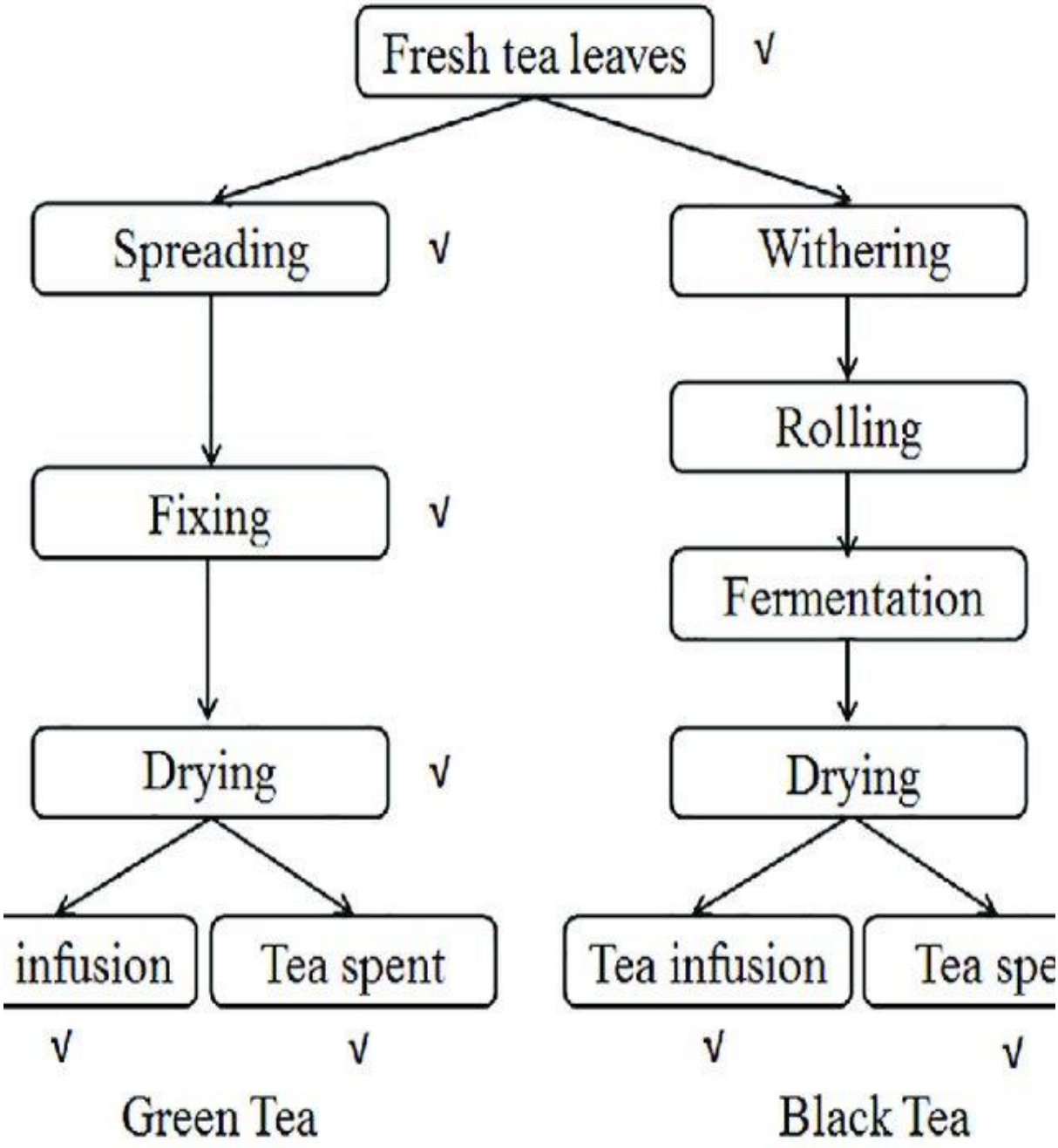

Fresh tea leaves
√
Spreading
√
Withering
Rolling
Fixing
√
Fermentation
Drying
√
Drying
infusion
Tea spent
Tea infusion
Tea spe
√
√
√
√
Green Tea
Black Tea
√ Sample taken for analysis

Figure.8

4.MARKET PROSPECT

- Tea is India's primary beverage with almost 85% of total household in the country consuming tea. Demand supply gap has been increasing in India in recent years. While tea consumption has been growing at 3-3.5% every year, there has been no significant increase in plantation land in the last few years as per the market survey report. Tea trading in India is done in two ways – auction and private selling. Market report are obtained from six major auction centers in India-Kolkata, Guwahati, Silguri, Cochin, Coonoor and Coimbatore where bulk trading is carried out through the suctions held in these centres.
- The Cottage made CTC Tea has great demand among the consumers due to its special manufacturing process, which imparts its quality and aroma. Besides, cottage organic Tea (CTC and Orthodox), Green-Tea also has great market potential. Therefore, Few cottage tea factory could be set up in concentrated tea growing areas that will have a steady market for its products.
- Market Promotion plays a vital role for the generation of the potential customers therefore, applications of marketing strategies are recommended. Marketing plan of the proposed project may include good quality maintenance, promotional campaign like offering special discounts, referrals, advertisements and typing up with buying houses.

5. QUALITY CONTROL AND STANDARDS

- The Tea being an agriculture product, it is necessary to clean it from impurities/foreign or unwanted material such as dust, fiber, wooden particle, small stones and sand including small glass pieces, ferrous and non ferrous particles, paper, plastics shreds, dead insects etc. that may come from field or processing factory. This alien particles do often get mixed at various stages of production and owing to the lack of modern facilities at Tea factories these impurities can go unnoticed in Tea.
- NO OBJECTION CERTIFICATE: The No Objection Certificate (NOC) must be obtained to commence and complete the construction of the factory and installation of all machinery items as prescribed by Tea Board of India. The rules and regulations under Tea Act 1953, The (Marketing) Control Order – 2003, the specifications of the FSSAI and other rules and regulations imposed by the other Departments of the Local , State and Center Governments must be followed.
- WASTE MANAGEMENT: Tea industry does not pose any threat to the environment. The industry does not generate much waste. It has been seen that a significant portion of the waste are being re-used in some way or the other. However , the industry should take up certain measures/actions, which may be useful in improving and maintain the environmental performance of the industry. The overall measures/actions that the industry may take up with an aim to improve the environmental performance of the industry are as follows:
    - Maximum re-circulation / re-use of the wastes.
    - Conservation of domestic water.
    - Quality control laboratory should monitor the residence of pesticides in finished tea.
    - Generally finished tea is pack in poly-bags and this poly-bags are placed in jute bags for final delivery. It is suggested that the plastics use for such packaging should be of food grade in nature.
    - Tea industries may try to use food grade jute bags instead of odourless jute bags as are currently being used.
    - Attempts should be made to use organic fertilizers and pesticides in place of chemical fertilizers and pesticides.
    - Attempts should also be made to optimize the use of fertilizers and pesticides during tea production.
    - Periodic (once in six months) monitoring of a few selected water sources around the tea garden should be made.
    - Periodic monitoring of health conditions of workers both in garden in factory should be made.
- EFFLUENT DISPOSAL: Disposal of any effluent out of the project unit should be treated with recycling facility or dumped in such a way that this does not cause hazard in the vicinity of the site.
- ENERGY CONSERVATION: Proper care should be taken in running the machineries and equipment to avoid over run and high electricity consumption. The machineries selected for the plant should be most energy efficient for economical production.

6.PRESENT MARKET POSITION

World tea production (black,green,instant and other) increased by 4.4 percent annually over the last decade. China was responsible for the accelerated growth in global tea output, as production in the country more than doubled from 1.17 million tonnes in 2007 to 2.44 million tonnes in 2016. China accounted for 42.6 percent of world tea production, with an output of 2.44 million tonnes in 2016; production in India, the second largest producer, increased to a record high of 1.27 million tonnes, due to favourable weather conditions. Globally tea is grown in more than 35 countries. However, only top seven countries including India contributed 90% of the total world tea production.

India tea industry has recorded the highest ever production as well as exports in the financial year 2018. The total tea production was 1315.05 million kgs, - an increase of 74.56 million kgs as compared to 2016-17. In percentage terms the increase is around 6%.

The total quantity of tea exported during the financial year 2017-18 stood at 256.57 million kgs, while the foreign exchange realized from exports of Indian tea was $ 785.92 million. In rupee terms, the total value of the exports was pegged at Rs. 5064.88 crores during 2017-18. The growth in exports was majorly driven by the following countries like Iran, Pakistan, China and Russia. According to Tea Board of India, production of high-value orthodox tea and green tea increased during 2017-18. These teas are in great demand in high value markets such as Iran, Germany and Japan.

Indian tea is among the finest in the world owing to strong geographical indications, heavy investments in tea processing units, continuous innovation, augmented product mix and strategic market expansion. The main tea-growing regions are in Northeast India (including Assam) and in north Bengal (Darjeeling district and the Dooars region). Tea is also grown on a large scale in the Nilgiris in south India.

There are some problems that stop this industry from reaching its potential. Production costs have risen at twice the rate of prices over the past decade. The market is no longer lucrative for producers as prices have stagnated in the Rs 125-132/kg range over the past five years. In the organized sector, labour costs are responsible for two-thirds of the cost of production.

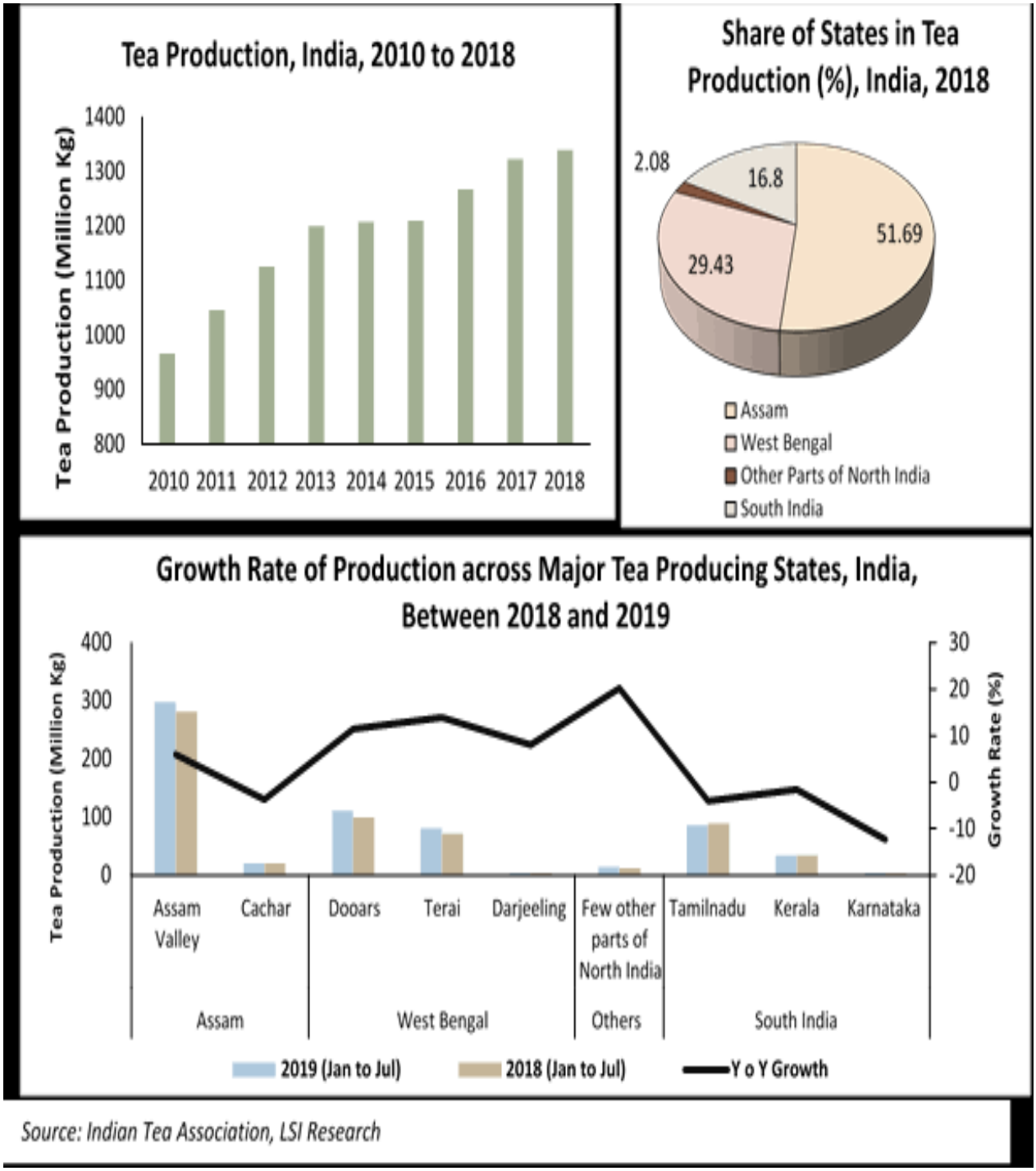

Tea Production, India, 2010 to 2018
Tea Production (Million Kg)
1400
1300
1200
1100
1000
900
800
2010 2011 2012 2013 2014 2015 2016 2017 2018
Share of States in Tea Production (%), India, 2018
2.08
16.8
51.69
29.43
Assam
West Bengal
Other Parts of North India
South India
Growth Rate of Production across Major Tea Producing States, India, Between 2018 and 2019
Tea Production (Million Kg)
400
300
200
100
0
30
20
10
0
-10
-20
Growth Rate (%)
Assam Valley
Cachar
Dooars
Terai
Darjeeling
Few other parts of North India
Tamilnadu
Kerala
Karnataka
Assam
West Bengal
Others
South India
2019 (Jan to Jul)
2018 (Jan to Jul)
Y o Y Growth
Source: Indian Tea Association, LSI Research

Figure.9

7.EXPECTED FUTURE DEMAND

There is a tea for every occasion, every part of the day and every emotion, we bond over it and celebrate with it. While the traditional boxes of sweets, dry fruits and other things are still in vogue for celebrations and gifts, people are increasingly trying out something new and different. A collection of gourmet or premium teas can make wedding invitation cards stand out and be that perfect accessory to other occasions as well.

The demand for tea is growing slowly but steadily. The market share will increase further as tastes and preferences evolve. As younger and new-age consumers explore new tastes and healthy brews, look for convenience and exotic varieties, brands will emerge to carter to this demand. There are already several homegrown and international brands introducing varieties of tea blends with taste variations. There is also a need to encourage innovation in this sector and leverage the power of tech to reach more consumers. With several boutique brands emerging in the market, there will be good growth in the coming years.

8.MARKET SIZE

The size of the global tea market will increase USD 12.62 billion between 2018-2023, accelerating at a CAGR of nearly 5% by the end of the forecast period. This growth in market size will be majorly driven by the health benefits associated with consuming tea and an increase in tea consumption worldwide. More of the global population has started developing tea consumption as a habit, which is subsequently contributing to global tea market growth. Additionally, changing demographics are also providing an opportunity for market participants in the tea industry as the growing middle class and urbanized population of many emerging and developing markets is influencing the consumption of the various types of tea.

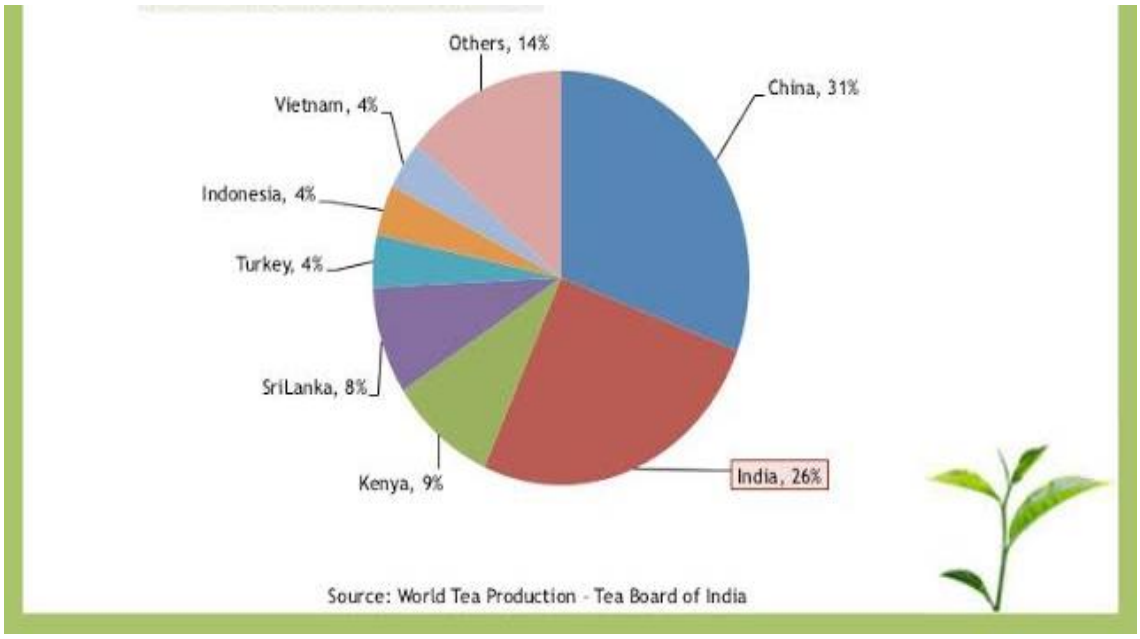


Figure.10

9.STATISTICS

9.1 LAND:

Covered Area: 5,100 Square Feet

Particulars	Area (sq.ft)	Rate(Rs)	Amount (Rs)
Site leveling approach road, construction of boundary wall, etc.	LS	--	40000
		Say (Rs. In lacks)	4.00

Table no: 2

9.2 MACHINERY:

Plant & Machinery

SS Rotorvane 8''	
CTC Machine (3CUT) 3 Pair 8'' Roller (8-10-8 TPI)	
DF Furnace	
Drier (Conventional)	
Humidifier	
Mydellton Sorter	
Fiber Extractor	
Vibro Sorter Total	 40 lacks.

Table no.:3

1. WITHERING:

The fresh tea leaves are laid out in thin layers on tats staked one above another and dried in the fresh air for at least 20 hours. Artificial Withering:

The leaves are laid out in layers of up to 20cm. thick on a mesh. The meshes are placed in a tunnel ; through which warm air mixed with fresh air is forced. This considerably reduces the total withering time. Around 60-62% residual moisture suitable for tea processing of the withered green leaves.

Figure.11

Figure.12

2. Rolling:

A circular table fitted in the centre with a cone and across the surface with slats called battens. A jacket, or bottomless circular box with a pressure cap, stands a top of the table. Table and jacket rotate eccentrically in opposite directions, and the leaf placed in the jacket is twisted and rolled over the cone and batterns in a fashion similar to land rolling.

Figure.13

Figure.14

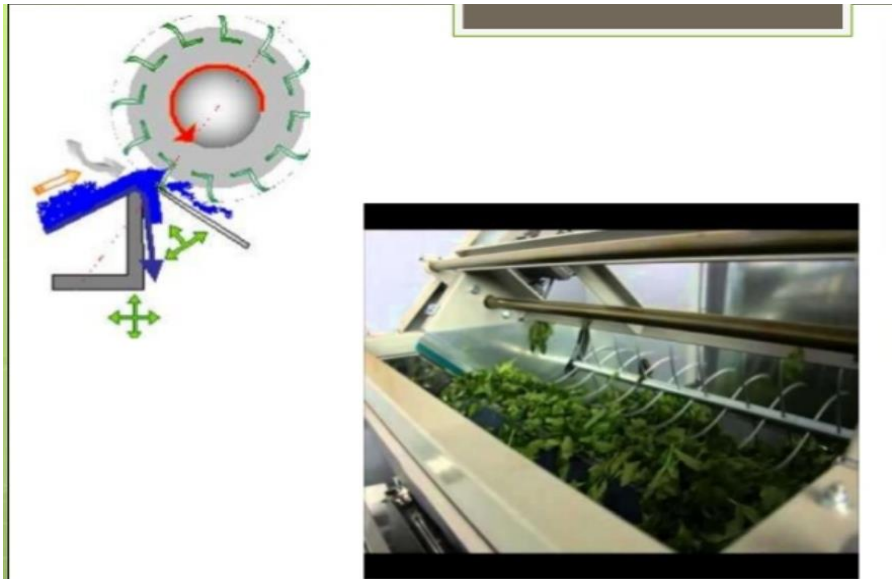


Figure. 15

3. CTC Method (Crushing, tearing and curling):

This machine consists of two separated metal rollers, placed close together and revolving at unequal speeds, which cut, tea and twist the leaf. CTC machiners are widely used, for example in Assam.

Figure.16

4. Fermentation:

During fermentation, the oxidation process which had begun during rolling is continued. Fermentation takes place in separate fermentation rooms, which need to be kept extremely clean to avoid bacterial infection of the tea. The tea leaves are placed in 3.5-7.5 cm. Layers on aluminium trays. The thickness of the layers depends on the room temperature. As soon as the tea has acquired a copper red colour, the correct degree of fermentation has been reached, and the process must be halted by drying.

Figure.17

5. Drying:

The drying process carried on a Conventional drier. Hot air up to 90 degree C. is blown against the leaves, which should have reached 80-degree C. by the time drying has been completed, in order for the polyphenol oxidize enzyme to be properly inactivated. The moisture content should be reduced to 3.5% whereby the aroma become established and the leaves take on their typical black coloration.

Figure.18

9.3 RAW MATERIALS

Cultivation, production and trading of raw materials for the tee industry is one of our specialty. Personal contact with the farmers ensures a high level of quality in our products. This guarantees also that our customers can be fully satisfied. Basic steps of quality control regarding sensorial, analytical and microbiological parameters of our raw materials are carried out in the country of cultivation. If the products meet the high EU standards they are released for export to Germany. We offer our customers all processing steps like cleaning, cutting, milling, mixing, laser sorting, germ reduction we produce our products in different forms: regular size, tea-bag cut, powder etc.

9.4 CONSUMABLES, POWER AND UTILITY

- The major consumables required are as follows;
    1. Green Tea Leaves
    2. Packaging Bags/Boxes
- POWER:

  The total requirement of power for the project is 34.34 KW. The total power supply would be distributed in the following way;

  Plant & Machinery - 29.84KW
  General Lighting - 4.50 KW

  The details requirements is shown in Appendix-C2.
- UTILITY:

  WATER: Constant flow of water would be necessary in the operation of the plant. Water would be obtained from bore well and can be stored in an overhead tank, from where it will be required areas. Process water should be free of mud and suspended particles. It should be available at a pressure of 3Kg/sq.cm.

  OTHER UTILITIES: Other utilities includes fuel etc. those should be locally available. Detail expenditure against the head is shown in Appendix-C2.

9.5 INSTALLED CAPACITY

- In assessing the proposed plant capacity, due consideration has been given to technological and financial factors, marketing considerations, availability of consumables, infrastructure facilities and economic viability. The detailed requirement of the plant and machineries to achieve the plant capacity is assessed by the unit technician. While arriving at the requirement of various type of equipment and machinery required for the unit, due considerations has been given to the following points.
    a) Minimum Wastage
    b) High Productivity
    c) Maximum flexibility in operation
    d) Adequate stock by provision wherever necessary

The installed production capacity of the unit per annum is as follows;

Processed CTC Tea - 100 Ton

For the purpose of carrying out this economic viability of the proposed project, it is assumed that the plant will operate at following efficiencies during the first 5(Five) years.

Year	01	02	03	04	05
Capacity Utilization	50%	60%	70%	70%	70%

Table no.:4

9.6 BASIS AND PRESUMPTIONS

While deriving figures and projections in this Project report, following Basis and Presumptions have been made.

- The project is based on a single shift basis and 200 days of working schedule in a year, working for 8 hours a day, 25 days a month.
- The project cost and other projections etc. have been made on present market conditions and the sources available within our sources only and therefore it may vary on account of market fluctuations and with different suppliers and qualities.
- The cost of machinery and equipment/materials indicated refer to a particular make and the prices are approximate to these prevailing at the time of preparation of this report.
- Power rate is assumed at Rs.6.00 per unit and monthly fixed rental charges.
- Water would be made available through bore well facility at the project site.
- Manpower requirement for the project has been planned considering the size of the unit.
- Interest rates considered is 8% on term loan and 12.00% on Working capital loan for financial assistance.
- For repayment, a period of 6 years is planned with moratorium period of one year.
- Insurance charges have been considered Lump Sum.
- Repair and maintenance have been calculated at reasonably.
- Depreciation shown has been calculated on Straight Line Method.
- Non-refundable deposits, Preparation of detailed project report fees, Architecture fees, travelling & Convenience amount, Know-how & Engineering fees, Application processing fees, trial production, fees etc. are considered under pre-operative expenses.
- Break Even Point & Rate of Return is calculated on optimum production condition findings.
- At the plant site, availability of unskilled labour is not a problem. Skilled and unskilled labourcan be recruited for operating the plant. It is felt that the skilled manpower available locally having some experience in operation can be recruited to satisfy the manpower need.
- Project would be set up at a site that is well connected by road and there is adequate supply of power and water.

9.7 PROJECT COST ESTIMATES AND MEANS OF FINANCE

- THE PROJECT COST: The Capital cost of he project has been estimated on the basis of installed capacity assuming 200 working days per annum. The total cost of the Project including margin for working capital has been estimated at Rs. 70,00,000.00 as detailed in Annexure-A.
- LAND, BUILDING AND CIVIL WORKS; The approximate cost of civil works including Leveling, Building, Electrification, Water Supply, Sanitation and Drainage etc. will Rs. 31,44,000.00.
- PLANT & MACHINERY: The total cost of Plant & Machinery has been estimated at Rs. 26,40,000.00as detailed in Appendix-A2.
- PLANT EXPENDITURE: The total cost of Plant expenditure includes admissible taxes, transportation, insurance of the machineries and installation etc. has been included as detailed in Appendix-A2.
- FIXED ASSET : The cost of Misc. Fixed Assest has been estimated at around Rs. 3,39,000.00 as detailed Appendix-A3. These include cost of furniture fixture's and office equipment.
- PRILIMINARY AND PRE-OPERATIVE EXPENDITURE : An expenditure of Rs. 3,96,000.00 as been earmarked on this account, as detailed in Appendix-A4.
- CONTINGENCY AND ESCALATION: This has been calculated @ 5% on Civil Work, Plant & Machinery and Misc. Fixed Assets to provide safeguard against escalation of prices or any other unforeseen expenditure. The total amount workout to Rs. 3,06,000.00.
- WORKING CAPITAL ESTIMATES: The details of Working Capital requirements of the proposed unit have been shown in Annexure-C. In arriving at the working capital estimates, various components vis Administrative Expenses/Consumables and Working Expenses have been taken on the basis of usual norms. The Working Capital requirement is proposed to be met from project margin money and cash credit loan borrowings from the financial institution.
- MEANS OF FINANCE: The Proposed Project Cost of Rs. 70.00 Lakhs would be finanaced under MSME development schemes of financial institution/commercial banks, in the following manner as shown below.

    1. LOAN FROM BANK/FI @ 60% = 42.00 LAKHS
    2. PROMOTERS CONTRIBUTION @ 40% = 28.00 LAKHS

    TOTAL = 70.00 LAKHS

- DEBT-EQUITY RATIO: Based on the above financing pattern, the Debt-Equity ratio of the Project is 1.5:1.

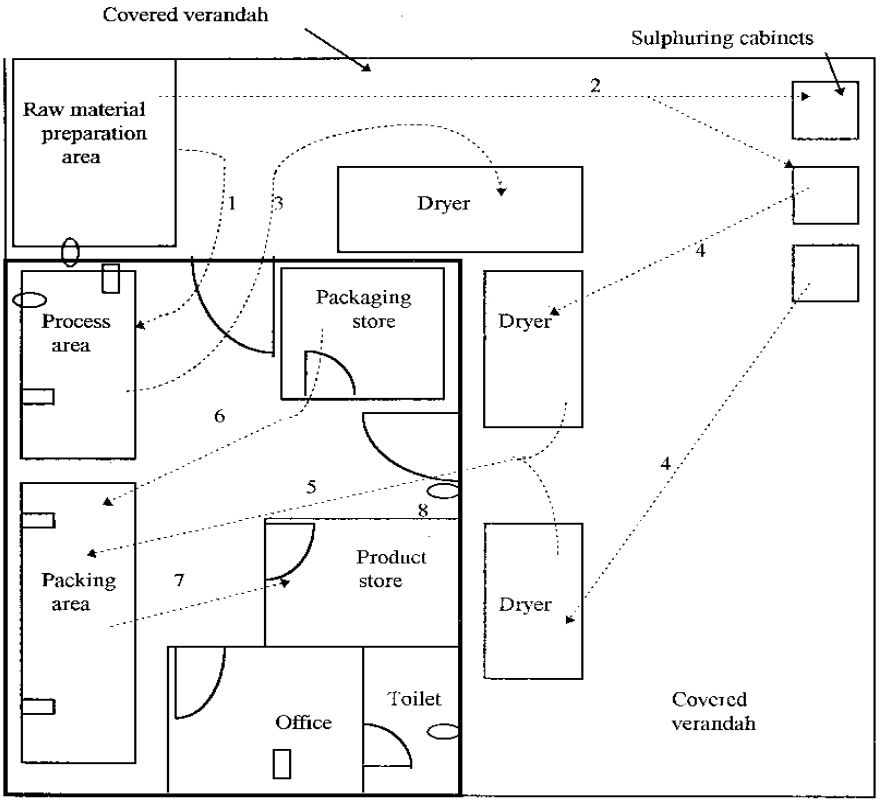
9.8 ECONOMIC VIABILITY AND FINANCIAL ANALYSIS

- COST OF PRODUTION: The cost of production has been estimated annually for the first five years of operation. The various cost components taken into account are cost of administrative expenses, consumable stores, utilities, wages and salaries, repairs and maintenance, insurance, interest rates, taxes etc. depreciation. The detailed cost of the production has been shown in Annexure-D.
- REPAIR & MAINTAINANCE: Cost under Repair and Maintenance expense have been assessed by charging 1% on Land & Building, 2% on Machineries and 1.5% on Fixed Assets on first year with increase of 2% on subsequent years as detailed in Appendix-D1.
- ADMINISTRATIVE EXPENSES: This has been considered in the cost and profitability statement under other expenses etc.
- SELLING EXPENSES: This has been considered in the cost and profitability statement under other expenses etc.
- DEPERICIATION: In calculating the cost of operation, depreciation has been calculated under straight line method after absorbing the pre-operative contingencies expenses as shown in Appendix-D4.
- FIANANCIAL CHARGES: The interest on proposed term loan amount of Rs. 42.00 Lakhs has been calculated @ 8% being the rate of interest. The interest calculation for various years after considering the repayments due in respective years has been shown in Appendix-D3.
- SALES REALISATION: The total annual income of the Project is shown in Appendix-D2. Based on 70% capacity utilization, total ton over is estimated at Rs. 91.00 Lakhs on third year, the sale for other years are estimated at different capacity utilization as shown in Appendix-D2.
- NET PROFIT: The proposed project is expected to generate profit from the first year of operation itself and will gradually increase with increase in capacity utilization.
- INTERNAL ACCRUALS: The net profit after tax with depreciation added back would make up sufficient internal accruals to meet the term loan, working capital loan repayment obligations without any liquidity problems.
- FIANANCIAL ANNALYSIS: The break even point of the proposed project is 42.50% at 70% operating capacity on third year at shown in Annexure-F.

  The DSCR of the project has been work out in Annexure-H with an average of 1:1.80, which is considered quite satisfactory to meet the repayment and interest obligations in respect on the term loan.

  The internal rate of return of the project works out to 18.00 %, which is satisfactory.

9.9 Plant layout



Key:
1 Prepared raw materials for processing
2 Prepared raw materials for sulphuring
3 Blanched/crystallised food to dryers
4 Sulphured fruits to dryers
5 Dried foods for packing
6 Packaging from store
7 Packaged product to store for distribution
8 Hand washing

□ = power point

() = water tap

Figure no.: 20

ANNEXTURE-A

ESTIMATED COST OF THE PROJECT

Particulars	Amount (Rs.lacs)
Land & Site development	4.00
Building & Civil Works	27.44
Plant & Machinery	26.40
Misc. Fixed Assets	3.39
Preliminary & Pre-operative Expenses	3.39
Contingencies & Escalation @ 5%	3.06
Working Capital	1.75
TOTAL	70.00

Table no.:5

Total Project Cost : Rs. 70, 00, 000.00

(Rupees Seventy Lakhs Only).

ANNEXTURE-B

PROPOSED MEANS OF FINANCE

Particulars	Percent	Amount (Rs.lacs)
EQUITY		
A. Equity from Promoters	40%	28.00
B. Subsidy from Central/State Govt.	-	
DEBT		
Term Loan from Banks/FIs	60%	42.00
TOTAL	100%	70.00

Table no.:6

Total Project Cost: Rs. 70,00,000.

(Rupees Seventy Lakhs Only).

ANNEXURE-C

WORKING CAPITAL ESTIMATES

	Period (Days)	Year 1	Year 2	Year 2
Raw materials	7	0.72	0.86	1.01
Power & Utility	30	0.18	0.22	0.26
Salary	30	1.14	1.15	1.16
Finished Goods	15	2.27	2.61	2.94
Receivables	15	2.67	3.21	3.74
Total		6.99	8.04	9.10
Working Capital Margin in Year 1 25%)	1.75			

Table no.:7

ANNEXURE-D

COST AND PROFITABILITY ESTIMATES

(Rs. In lacs**)**

Particulars	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 5
A. INCOME						
Production Capacity (Ton/ annum)	100	100	100	100	100	100
Capacity utilization	50%	60%	70%	70%	70%	70%
Production/ annum at capacity utilization	50	60	70	70	70	70
Total income/annum	65.00	78.00	91.00	91.00	91.00	91.00
B.OPERATING EXPENSESS						
Raw Materials	37.55	45.06	52.57	52.57	52.57	52.57
Power & Utility	2.22	2.67	3.11	3.11	3.11	3.11
Salary	13.92	13.99	14.06	14.13	14.20	14.27
Repair & Machinery	0.90	0.92	0.94	0.95	0.97	0.99
Other Expenses	0.65	0.78	0.91	0.91	0.91	0.91
Total Operating Expenses	55.24	63.42	71.59	71.68	71.77	71.86
Operating profit	9.76	14.58	19.41	19.32	19.23	19.14
C.FINANCIAL EXPENSES						
Depreciation	3.02	3.02	3.02	3.02	3.02	3.02
Interest on Term Loan	3.36	3.05	2.38	1.71	1.04	0.36
Interes on Working Capital Loan	0.63	0.72	0.82	0.82	0.82	0.82
Net Profit	2.75	7.79	13.20	13.78	14.36	14.94
Net Cash Accruals	5.77	10.81	16.21	16.80	17.38	17.96
Principal Repayment	0.00	8.40	8.40	8.40	8.40	8.40

Table no.:8

10. Trends

- Ready to drink and refrigerated teas are synonymous with convenience. RTD is by far the largest segment in tea earning more than $10 billion and accounting for almost 50% market share with $4 billion in sales in mass market and convenience outlets. Sales of canned and bottled teas were down 1.3% for the year, according to Chicago-based market research firm IRI. Natural and healthful teas, such as Teavana (sales up 15.1%), Bai tea(up 44.4%), Guayaki Yerba Mate (up18.7%) and pure Leaf (up7.1%) signal a trend to lower calories and plant-based ingredients. Sales of bottled water surpassed carbonated soda in 2019 with seltzer and sparkling waters up 15% in the past year, according to IRI but the biggest winners in the category are iced coffee and cappuccino, up 6.4% to $2.87 billion and cold brew coffee, up 18.1% with sales of $436 million.
- Botanicals that promise specific health benefits are outselling many traditional camellia sinensis-based teas. Functional and conditions-specific blends are popular with young tea drinkers. Every major brand has introduced line extensions, altering their identity. Rishi, for example, is now Rishi Tea & Botanicals. Maria Uspenski, founder of The Tea Spot, predicts adaptogenic teas that offer overall wellness benefits will do well in 2020.
- The amount Americans spent eating out at restaurant exceeded money spent at grocers for the first in 2019, according to the U.S.Census Bureau. Restaurant spending is up 4% with delivery and digital ordering accelerating beverage sales at coffee shops.
- Foot traffic continues to decline. Coresight Research estimated 9,300 retail store closings in 2019. As a result, successful marketing and merchandising at conventional brick and mortar tea retail ventures demands omni-channel offerings and experiential options. Mall locations face increasing headwinds. Credit Suisse estimates 20% to 25% of U.S. malls will be shuttered by 2022.
- Those who smirk at bubble tea should visit the 1.6 million member Facebook group “Subtle Asian Traits’’ and then review financials at homegrown chains like Boba Guys and Kung Fu Tea as well as Gong Cha and Tiger Sugar, a Taiwan chain with new stores in Brooklyn and Los Angeles, Toronto and Vancouver.
- Matcha is the star of green tea growth. Green tea now accounts for 15% of U.S consumption and skews much higher among Americans with Asian heritage. Global industry Analysts (GIS) predicts the green tea market will grow $8.1 billion globally by 2025 and that the U.S will maintain a 4.9% growth rate during the next five years. Green tea imports from Japan are up 102.1% during the past five years, the biggest gain of any U.S tea trading partner, according to Worlds Top Exports. Volume during the first ten months of 2019 totaled 9.8% of green tea imports and approaches $10 million annually largely due to the popularity of matcha.
- Kombucha is morphing into complimentary product lines. The Global Hard Kombucha Industry Research Report estimates the market for hard (alcoholic) kombucha to expand from $55.45 million in 2018 to $1.12 billion million in 2026 due to a combined annual growth rate of 42% through 2026. Category sales are approaching $500 million in mass market.
- Origin continues to shudder under the weight of increased labor costs. Oversupply has depressed tea prices globally weakening the bottom lines at multinationals and smallholders alike. The Tea Association of India reports that only 20% of tea estates earned a profit in 2019.

- Transparent supply chains are now the rule with every major chain accepting a consumer mandate to reveal specifics about the environmental condition of gardens, labor standards, certifications, mid-supply chain logistics and more. Staling is an issue as suppliers like Vahdam Tea and Teabox shine a light on the fact that many teas are stored for many months before sales.
- Weather extremes. The blood red skies over Australia due to forest ash of summer follow an unusually cold winter the Southern Hemisphere. Yields at the Nerada Tea estate in North Queensland were cut by half due to drought.

11. SWOT ANALYSIS AND FORECAST

11.1 Swot Analysis

STRENGTHS:

1. Quality
2. Production Base
3. Baked by strong scientific research institute.
4. Workmen's are supported by strong Labor welfare Law.
5. Prominent for Small Tea Growers.

WEAKNESSES:

1. Old age of the Tea Bushes.
2. Decreasing trend of availability of Workforce.
3. Difficulty in introduced of Mechanization.
4. Lack of quality monitoring mechanism.
5. Quality deterioration due to ill effect of Climate change.

OPPORTUNITIES:

1. Worldwide awareness of the health attributes of Tea.
2. Automization of the Tea manufacturing factories.
3. Research on Crop resistant variety seeds.
4. Tea Tourism.

THREATS:

1. Completion with the other Tea producing Countries.
2. Climate change.
3. Low COP of teas produced by Kenya, Vietnam, Indonesia, etc.
4. Round the year production in Countries like Sri Lanka, Vietnam, etc.

11.2 FORECAST

The global tea market size was valued at $55,144 million in 2019, and is projected to reach $68,950 million by 2027, registering a CAGR of 6.6% from 2020 to 2027. The green tea segment was the highest contributor to the market, with $16,362 million in 2019, and is estimated to reach $26,110 million by 2017, at a CAGR of 9.8% during the forecast period. China is one of the prominent regions in the market that accounted for a sizeable share of the total market in 2019.

Tea is an aromatic beverage derived from Camellia Sinensis plant. It is one of the most consumed beverage in the world. Black tea and green tea are the most popular tea while herbal tea is gaining popularly. Tea is considered a healthy beverage owing to presence of a number of potent antioxidants, and minerals such as potassium, manganese, magnesium, and calcium. Regular consumption of tea helps reduce cell damage caused due to free radicals as well as lowers cholesterol levels and facilities healthy weight loss.

Tea has been very popular in the emerging market, owing to prevalence of tea culture. Furthermore, growth in health awareness and increase in the disposable income has aided the tea market growth. Moreover, introduction of additional healthy ingredients in tea by different market players are some other factors that drive the growth of the market. However, increase in trend of coffee consumption and fluctuating prices of raw materials caused by unpredictable climatic conditions act as the major restraint for this market. On the contrary, growth in demand for herbal tea and introduction of new flavor and variety of tea is anticipated to provide growth opportunities for the market.

The tea market forecast, the paperboards was the most prominent segment accounting for the highest share in the global tea market. This can be attributed to their remarkable design flexibility and excellent barrier properties. However, the tea bags segment is expected to witness the highest growth, owing to convenience it offers over loose or differently packaged tea as brewing tea with tea bags is very easy as well as disposal of the used tea bag is even more convenient.

12. Market Growth Drivers

A rise in the disposable incomes of consumers has enabled the tea manufactures to introduce premium and health-oriented products. They have started adding several healthy ingredients to their organic tea formulations in order to target some of the common health conditions including diabetes, beauty, obesity, heart health, etc. Therefore, a shift towards the consumption of organic tea acts as an emerging trend which is having a positive impact on the growth of the tea market.

Another major factor driving the growth of tea is its strong consumer acceptance. Currently, it represents the world's most consumed beverage after water. It has very high penetration levels in Asia and Europe with people consuming tea on a daily basis.

Tea represents an inexpensive beverage and is consumed across all socio-economic consumer groups. A major catalyst which has supported the popularity of tea across various developing markets, such as India and China, is the fact that it is affordable by the mass population, a majority of whom belong to low income groups.

Over the past few years, the out-of-home market for tea has been expanding where various tea lounges have been opening across the globe. These lounges offer different benefits to the consumers such as the availability of a variety of handpicked teas from different regions. Such places have provided the consumers with hang out spaces where they can indulge in conversations which has contributed towards an augmenting demand for tea.

13.FACTORS LIMITING MARKET GROWTH

Food security remains a serious problem, especially in developing countries where the challenge of the sustainable food supply is exacerbated by the rapid rise in the population, limited access to food intake, vulnerability, price volatilities, protection measures imposed by the government, and other distorting influences. Russia in classified as a middle-income country that is nationally self-sufficient in its food supply. However, amid the economic recession and restrictions on foreign trade in food, many households in Russia are becoming increasingly vulnerable to food insecurity. In the case of Russia, this paper aims to assess the sustainability of the food supply; and identify the factors that affect food security. In order to establish the impact of socio-economic variables on food security at the macroeconomic level, a regression model was estimated. The study has identified the factors that influence food security in terms of agricultural production, food self-sufficiently, and foreign trade. The relationships between the regressands and corresponding regressors have been discovered, in view of alternations between positive and negative influences on the dependent variables. Additionally, a significance of the relationships has been measured. The results of the regression analysis suggest that the sustainability of the food supply in Russia in threatened by inflation and a degrading purchasing power of the population from people shifting towards cheaper products of lower quality, while exporters seek higher profits outside the country and thus create food shortages in the domestic market.

14. CURRENT MARKET TRENDS

The trends are expected to run the market for next couple of years. Premium variants, green tea and its flavours and new flavours and fruit variants shall be launched to target consume looking for indulgence products. Not only new products, but existing players entering into various price and variant segments and new player entry shall also be expected in packaged tea market. Consumers will also continue to shift from unpackaged to branded tea offerings. Growth is also expected via expansion of modern retail and penetration of branded or packed tea in rural market among other factors. The RTD segment shall also witness a boom and many more players shall be expected to create products with lesser differentiation. On-trade sales of packaged tea shall also be another area to watch out for as new players shall enter with various product and format offerings.

MARKET STRUCTURE

- Monopolistic Competition
- Market Leaders : Tata Tea and HUL
- Numerous small players
- Marketers try to differentiable their product by varying marketing mix
- Price is varied
- Catering to regional tastes
- Various Promotional Campaigns

One of the oldest beverages, Tea makes on the most competitive and challenging market both in terms of products in India. In terms of product classification, the tea is usually divided into black and green tea primarily and internationally there is some variants of fruit/herbal tea, Instant tea, etc. which has negligible penetration in the Indian market. Further in black tea, there are variants of standard and specialty black tea both in loose and packed form.

With increasing disposable income and awareness on product differentiation (aroma, origin, taste, etc), the loose/ standard tea is making way for more premium variants and flavors. At the same time, the increasing consumer health quotient is boosting sales for the green tea and its variants – mint, lime/ lemon, classic etc. Green tea has been marketed for many health benefits such as weight loss, effective against diabetes and cancer, healthier skin, stronger immune systems and assisting in hair growth. This has not only resulted in consumption of premium segments but also given an overall push to the unit consumption price point per kg.

To look at the market play, the total branded or the packaged tea (in various forms) market in India is -10,000 crores growing at a CAGR of 5 percent. The branded tea in India can be classified into the packed, tea bag, and flavoured tea segments whereas the unbranded segment is usually the loose tea both in unpacked or tea bag form. As per industry estimates, unpackaged tea accounts for over 45% of value sales of total tea sold in India and has a dominance presence in the rural market. With the aggressive marketing and promotional schemes along with wide distribution system the rural market is opening wings to the branded or the packed tea brands – national or regional alike.

In terms of packaged or branded tea distribution, almost the entire urban India is deeply penetrated by various brands. As a typical FMCG product, the kiranas or independent smaller merchants account for the major channel accounting for as high as 65-70 percent of the sales followed by supermarkets and hypermarkets. The other slow emerging segment is the on-trade sales of tea though food service formats such as tea lounges or tea cafes along with hundreds of chai shops. Most of these formats use packaged or branded tea either of the manufacturer (Wagh Bakri Tea Lourges, Goodricke Tea Caffe) or smaller packs of established brands. Another channel of on-trade sales for packaged tea is the tea vending machines increasingly been installed in

large office complexes and hospitals etc., but this channel shall witness crawling growth due to the smaller street chai shops that appeals more to the Indian palate.

Packet tea market is extremely penetrated with multiple brands with more than 300 brands in the country, dominated by HUL, and Tata tea which have a deep presence in both urban and rural market, across pack and variants and hence together account for 40-50 percent of the total market in the packaged tea segment. The other regional/ national players are Waghbakri, Duncan's, Everyday, Goodricke, GPL Girnar., Sapat, Dhunseri, Mohini Society, Marvel etc.

Among the brands, Brooke Bond, Taj Mahal, Red Rose, Al, Tata Tea Premium, Tata Tea Gold, Tata Tea Agri Dust, Waghbakri, Ducans, Tata Tea Chakra Gold etc are among the key brands sold in the branded, packaged segment though Unilever was the only prominent multinational player present in the Indian tea category and continued to be the market leader in the industry.

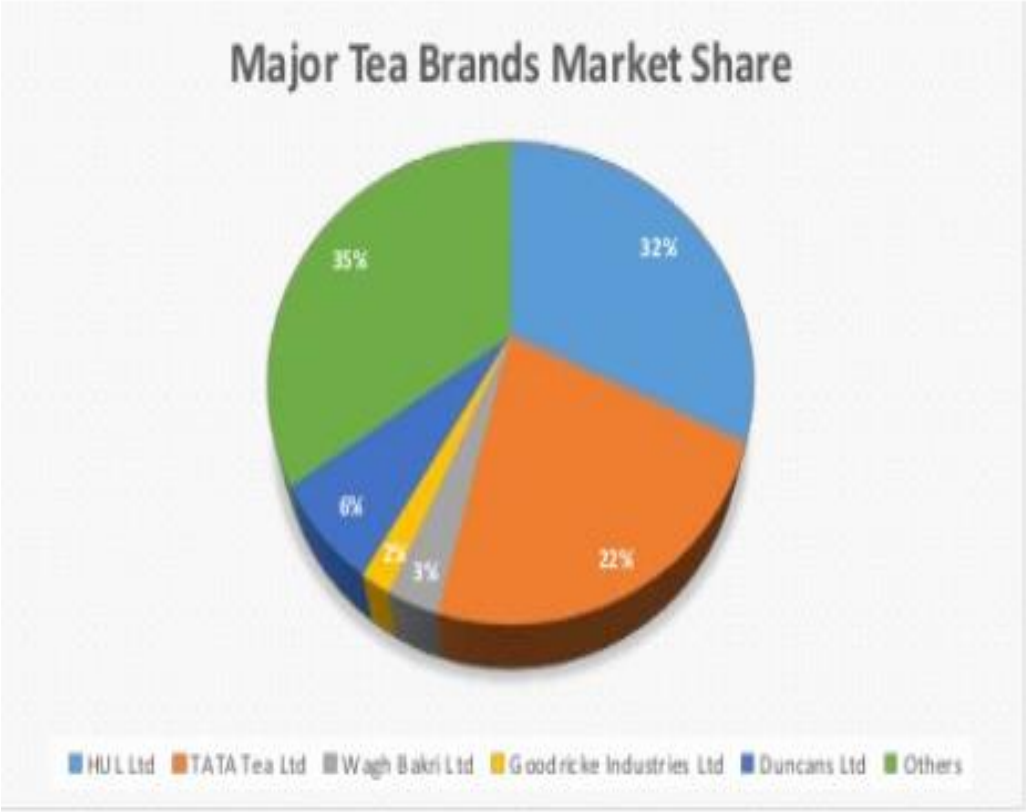


Figure no.:20

KEY HIGHLIGHTS:

The major highlights of the project are as follow:

Total capital requirement (Rs. Lakhs)	16.82
Promoter's contribution (Rs. Lakhs)	5.89
Annul sales realization (Rs. Lakhs)	20.4
Annul operating expenses (Rs. Lakhs)	16.24
Annual profit (Pre-tax) (Rs. Lakhs)	4.16
Pre-tax return on sales	20%
Break-Even Point	58%
No. of persons employed	10

Table no.:9