FEASIBILITY STUDY OF
AN AGRO-BASED INDUSTRIAL PROJECT

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AN AGRO-BASED INDUSTRIAL PROJECT

By

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A project submitted to the Department of Industrial & Production Engineering, Bangladesh University of Engineering and Technology, Dhaka in partial fulfillment of the requirement for the degree of Master of Advanced Engineering Management.

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CERTIFICATE OF APPROVAL

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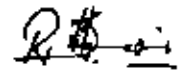

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ACRONYM

CR - Current Ratio

COGS - Cost of Goods Sold

DOE - Department of Environment

EBIT - Earning before interest and tax

EIA - Environmental Impact Assessment

ERR - Economic Rate of Return

HTST - High Temperature Sterilization Treatment

IRR - Internal Rate of Return

LTST - Low Temperature Sterilization Treatment

ROE - Return on equity

SNF - Solid Non Fat

SMP - Skim Milk Powder

SWOT - Strength, Weakness, Opportunity and Threat

UHT - Ultra Heat Treated

ABSTARCT

Bangladesh is a densely populated developing country with agro based economy. But at this advanced stage of science and technology, Bangladesh is yet to compete in the international market with its agro-based products. Imported agricultural commodities are playing a dominating role in our market. Highest priority has been given on industrial development to achieve the desired level of macro economic development of the country.

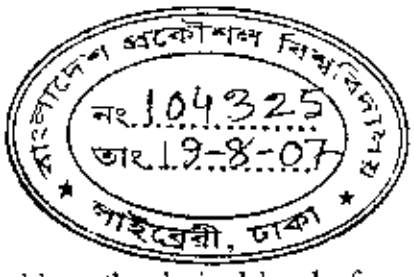
As for milk products, there are only a very few companies who are existing in the market with a limited number of items against a full range of imported items having various product features such as packaging, flavor, taste, quality, durability etc. Urban section of the population of the country is not getting the required fresh milk which is leading most of them depended on powder milk due to poor transportation facilities and lack of local milk processing and preserving facilities. A considerable amount of foreign exchange is going out every year in the form of import payment for milk powder and milk based products including much needed baby food, causing an adverse havoc in the country's balance of payment situation.

The proposed project of "Milk & Milk Products" is an appropriate and timely concerned approach because of its connection to the agro-based industry. The immediate objective of this project is to produce milk and milk products and market them all over the country. As a consequence, it will have multifaceted beneficiary from rural poor to upper income group people in the cities. The project will have direct impact on job creation for skilled and semi-skilled people, savings of foreign currency, contribution to GDP, and consumers' health in general;

With this point of view - the feasibility study will focus on the analysis of the practicability of a proposed milk processing plant that will meet different options and choices of the consumers. This study aims to address two types of feasibility studies in broader sense, i.e. (i) Commercial feasibility and (ii) Socio economic feasibility. Commercial feasibility study again comprises of five different aspects namely: technical, marketing, financial, managerial and organizational. profitability element will be taken into consideration from the individuals as well as the lenders point of view for commercial feasibility whereas in case of economic feasibility the same is viewed from the society's angle as a whole.

CHAPTER - 1

INTRODUCTION



1.1 BACKGROUND

Bangladesh is a densely populated developing country. To achieve the desired level of macro economic development of the country, highest priority has been given on industrial development. As the country is mainly an agro-based one, the agro-based industrial development might be the milestone of the economy. But at this advanced stage of science and technology, Bangladesh is yet to compete in the international market with its agro-based products. As a result, imported agricultural commodities are playing a dominating role in our market. Consumers prefer to buy imported commodities at much higher prices [1,2].

As for milk products, there are only a very few companies who are existing in the market with a limited number of items against a full range of imported items having various product features such as packaging, flavor, taste, quality, durability etc. These features attract customers in favor of imported items even if higher price is charged.

Urban section of the population of the country is not getting the required fresh milk which is leading most of them depended on powder milk. Milk produced in remote areas sometimes face gluts due to lower price while city dwellers find fresh milk cherished. This is due to poor transportation facilities and lack of local milk processing and preserving facilities. A considerable amount of foreign exchange is going out every year in the form of import payment for milk powder and milk based products including much needed baby food, causing an adverse havoc in the country's balance of payment situation.

With this point of view - the feasibility study will focus on the analysis of the practicability of a proposed milk processing plant that will meet different options and choices of the consumers.

This research project will focus on justifying the soundness of the investment by means of a critical and systematic analysis of different elements of a project. This study aims to address two types of feasibility studies in broader sense, i.e. (i) Commercial feasibility and (ii) Socio economic feasibility [3].

While studying the commercial feasibility of the project profitability element will be taken into consideration from the individuals as well as the lenders point of view whereas in case of economic feasibility the same is viewed from the society's angle as a whole. Commercial feasibility study again comprises of five different aspects namely: technical, marketing, financial, managerial and organizational [4,5].

1.2 OBJECTIVE

The proposed project will aim at the following objectives:

(a) Analyze the market condition and assess the market demand and prospect of the proposed project.

(b) Assess the socio-economic and environmental implication of the project.

(c) Assess strength, weakness, opportunity and threat (SWOT) of the project.

(d) Assess the financial and technical viability of the project.

The main outcomes of this study are – (i) a comprehensive feasibility report, which will also identify the constraints of the project, (ii) a business plan to offset the constraints, (iii) a host of potential opportunities to strengthen locally produced products against the powerful brands of foreign items, as an aid to develop future marketing plan.

1.3 METHODOLOGY

The followings step-by-step methodology will be applied to this research project:

(a) Market study will be carried out mainly on the data/information collected through field visits, market survey and discussions with businessmen related to this discipline.

(b) Financial and economic analysis will be done based on real data obtained from engineering estimation and suitable engineering economic methods.

(c) The environmental assessment will be done in consultation with the Department of Environment and Pollution Control with respect to Environmental Policy 1992 and EIA rule.

(d) Technical assessment will be done based on the consideration of engineering design of the project, infrastructure facility, production process etc.

CHAPTER - 2
LITERATURE REVIEW

2.1 MAJOR ASPECTS OF FEASIBILITY STUDY

A project is the whole complex of activities involved in using resources to gain benefits.

A feasibility study is defined as an evaluation or analysis of the potential impact of a proposed project or program. A feasibility study is conducted to assist decision-makers in determining whether or not to implement a particular project or program. The feasibility study is based on extensive research on both the current practices and the proposed project/program and its impact.

Project appraisal or Feasibility study means pre-investment analysis of an investment project with a view to determine its commercial and socio economic feasibilities.

Major Aspects to be looked into while appraising or studying feasibility of an investment project are **Commercial Appraisal / Feasibility Study** and **Economic appraisal**. Details are outlined below:

I. Commercial Appraisal / Feasibility Study

a) Technical

The technical aspect of an industrial project are appraised to determine whether the project is sound with regard to very engineering and technological considerations, including product specification, process, size, internal balance, suitability and availability of physical facilities, designs and layouts of equipment, building etc. The main objective of technical appraisal is to look into the appropriateness of technical structure of the project within certain economic and financial constraints.

The key issues to be considered are as follows:

- Is the engineering design of the project sound?
- Has the size of the project plant that is, the proposed scale of operation been determined on a correct assessment of the requirement of the industry vis-à-vis market size?
- Has due consideration been given to alternative production process?

- Are the inputs needed by the project available at reasonable costs?
- Is the location of the project of maximum economic advantage?

The basic aspects to be analyzed in the course of technical appraisal are

(i) Preliminary investigation of product / service, raw materials, manpower skill and technology required for manufacturing / service and testing and analytical report,

(ii) Selection of production process involving choice of alternative technology and selection criteria, wastage in manufacturing process, by-products and their recovery & disposal of waste and effluents,

(iii) Machinery and equipment for production service,

(iv) Production capacity and efficiency,

(v) Site selection and considering technical factors, cost factors of production, marketing factors, administrative and housing factors, social and political factors,

(vi) layout plan of site, building, plant and machinery, supplementary installations

(vii) Analysis and evaluation of utilities & supplies covering raw materials, stores and spares, technical know how, transfer of technology, power, fuel, water, gas etc., labour and transportation

b) Marketing

Marketing may be defined as "the performance of all business activities involved in the flow of goods and services from the producer to the consumer". Marketing Plan is the most critical segment of project feasibility analysis. Through this the company assesses the opportunities and threats in the environment, and develops strategic responses that ultimately lead it to its set objectives. The objective of market analysis is to see how much of these goods or services the community is disposed to acquire and at what prices. The market analysis is concerned initially with the study of demand for a project's output. Market analysis covers the following aspects:

- Are there adequate possibilities for surviving the project in view of the consumer's needs, production, distribution etc. of the produce(s) / Product (s) to be produced by the project?
- Has the demand for the produce(s) / Product(s) of the project been duly assessed taking into consideration all the factors which affect the said demand both favourable as well as adversely?
- Whether supply analysis of the produce(s) / Product (s) of the project has been made properly?
- Have the size of the market for the produce(s) / Product (s) of the project as well as the maximum share of those produce(s) / Product (s) that might have in the said market been determined properly from the interaction of the demand for and supply of the produce(s) / Product (s) of the project in question?
- Whether the size of the plant is enough to supply the required quantity to cope with the gap that exists in between the demand for and supply of the produce(s) / Product (s) of the project?
- Will there be any major risk for marketing the produce(s) / Product (s)?

c) Financial

The main purpose of financial appraisal is to assess if the proposed project is viable in terms of its operation in the future years and its financial soundness. To see whether the project will be able to generate sufficient surplus after meeting all operating costs and other day to day transactions to meet its long-term debt obligations. The relevant Information collected through technical, marketing, management and economic appraisal of the project have direct bearing upon its financial appraisal.

The financial appraisal is directed to examine mainly the following two aspects:

(a) Financial requirement to bring the project into existence and the probable sources from where the required funds will be forthcoming; and

(b) Prospects of adequate revenue generation by the project when it goes into operation, position of the concern with regard to its actual cash generation (Liquidity) and its probable impact upon the financial condition (Solvency)

The financial appraisal of a project thus covers the following aspects:

i) Assessment of net-working capital to have adequate provision.

ii) Estimates of the total cost of the project.

iii) Drawing means of finance (sources of finance).

iv) Sales Estimates and Earning forecast to ensure profit for its owners or sponsors.

v) Estimates of cost of goods sold and general administrative and selling expenses and other financial expenses to ensure whether the costs are exhaustive and realistic.

vi) Various ratio analysis, IRR calculation and sensitivity analysis to withstand against possible threats.

vii) Break-even and cash flow analysis to ensure adequate liquidity and cover its debt servicing liabilities, projected balance sheet,

d) Managerial

Management feasibility study refers to the assessment of the ability of a management in relation to the functions, which they have to perform. The evaluation of management rests, apart from environmental factors, on the resourcefulness, competence and integrity of its management.

An assessment of the principal promoters in respect of their integrity, experience and capabilities to implement and run the project is of prime importance before extending a credit of any amount. As because a project which is viable from economic, marketing, technical and financial aspects may fail if wrong persons are chosen to execute and run the project. Even a project with excellent market prospect, outstanding engineering design and full proof financial arrangements may end in failure if its management is not efficient, honest and dynamic. In other words, the ultimate success or failure of a project depends mainly on its management ability and sincerity.

The management appraisal covers the analysis and interpretation of the following areas of the prospective entrepreneurs:

(i) Identification of management competency;

(ii) Family background and experience in related spheres;

(iii) Educational background;

(iv) Financial strength and capability of mobilizing funds as their part of equity, as well as their existing investment in land, building, machinery and other assets.

(v) Credit investigation and evaluation of credit worthiness through interview of the applicant, bank reports, government reports/publication, report from trade circle

(vi) Liquidity status of the applicant.

The key issues to be considered are as follows:

- Do the top managerial personnel possess sufficient experience in the line of production in which the project falls?
- Has the supervisory staff been chosen with exclusive consideration of expertise and ability?
- Has due balance been maintained in the employment of supervisory staff and production workers?

e) Organizational

The key issues to be considered are as follows:

- Has the organizational structure been devised in a way that inter departmental coordination becomes easy?
- Are the documents in respect of the organizational set up of the project proper?

II. Economic appraisal

In the economic appraisal, the project is looked at from the national or social point of view and the economic cash flow is calculated on the basis of "true or real prices", commonly known as accounting or shadow prices. While in the financial appraisal,

the project is looked at from the sponsor's point of view and cash flow is determined on the basis of actual receipts and expenditures.

The economic analysis starts from the point at which the market price mechanism fails. Economic analysis eliminates the difference between "Social" and "Private" costs by valuing all goods and services in terms of the real costs and benefits, which their production imposes on the economy. Economic Appraisal covers the following aspects:

(a) Calculation of Economic Rate of Return (ERR).
(b) Calculation of Bruno Ratio i.e., cost of per unit foreign currency earned or saved.
(c) Calculation of contribution to GDP; and
(d) Employment opportunity and cost of per capita investment.

Economic Appraisal answers the following questions:

- Whether social cost of the project < private cost?
- Whether social benefit is > private benefit?
- Whether social cost < social benefit of the project?
- Whether the project generates more external economies than what it internalizes?

The above mentioned project appraisal techniques helps the analysts, the loan giving agency, the prospective entrepreneurs to arrive at a decision whether to accept or reject a capital investment project. After detailed appraisal, if the analysts / loan giving agencies find that the project is viable from its management, market, technical and financial point of view and that the project is also socially desirable, then they may choose the project for safe lending. On the other way if after detailed appraisal the project is not found viable they may reject the loan proposal with the advice to go for re-designing of the project, if possible or to abandon the idea.

A mere appraisal will not bring success to the project rather it is the close supervision and monitoring during its implementation as well as operation upon which the success of the project depends to a greater extent.

2.2 RATIO ANALYSIS

Appropriate information and interpretation of the information should be the prior requirements of investing a firm. Analysis of financial statement is one of the useful tools for this purpose. Financial ratios are like the financial temperatures of a business entity. Ratios are among the best-known and most widely used tools of financial analysis. Ratio analysis expresses the relationship among selected items of financial statement data. These data may appear on the same statement or they may appear on different statements. Its objective is to assess the firms' performance.

Definition of ratios

A ratio expresses the mathematical relationship between one quantity and another. The relationship is expressed in terms of a percentage, or a rate, or a simple proportion. Ratio analysis of a firm's financial statement is of interest to shareholders, creditors and the firm's own management. The people whose job is to analyze firm's financial position will differ in the ratios they find useful. Short-term creditors are primarily interested in the firm's short run performance and the level of liquid assets (cash, marketable securities, account receivables). Long-term creditors and the stakeholders are interested in the firm's long run performance. Management uses all these ratios to assess the overall performance of the company.

Classification of ratios is mentioned in the following table

Table 2.2.1 Different types of ratios

Basis	Type	
Statement	▪ Balance sheet ratios - based on balance sheet figures ▪ Profit and loss account ratios - based on profit and loss account figure. ▪ Profit and loss account and Balance sheet ratios - based on figures from both statements.	
User	▪ From the share holders point of view ▪ From Short term creditors point of view ▪ From long term creditors point of view	
Function	*Liquidity ratios*	▪ Current ratio ▪ Quick (Acid test ratio) ▪ Net working capital ratio

Basis	Type	
	Activity or efficiency ratios	▪ Inventory turn over ratio ▪ Receivable turn over ▪ Payables turnover ▪ Total asset turn over
	Leverage ratios	▪ Debt to equity ratio ▪ Debt to total asset ratio
	Coverage ratios:	▪ Times interest earned ratio ▪ Debt Service coverage ratio.
	Profitability ratios:	▪ Gross Profit margin ▪ Operating profit margin ▪ Net profit margin ▪ Return on asset ▪ Return on equity
	Market value measures	▪ Earning per share ▪ Price earning ratio ▪ Market to book ratio

Any given ratios reflect the particular aspect of the company. The particular ratio and what it indicates should be viewed in terms of other ratios and other facts concerning the company.

LIQUIDITY RATIOS

Liquidity refers to the ability of a firm to meet its short-term financial obligation when and as they come due. Three basic measures of liquidity are as follows:

$$\textit{Current ratio} = \frac{\textit{Current Asset}}{\textit{Current Liability}}$$

It is viewed as relatively liquid. It implies firm's ability to meet current obligations. Generally higher the ratio, greater the cushion between current obligations and a firm's ability to pay them. However the composition and quality of current assets is a critical factor in analysis of an individual firm's liquidity. If the ratio is too high it means that firm may have an excessive investment in current assets. **Rule of thumb 2:1.**

$$QuickRatio = \frac{Cash + securities + Netreceivables}{Currentliability}$$

It implies firm's ability to meet short-term obligations from its most liquid assets. It is a refinement of the current ratio and is a more conservative measure of liquidity. The ratio shows the degree to which a company's current liabilities are covered by most liquid current assets. **Rule of thumb 1:1.**

$$Working\ Capital\ Turn\ over\ Ratio\ =\ \frac{Net\ sales}{Net\ working\ capital}$$

Working capital reflects the ability of a company to finance current operations and is a measure of the margin of protection of current creditors. A low ratio can indicate inefficient use of working capital while a very.

Rule of thumb: increase in ratio indicates over trading.

ACTIVITY OR INEFFICIENCY RATIOS:

It has been widely accepted that the profitability of an enterprise to a large extent depends on its efficient asset utilization or activity performed. Activity ratio measures the speed with which various accounts are converted into sales or cash.

$$\text{Inventory turnover (in days)} = \frac{360}{\text{COGS / Inventory}}$$

Shows the average no. of days the inventory is held before it is turned into accounts receivable through sales. The lower the number the firm indicates the better is the position. High inventory days can indicate poor liquidity, possible over stocking or obsolescence.

Rule of thumb: Compares with the previous year.

$$\text{Account receivables (turn over in days)} = \frac{360}{\text{(Net sales / Account receivables)}}$$

shows average number of days receivables are outstanding before being collected. The lower no. of days the shorter the time between the sale and cash collection.

Rule of thumb: Should not be more than 1/3rd greater than company's term of sales.

$$\text{Account payables turnover (in days)} = \frac{360}{(\text{COGS/Accounts payable})}$$

This ratio indicates the no. of days the debt is outstanding. If the number of days is high the company may be experiencing cash shortage, taking extended terms or simply expanding trade credits.

$$\text{Total asset turn over ratio} = \frac{\text{Sales}}{\text{Total asset}}$$

This ratio is a measure of the effective use of company's assets in order to generate sales. Generally higher a firm's total asset turnover, the more efficiently its assets have been used.

LEVERAGE RATIOS:

Financial leverage is the magnification of risk and return introduced through the use of fixed cost financing such as debt and preferred stock. In general, the more debt a firm uses in relation to its total assets, the greater its financial leverage. In other words, the more fixed cost debt, or financial leverage a firm uses, the greater will be its risk and expected return.

$$\text{Debt Equity Ratio} = \frac{\text{Total Debt}}{\text{Total Equity}}$$

Ratio indicates the relationship between capital contributed by the creditors and contributed by the owners. The higher the ratio the less protection there is for creditors.

$$\text{Debt to Total Asset Ratio} = \frac{\text{Total Debt}}{\text{Total Asset}}$$

The ratio shows the relative extent to which the firm is using borrowed fund.

COVERAGE RATIOS

The coverage ratio refers to the ability of an organization to service from its operations interest payments that are due to non-equity suppliers of capital.

$$\text{Interest Coverage Ratio} = \frac{\text{EBIT}}{\text{Interest Payments}}$$

The higher the ratio, the greater the ability to service interest payments to external parties.

$$\text{Debt Service Coverage Ratio} = \frac{\text{EBIT + Depreciation}}{\text{Interest Payments + Amortization amount}}$$

This Ratio indicates the ability of a company to generate cash to pay interest and principal repayments.

Rule of thumb: The ratio must be more than 1 is desirable to show debt service coverage ability.

PROFITABILITY RATIOS

Profitability refers to the ability of a firm to generate revenues in excess of expenses. There are many measures of profitability, which relate the returns of the firm to its sales, assets, or equity.

$$\text{Gross Profit Margin} = \frac{\text{Gross Profit}}{\text{Sales}}$$

Indicates how much gross profit is achieved from each taka of revenue.

The higher the gross profit margin, the more profitable the firm in a relative sense.

$$\text{Operating Profit margin} = \frac{\text{Operating Profit}}{\text{Sales}}$$

Indicates the profit margin from each taka of revenue after all costs and expenses other than interest and taxes.

$$\text{Net Profit Margin} = \frac{\text{Net Profit}}{\text{Sales}}$$

indicates the profit margin from each taka of revenue after all costs and expenses including interest and taxes. The higher the net profit margin, the more profitable the firm in a relative sense.

$$\text{Return on Assets (ROA)} = \frac{\text{Net Profit}}{\text{Total Asset}}$$

Measures the overall effectiveness of management in generating profits with its available assets. It is also known as return on investment (ROI)

$$\text{Return on Equity(ROE)} = \frac{\text{Net Profit}}{\text{Total Equity}}$$

Measures the return earned on the owner's investment in the firm. The owners of the firm expect higher return.

MARKET VALUE MEASURES

These ratios are calculated to assess the market position of the firm. There are many measures, which are calculated for publicly traded companies.

$$\text{Earning PerShare (EPS)} = \frac{\text{Net Income}}{\text{No. of Shares Outstanding}}$$

The more the earning per share better the performance and the prospects of the company.

$$\text{Price Earning (PE) ratio} = \frac{\text{Market Price Per Share}}{\text{EPS}}$$

This ratio is also known as earning multiple. It generally measures how much an investor is willing to pay for the company's prospects for earnings. A high PE ratio indicates investor's confidence in the stability and growth of company's income.

$$\text{Market to Book Value} = \frac{\text{Market Value Per Share}}{\text{Book Value Per Share}}$$

Book value per share indicates historical costs. This ratio compares the market value of the firm's investment to their costs. A value less than 1 could mean that the firm has not been successful in creating value for its stockholders.

2.3 SWOT

Sizing up a firm's resource strengths and weaknesses and its external opportunities and threats, commonly known as *SWOT analysis*, provides a good overview of whether a firm's business position is fundamentally healthy or unhealthy. SWOT analysis is grounded in the basic principle that *strategy-making efforts must aim at producing a good fit between a company's resource capability* (as reflected by its balance of resource strengths and weaknesses) *and its external situation* (as reflected by industry and competitive conditions, the company's own market opportunities, and specific external threats to the company's profitability and market standing).

Perceptive understanding of a company's resource capabilities and deficiencies, its market opportunities, and the external threats to its future well-being is essential to good strategy-making. Otherwise, the task of conceiving a strategy that capitalizes on the company's resources, aims squarely at capturing the company's best opportunities, and neutralizes the threats to its well-being becomes a chancy proposition -indeed.

Factors to be considered for in sizing up a Company's Strengths, Weakness, Opportunities, and Threats are mentioned in the following table:

Table 2.3.1 Factors of SWOT analysis

Potential Resource Strengths and Competitive Capabilities	Potential Resource Weakness and Competitive Deficiencies
• A powerful strategy supported by competitively valuable skills and expertise in key areas • A strong financial condition; ample financial resources to grow the business • Strong brand name image/company reputation • A widely recognized market leader and an attractive customer base • Ability to take advantage of economies of scale and/or learning and experience curve effects • Proprietary technology/superior technological skills/important patents • Superior intellectual capital relative to key rivals • Cost advantages • Strong advertising and promotion • Product innovation skills • Proven skills in improving production processes • Sophisticated use of e-commerce technologies and processes • Superior skills in supply chain management • A reputation for good customer service • Better product quality relative to rivals • Wide geographic coverage and/or strong Global distribution capability • Alliances/ joint ventures with other firms that provide access to valuable technology, competencies, and/or attractive geographic markets	• No clear strategic direction • Obsolete facilities • A weak balance sheet; burdened with too much debt • Higher overall unit costs relative to key competitors • Missing some key skills or competencies /lack of management depth/ a deficiency of intellectual capital relative to leading rivals • Sub par profitability because…… • Plagued with internal operating problem • Falling behind rivals in putting e-commerce capabilities and strategies in place • Too narrow a product line relative to rivals • Weak brand image or reputation • Weaker dealer network than key rivals and/or lack of adequate global distribution capability • Sub par e-commerce systems and capabilities relative to rivals • Short on financial resources to fund promising strategic initiatives • Lost of underutilized plant capacity • Behind on product quality and/or R&D and/or technological know-how • Not attracting new customers as rapidly as rivals due to ho-hum product attributes

Potential Company Opportunities	Potential External Threats to Company's Well-Being
• Serving additional customer groups or expanding into new geographic markets or product segments • Expanding the company's product line to meet a broader range of customer needs. • Utilizing existing company skills or technological know- how to enter new product line or new businesses • Using the Internet and e- commerce technologies to dramatically cut costs and/or to pursue new sales growth opportunities • Integrating forward or backward • Falling trade barriers in attractive foreign markets • Openings to take market share away from rivals • Ability to grow rapidly because of sharply rising demand in one or more market segments • Acquisition of rival firms or companies with attractive technologies expertise • Alliances or joint ventures that expand the firms market coverage or boost its competitive capacity • Openings to exploit emerging new technologies • Market openings to extend the company's brand name or reputation to new geographic areas	• Likely entry of potent new competitors • Loss of sales to substitute products • Mounting competition from new Internet start –up companies pursuing e-commerce strategies • Increasing intensity of competition among industry rivals- may cause squeeze on profit margins • Technological changes or product innovations that undermine demand for the firms product • Slowdowns in market growth • Adverse shifts in foreign exchange rates and trade policies of foreign governments • Costly new regulatory requirements • Growing bargaining power of customers or suppliers • A shift in buyer need and tastes away from the industry's product • Adverse demographic changes that threaten to curtail demand for the firm's product • Vulnerability to industry driving forces

2.4 DEFINITIONS

PAY BACK PERIOD: It is defined as the expected number of years required to recover the original investment. The shorter the Pay Back period, the better. The time value of money is not considered in Pay Back period.

NET PRESENT VALUE (NPV): It is a method of ranking investment proposals - which is equal to the present value of future net cash flows, discounted at the marginal cost of capital. For mutually exclusive projects, higher NPV will be accepted.

GDP: GDP is the total value of goods and services produced within a nation's geographical boundaries within a given year, regardless of the nationality of the productive entity's nationality It is the primary indicator of the status of the economy. It includes consumer and government purchases, private domestic and foreign investments and the total value of exports. It can be measured in three ways: (a) Production - Measures the GDP as the sum of all the *Value Added* by all activities which produce goods and services, (b) Income (GDP(I)) - Measures the GDP as the total of incomes earned from the production of goods and services, (c) Expenditure (GDP(E)) Measures the GDP as the total of all expenditures made either in consuming finished goods and services or adding to wealth, less the cost of imports.

GNP: Total goods and services, domestic and foreign, produced by entities owned by national residents.
GNP = GDP+ (foreign factor incomes of national residents)- (income earned by foreigners in geographic boundaries of nation).

IRR: It is a method of ranking investment proposals using the rate of return on an investment, calculated by finding the discount rate, that equates the present value of future cash inflows to the project's cost. Alternatively IRR is the discount rate that forces the Present Value (PV) of a projects inflows to equal the PV of its cost.

If IRR > Cost of capital – Project be acceptable.

If IRR < Cost of capital – Project be rejected

If IRR = Cost of capital – matter of indifference

CHAPTER - 3

COMPANY PROFILE
PRODUCT & CAPACITY

3.1 VISION - MISSION - OBJECTIVES

Since independence, we have been importing milk powders. To encourage local dairy industry, custom duty on milk powder in bulk packaging has been raised from 25% to 32.5%. This measure of Bangladesh Government would facilitate promotion and expansion of local dairy sectors.

As an agriculture-based industry, dairy sector has been considered as one of the 16 thrust sectors receiving special attention. The relevant objectives and policy strategies of the 'Industrial Policy' are:

- To meet the growing demands of the local market and to encourage import substitute industries.
- To encourage expansion of production for local raw materials based industries.
- To provide special revenue assistance to the thrust sector industries.
- To extend financial assistance to this sector, if needed.

In this connection, the proposed project of "Milk & Milk Products" is an appropriate and timely concerned approach because of its connection to the agro-based industry. The immediate objective of this project is to produce milk and milk products and market them all over the country. As a consequence, it will have multifaceted beneficiary from rural poor to upper income group people in the cities. The project will have direct impact on the followings:

- Job creation for skilled and semi-skilled people;
- Savings of foreign currency;
- Contribution to GDP;
- Employment creation for rural men and women;
- Efficient use of milk:
- Milk production; and
- Consumers' health in general:

The project is proposed to establish with the following Objectives, Mission and Vision:
Vision Mission Objectives

Vision - The vision of the project is to improve health condition of the people with special attention to child and elderly people.

Mission - Mission of the project is to produce milk and milk products with long open shelf life so that milk produced in abundance in few places can be distributed to the people all over the country.

Objectives - Main objective of the project is to provide milk and milk products to a wide range of people at a reasonable and affordable price.

Sub-objectives of the project are as follows:

- Stimulate dairy production and utilize women manpower of the country more fruitfully;
- Assist milk producers by collecting surplus milk;
- Bringing new dimension in milk and milk products industry;
- Milk powder import will be reduced due to its substitution.

3.2 COMPANY PROFILE

(a) **Name of the Project** : **ECHO MILK PRODUCTS LIMITED**

(b) **Location of the Project** :

a. Area : 9.5 bigas
b. Location : Keowa, Sreepur, Gazipur
c. Encumbrance : The project land is free from any kind of encumbrance.

(c) **Legal Status** : Private Limited Company

(d) **Capital Structure** : Authorized Capital : Tk 300,000,000/-

Paid-up Capital : Tk 100,000,000/-

(e) **Name of the Sector** : Agro based

(f) **Source of Raw Material** : Local

(g) **Production Capacity** : At 100% capacity utilization, the project is expected to produce annually the items below:

SL	Products	Quantity
1	Pasteurized white milk	6,205,000 liter
2	Pasteurized flavored milk	1,095,000 liter
3	Lassi (180 ml bottle)	15,184,000 liter
4	Curd	5,110,000 liter
5	Yogurt (120 ml cup)	7,602,950 liter
6	Whey drink (Mango) (250 ml bottle)	17,520,000 liter
7	Ghee	62,050 kg

(h) **Cost of the Project** : The total cost of the project is estimated at Tk 198,169,294 including net working capital of Tk 19,283,913. A summary break-up of the total cost of the project has been shown below:

Sl. No	Description	Cost
1	Land & land development	21,561,580
2	Chilling points, Building & other civil construction	22,000,000
3	Capital machinery	117,655,000
4	Other fixed asset	17,698,800
	Total Fixed Investment	**178,915,380**
5	Working capital	19,268,000
	TOTAL	**198,183,380**

(i) Means of finance:

Debt	101,073,524
Equity	97,109,856
Debt : Equity	**51 : 49**

(j) Financial Performance:

(Amount in '000 Taka)

Particulars	Year-1	Year-2	Year-3	Year-4	Year-5
Capacity Utilization	65%	70%	80%	85%	85%
A. Profitability					
Sales Revenue	317,877	345,507	394,681	419,624	419,872
Financial Expenses	15,161	14,447	12,281	10,115	7,949
Net Profit (After Tax)	27,316	33,482	46,565	53,482	54,289
B. Ratios					
Gross profit to sales (%)	31.05%	31.41%	32.19%	32.36%	32.08%
Net profit to sales (%)	7.73%	8.80%	10.77%	11.73%	12.02%
Return on Equity (%)	28.13%	34.76%	48.58%	56.18%	57.56%
Return on Investment (%)	21.43%	24.18%	29.69%	32.09%	31.40%
Fixed assets Coverage (times)	1.44	1.36	1.26	1.10	0.85

(k) Marketing Aspect:

The proposed project ECHO MILK PRODUCTS LIMITED is an innovative addition to the agricultural production in Bangladesh. It is a most modern Milk Processing unit where a variety of milk products will be produced.

The products of the project will have their own uniqueness in terms of quality, branding, packaging, handling, carrying, etc. They will also have easy and common customer acceptability regardless of age, sex, health status, cast and religion.

The products will enjoy a vast consumer market of the country. Because of uncommon and unique product features, they will have wide demand nation wide. Some of the products will be of import substitution, meaning that they will save the incurrence of foreign exchange to the extent they will be produced by the proposed project.

The sponsors have been inspired to set up and establish such a project by observing the prevalence of different foreign products in Bangladesh market, the changing buying habits and increasing demand of the consumers, the necessity of making import substitution of the foreign products, the utmost importance laid by the government to develop the agro sector and other aspects.

(l) **Socio-economic Aspects**

Upon implementation, the project will create direct job opportunity for **125** persons of different categories. It will contribute significantly **Tk 121,522,162** per year from the 4th year of commercial operation to the GDP of the country. The macro-economic effect will change the socio-economic condition of the directors, the employees, and the country as a whole.

(m) **Financial & Technical Viability**

The project has been found to be financially and technically viable. The profitability ratios are found to be highly satisfactory. The project will have sufficient liquidity to pay its liabilities. The break-even analysis shows a sound position and sustainability of the project in sensitive market situation. The project can afford a maximum cost of capital of **39%** as indicated by IRR (Internal Rate of Return).

(n) **Conclusion**

From the feasibility report of the project it appears that the proposed project will be a profitable one. It is found to be technically sound, financially and economically viable and acceptable from the marketing point of view.

As such it can be recommended to be worthwhile and desirable for investment.

CHAPTER - 4

ORGANIZATION AND MANAGEMENT ASPECT

4.1 LEGAL STATUS OF THE ORGANIZATION

The proposed project is a private limited company registered with the Registrar of Joint Stock Companies (RJSC) on November 22, 2003. The title of the project is "Echo Milk Products Ltd.".

4.2 CORPORATE STRUCTURE

The corporate structure of the organization is as follows:

Sl.	Name of the Sponsor and Permanent Address	Present Address	Number Shares	Position in Business
1	Mr. ABC S/O EEF House # 9A, RD # 14 (New) Dhanmondi R/A, Dhaka-1209	House # 9A, RD # 14 (New) Dhanmondi R/A, Dhaka-1209	20,000	Managing Director
2	Ms GHI W/O. ABC House # 9A, RD # 14 (New) Dhanmondi R/A, Dhaka-1209	House # 9A, RD # 14 (New) Dhanmondi R/A, Dhaka-1209	5,000	Director
3	Mr. DEF S/O. ABC House # 9A, RD # 14 (New) Dhanmondi, R/A Dhaka-1209.	House # 9A, RD # 14 (New) Dhanmondi R/A, Dhaka-1209	5,000	Director
		TOTAL SHARE	30,000	

4.3 PROFILE OF THE DIRECTORS

Mr. ABC, aged 62, is a tremendously successful business personality, is the Managing Director of the Company and a very well known figure in the country's business arena. At the beginning of his career, he served a few multinational companies for acquiring knowledge and experiences to fulfill his vision to be an industrialist. Starting business with chemical products he has got into cotton, yarn and textile mills. Mr. ABC achieved significant success in the related industry and trade and also earned wide reputation in the business community. He has also overseas business and visits frequently developed and developing countries.

Mr. ABC is a prominent member of Dhaka Stock Exchange Limited and is a Director of the Executive Committee of Bangladesh Terry Towel and Linen Manufacturers & Exporters Association (BTTLMEA)

His involvement in different **businesses is as follows:**

Sl.	**Name and address of business**	**Position**
1	Echo Cotton Mills Ltd.	Director
2	Shabnam Textile Mils Ltd.	Director
3	Echo Chemical Corporation Limited	Managing Director

Mrs. GHI, aged 55, is a Director of the Company. She is a graduate. In addition to the directorship of the proposed company, Mrs. GHI has also the directorship of two other companies namely Echo Cotton Mills Ltd and Shabnam Textile Mills Limited. She has visited several countries of the world for business purpose. Mrs. GHIis a dedicated social worker and is associated with few socio-cultural organizations. By engaging herself into business activities, she acquired considerable business management capability, which will certainly be of good use to run the business affairs of the proposed company.

Mr. DEF, aged 34, is one of the Directors of the company. He is an MBA from USA and has 5 (five) years experience as marketer of the milk products in USA. Apart from these, he is involved with his family business and has also the directorship of two other companies namely Echo Cotton Mills Ltd and Shabnam Textile Mills Limited. He is hard working and very much enthusiastic to establish the new and challenging business venture.

4.4 MANAGEMENT

The overall management of the company will be vested in the Board of Directors. The Managing Director will be responsible to the Board of Directors for overall operation of the project and will be assisted by different managerial and technical personnel.

Technical Expert

Mr. XYZ, Consultant, of the company is an M.Sc. in Dairy Science Department from USA and a Mechanical Engineer. He is a renowned person in the field of Milk Project installation in Bangladesh. He has more than 25 years of experience in milk related projects. He worked as a consultant of Shelaidaha Dairy Ltd. Abul Khair Condensed Milk

Industries Ltd.. Danish Condensed Milk Bangladesh Ltd., Samannaz Condensed Milk Ltd.. Aftab Bahumuki Farm Ltd. BRAC Dairy and Food Project. Tuilp Dairy and Food Products. At present he is working as a free Lance consultant and has agreed to work with the proposed project as a consultant up to the end of 2005. He will provide his expertise in the supervision of installation, commissioning and running. developing of various products, its marketing and distribution.

4.5 CONCLUSION

The management team has the entrepreneurial spirit with adequate education and experience to set up a processing plant as the proposed one.

CHAPTER - 5

TECHNICAL ASPECTS

5.1 THE PROJECT

The project envisages for setting up a milk product-processing plant under the name and style of **"Echo Milk Products Ltd."** on an area of land measuring 9.5 bigas (313.5 decimal) at Sreepur, Gazipur.

The project is intended to produce various milk based products like pasteurized white milk, pasteurized flavored milk, lassi, curd, yoghurt, whey milk (mango), ghee, etc. which are of international standard and quality having vast market demand as a whole.

The project has been designed based on imported and local machinery & equipments, raw materials, packaging and other supplies.

5.2 PRODUCTION CAPACITY

At 100% present capacity, the project will produce the following qualities of products annually:

SL	Products	Quantity	Unit Price
1	Pasteurized white milk	**6,205,000 liter**	
	1 liter bottle	1,095,000 liter	Tk 24.00
	1/2 liter bottle	5,110,000 liter	Tk 13.00
2	Pasteurized flavored milk	**1,095,000 liter**	
	1 liter bottle	365,000 liter	Tk 30.00
	1/2 liter bottle	730,000 liter	Tk 16.00
3	Lassi (180 ml bottle)	15,184,000 liter	Tk 7.00
4	Curd	**5,110,000 liter**	
	120 ml cup	4,562,500 liter	Tk 7.00
	1/2 liter cup	365,000 liter	Tk 29.00
	1 liter cup	182,500 liter	Tk 56.00
5	Yogurt (120 ml cup)	7,602,950 liter	Tk 8.00
6	Whey drink (Mango) (250 ml bottle)	17,520,000 liter	Tk 8.00
7	Ghee	62,050 kg	Tk 300.00

A brief description of all the products highlighting their quality, usefulness, pack size, packaging and other features is furnished as follows:

Pasteurized white milk: This product will be a quite different one than any others available in the market, especially in terms of its taste and nutrition level. The uniqueness of the product is that it will state like oven fresh milk and as if it is one-time steamed. It is a health product having pure food value and free from radiation that will reduce nutrition deficiency and increase children health. It will have a long open shelf-life of higher than any others in the market having a maximum shelf-life of 3-4 days. The consumer group of the product includes all classes of people regardless of age, health condition, religion, and so on.

Considering different option levels of the consumers, there will be two different pack sizes of the product: 1 liter and 1/2 liter which will be packed in bottles. This new and uncommon packaging in attractive bottles will attract the consumers greatly because of its convenience in handling and carrying.

Pasteurized flavored milk: This product will also be a new and uncommon one in our market. It will be a specially flavored item having extraordinary taste and quality. It will also carry high nutrition level and help the children keeping good health Like the pasteurized white milk, it will also have the same pack sizes of 1 liter and 1/2 liter and will be packed in attractive bottles.

The standard liquid milk, low fat milk and flavored milk follows the same processing but the percentage of various ingredients like fat, MSNF and sugar varies as per various formulations. The LACTOSE treated UHT uses a special treatment to breakdown milk lactose into Glucose & Galactose. These help elderly people or lactose intolerant people to digest the milk easily without any gastrointestinal problem.

Lassi: This item of milk product is a popular one in our country. Specially, it will be a lucrative one that will have special flavor and taste and will be liked by the people in general. An interesting thing is that the product contains millions of live bacteria which will kill other bacteria in the stomach to keep a person in good health and free from disease.

The product will have a single packsize of 180 ml in quantity and will be packed in attractive bottles. And this will show its differentiating characteristic in the market creating a strong competitive edge over the competitors.

Curd: This item will be a suitably tasted and delicious one that will be able to attract all classes of people. Like Lassi, it will help in killing the stomach bacteria and will thus help maintain a good stomach condition.

Curd will be packed in three different pack sizes of 120 ml, 1/2 liter and 1 liter attractive cups. This special type of packaging will carry a high image of the product, while its number of pack sizes will create more options of the consumers.

Yoghurt: Among all items of the project, this is a highly notable one. It will be a highly tasted and delicious item of milk product. Yoghourt will have a single and common pack size of 120 ml cup, which will also be attractive in design and outlook.

Whey Drink (Mango): Whey Drink is a common milk item that keeps the stomach in good condition and has a vast consumer demand in our country. This project will produce a special type of whey drink that will maintain a real taste and flavor of mango.

This item will be a quite new one in our country, and as such it will create its own market nationwide. The pack size of the product has been determined to be 250 ml in quantity being a logical one.

Ghee: As an excess output, the project will have this rich item with fullest purity. Consumers will find this product at reasonable price with maximum product benefit. It will bear the pack sizes that will conveniently suit the customer options.

5.3 LAND AND LOCATION

The project will be set up on a plot of land measuring 9.5 bigas located at Keown, Sreepur, Gazipur. The total cost of the project land including the development cost has been estimated at Tk 21,561,580 (Tk 19,000,000 + Tk 2,561,580)

	Calculations	
Value of land	Area: 9.5 bigha @ Tk.2,000,000/-	= Tk 19,000,000
Cost of land development	Area: = 9.5 bigha = (9.5x20x720) sft. = 136,800 sft. Cost= (136,800 sft. x 3.5' ht) cft x Tk.5.35/cft	= Tk 2,561,580
TOTAL		= Tk 21,561,580

5.4 CIVIL WORKS

The cost of building and other civil works required for the project has been estimated at Tk 2.2 million. Details breakdown of the cost is given below:

Sl.	Description	Area	Rate (Tk)	Amount (Tk)
01	Factory Shade (78'-9" x 59'-0")	4,646.25 sft.	1,160	5,389,650
02	Office	16,227.75 sft.	480	7,789,320
03	Office Quarter (66'-8" x 30'-0")	2,000 sft.	700	1,400,000
04	Staff Quarter (54'-0" x 30'-0")	1,652 sft	520	859,040
05	Garage (25'-0" x 30'-0")	750 sft.	540	405,000
06	Septic Tank (200 Users)	01 no.	70,000	70,000
07	Septic Tank (50 Users)	01 no.	50,000	50,000
08	Soak Well (200 Users)	01 no.	30,000	30,000
09	Soak Well(50 Users)	01 no.	30,000	30,000
10	Generator Room	-	LS	146,090
11	Boundary	-	LS	400,900
12	Pump	01 no.	LS	430,000
13	Road (Internal Road)	-	LS	300,000
14	Over Head Tank	-	LS	200,000
14	9 Chilling Point	-	LS	4,500,000
	Total			22,000,000

5.5 MACHINERY

The machinery required for the project will be procured from both local and abroad. The cost of foreign equipment has been estimated Tk 107,630,000 and the local equipment at Tk 7,525,000. Total cost of the machinery will be Tk 117,655,000. The above cost has been accepted on the basis of competitive price quotations.

A total list of the imported and local machinery and equipment is given in Annexure-1.

5.6 ERECTION AND INSTALLATION

The erection and installation of machinery will be completed within eighteen (18) months. Local technicians will be employed under supervision of machinery suppliers. The cost of erection and installation including cables and pipe & fittings has been estimated at Tk. 2,500,000 that will be included in the cost of machinery.

5.7 FURNITURE AND FIXTURES

The following furniture & fixtures will be required for the project at a total cost of Tk 1,046,800/-.

Sl.No.	Item	Quantity	Cost/Tk.
01.	Telephone (fixed 4 & mobile 8)	12	200,800
02.	Office Table	20	160,000
03.	Office chair	120	96,000
04.	File cabinets	10	50,000
05.	Racks	L.S.	100,000
06.	Ceiling fan	30	60,000
07.	Air conditioner	2	100,000
08.	Fire fighting equipment	L.S.	100,000
09.	Computer, ups, printer	3	150,000
10.	Miscellaneous		30,000
	Total		1,046,800

5.8 MANPOWER REQUIREMENT

The details of manpower requirement is given below:

Administration

Position	Number of employees	Salary/ month (Tk)
1. Managing Director	1	30,000
2. General Manager	1	25,000
3. Marketing Manager	1	18,000
4. Administrative Manager	1	12,000
5. Accountant/ Cashier	2	12,000
6. Marketing Executives	20	100,000
7. Store officer/Assistant	2	10,000
7. Purchase Executive	3	15,000
8. Security Officer	1	7,500
8. Security Guard	10	25,000
9. Driver	2	10,000
10. Computer Operator	3	15,000
11 Peon/Cook	5	15,000
12. Cleaner	5	15,000
TOTAL	57	309,500

Production

Position	Number of employees	Salary/ month (Tk)
01. Factory Manager	1	20,000
02. Production Manager (Expert)	1	50,000
03. Asstt. Production Manager	2	40,000
04. Shift-in-charge	2	30,000
05. Mechanical Engineer	1	12,000
06. Electrical Engineer	1	12,000
07. Technician	5	30,000
08.Quality Controller/Supervisor	4	24,000
09 Generator Attendant	1	3,500
10. Electrician-cum-fitter	1	5,000
11. Driver (Procurement)	4	24,000
09 Skilled worker	15	30,000
10 Semi skilled worker	15	22,500
11 Unskilled worker/Helper	15	15,000
TOTAL	68	318,000/-

Total (Monthly)	**125**	**619,500/-**
Total (Per Annum)		**7,434,000/-**

5.9 RAW MATERIALS & SUPPLIES:

The project will have to source raw materials both from local and imported market.

The requires raw materials have been estimated as follows:

Sl	Raw materials	Annual requirements	Unit price (Tk.)	Total amount (Tk..)
1	Fresh Milk	20,000 ltr x 300 days = 6,000,000 ltr	18.00	108,000,000
2	Why	5000 ltr x 300 days = 1,500,000 ltr	2.00	3,000,000
3	Mango Pulp	600 kg x 300 days = 180,000 kg	65.00	11,700,000
4	Youhon Culture	Tk 300/day x 300		90,000
5	Sugar	1,715 kg x 300 days = 514,500 kg	30.00	15,435,000
6	Flavor, Color and others	Tk 100 x 300 days		30,000
7	Skim Milk Powder	365 kg x 300 days = 109,500 kg	140	15,330,000
		Total		153,585,000

5.10 PACKAGING COST

Sl.	Materials	Annual Requirements	Unit Cost	Total Amount Tk
1	120 ml cups for curd & Yoghurt	33,330/day x 300 = 9,999,000 pcs	1.80	17,998,200
2	1/2 ltr. box for curd	1000/day x 300 = 300,000 pcs	5.00	1,500,000
3	1 ltr. box for curd	500/day x 300 = 150,000 pcs	8.00	1,200,000
4	250 ml Aseptic packets for whey drink including straw & shrink wrapper	48,000 pcs/day x 300 = 14,400,000 pcs	2.85	41,040,000
5	200 gm jar for Ghee	850/day x 300 = 255000	6.00	1,530,000
6	180 ml HDPE bottle	41,600/day x 300 = 12,480,000 pcs	1.50	18,720,000
7	1000 ml HDPE bottle with cap	4,000/day x 300 = 1,200,000 pcs	2.50	3,000,000
8	500 ml HDPE bottle with cap	16,000/day x 300 = 4,800,000 pcs	1.75	8,400,000
9	Paper Carton	4,650/day x 300 = 1,395,000 pcs	12.00	16,740,000
			Total	110,128,200

5.11 TRANSPORTATION

A total of Tk.13,450,000/- Lac has been considered to be incurred for purchasing required vehicles:

Sl	Description	Quantity	Unit Price	Amount/Taka
1	Road Milk Tanker Capacity: 9,000 ltr Indian Dairy Machinery Co. Lt (IDMC).	03	2,000,000	6,000,000
2	Production Delivery Van (Refregerated) – 8 MT	02	2,500,000	5,000,000
3	Rickshaw Van (Insulated)	50	15,000	750,000
4	Car Engine: 1500 cc +1300cc	02	800,000	1,600,000
5	Motor Cycle Engine: 1000 cc	01	100,000	100,000
		Total/Taka		13,450,000

5.12 STORES & SPARES

The annual cost of stores & spares has been estimated @ 0.5%, 1%, 1.5%, 2% & 2.5% from 1st to 5th year of operation, respectively, on the value of machinery and equipment.

5.13 REPAIRS & MAINTENANCE

The annual cost of repairs and maintenance has been estimated @ 0.5%, 1%, 1.5%, 2% & 2.5% from 1st to 5th year of operation, respectively, on the value of buildings, machinery and vehicles.

5.14 UTILITIES

Water: The required supply of water will be met up by sinking a tube-well within the project site. A sum of Tk 1,000,000/- has been estimated to procure the tube well. Provisions will also be made for pump and motor and construction of overhead tank.

Power: The required power supply will be met up by obtaining power connection from PDB/REB. The annual electricity bill at rated capacity will be Tk 12,672,000/- (550 KVA x 0.8 x 16 hours x 300 days x Tk 6/- (Unit cost))

Fuel & Lubricants: The project will require incurring a roughly estimated amount of Tk 10,000,000 per annum for this purpose.

5.15 RENT, TAX & INSURANCE

The main assets of the project will have insurance coverage @ 1% of the total cost thereof (excluding the value of land). As per agreement with the machinery suppliers, the trial production will be conducted by their engineers/technicians. In addition, they will provide sufficient training to the local technical and operational personnel to enable them carry out the production functions smoothly and without any hindrance.

5.16 POLLUTION

The project is environment friendly having dust free system in the process. So, it will pose no threat on the environment. However, some bad smell may come during the process but these will not be toxic or poisonous any way.

5.17 SAFETY PROVISIONS

Necessary provision will be made to safeguard the project assets from fire hazards, for which the project will be equipped with fire fighting equipment, Further all personnel working in the factory will be adequately trained on safety measures and on risk involved in operating the machinery.

5.18 TECHNOLOGY AND MANUFACTURING PROCESS

The technical know-how required for milk processing will be imported as well as some utility items will be procured locally. The machinery will comply product safety and security, good cleanliness, good dismantling efficiency and good inspection capacity.

Drinking milk is broadly divided into milk and processed milk. The only raw material of milk is fresh milk, but processed milk is made by ingredient regulation, using not only fresh milk as a raw material *but also non-fat powdered milk or butter, etc.* Depending on the sterilizing conditions, UHT milk (120 - 135°C with 2 seconds holding pasteurization) is common, but in recent years there have been improvements in dairy farm milk production technology and fresh milk treatment technology, a decrease in the number of bacteria in fresh milk received in factories, and now high-quality fresh milk is being produced and supplied. At the same time, due to the tendency of consumer taste for natural foods, low temperature sterilization treatment

milk (HTST 72°C held for 15 seconds, and LTST 63°C held for 30 minutes) is now being produced.

A non-fat solid content of 80% or more, an acidity (lactic acid) of 0.18% or less, 50,000 bacteria (per 1 ml), and colon bacilli cluster (E. colli) negativity are stipulated internationally for processed milk.

The pasteurization of milk is almost completely carried out by the heat treatment sterilization method, and the ultra high temperature instantaneous sterilization method

(UHT sterilization) has become widespread with the aim of ensuring long life. In recent years, due to the tendency of consumer taste for natural food products, low temperature sterilization of milk (63 - 75°C sterilization) has also become widespread in the restricted market for products with a limited storage period.

The UHT sterilization method can almost completely get rid of bacteria in milk and is a method developed along with the introduction of high heat exchange rate plate heat exchangers.

The UHT sterilization temperature conditions are 130°C held for 2 seconds, but long life milk is heated up to 150°C for thorough sterilization and packed with sterilized filling machines.

Following Figure shows the flow sheet for UHT sterilization of milk.

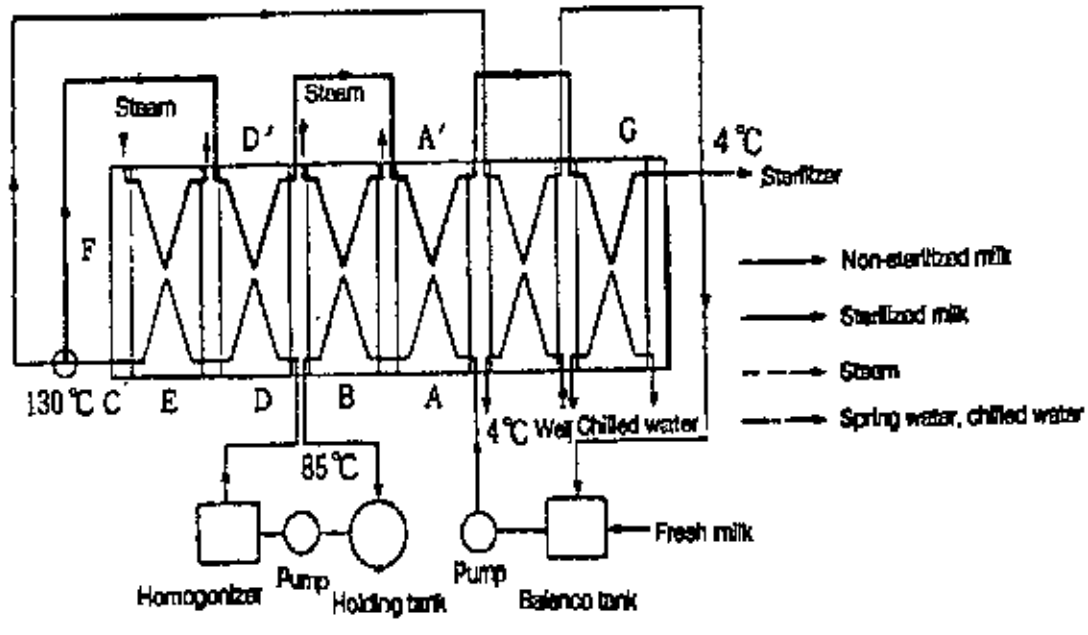
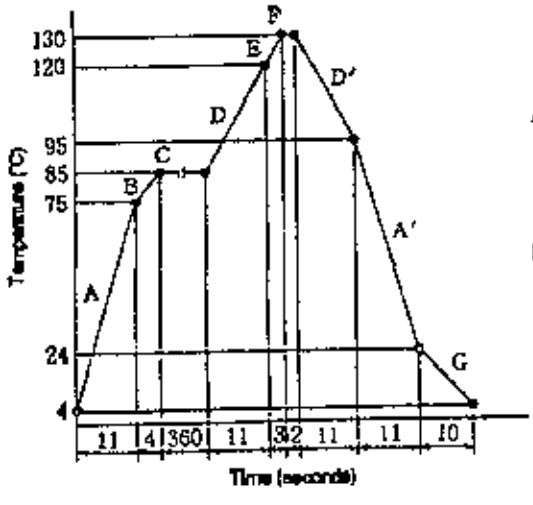


Fig 5.18.1 UHT milk flow sheet example

Fresh milk refrigerated at around 4°C is supplied by the milk pump to the plate-type heat exchanger's No. 1 heat exchanger and No. 1 heater, and its temperature raised to 85°C. Then by holding it for about 6 minutes in the holding tank, proteins that are easily denatured by heat are converted, which prevents scale coating on the high temperature part plate surface of the No. 2 heat exchanger and heater.

After holding, fat globules are made very small with the previous homogenizer. Then the milk passes through the No. 2 heat exchanger and No. 2 heater and is heated to 130°C, and after holding for 2 seconds it is at once passed through the No. 2 heat exchanger, the No. 1 heat exchanger and the cooler and is cooled to 4°C or less. If the 6 minutes holding period is omitted, the milk is heated for about 30 seconds up to 130°C and then cooled to 4°C or less in a short time of around 30 seconds.

An example of time progress is shown in the following figure. A UHT sterilizer, centered around a plate- type heat exchanger, can be arranged compactly.



A, A'	No.1 heat exchange section	4→75°C 24←95°C
B	No.1 heater	75→85°C
C	6 minute holding section	85°C
D,D'	No.2 heat exchange section	85→120°C 95←130°C
E	No.2 heater	120→130°C
F	Sterilization temperature 2 second holding section	130°C
G	Cooling section	24→4°C

Fig 5.18.2 Example of temperature change with time of UHT milk

UHT (Ultra Heat Treated) MILK

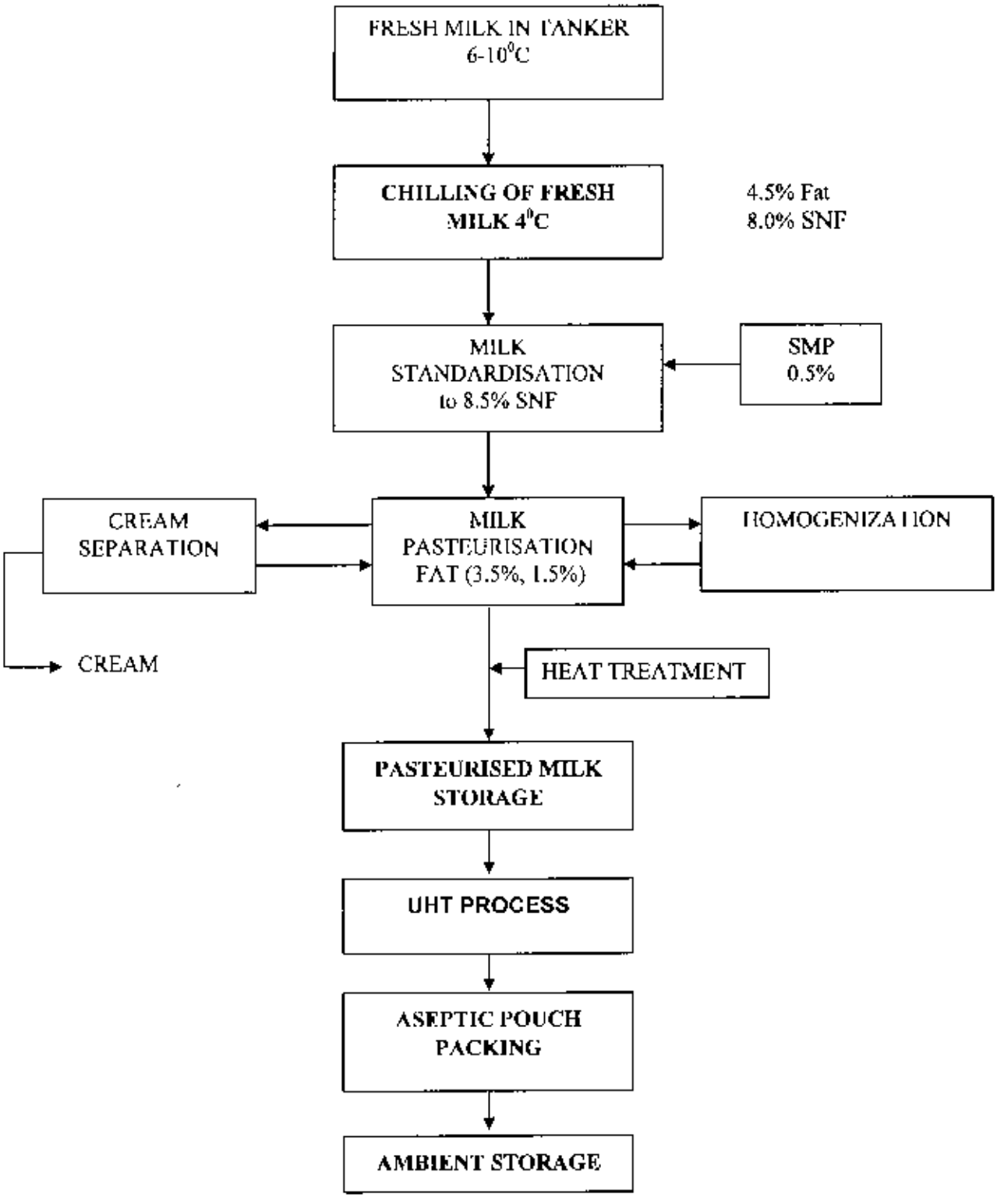


Fig 5.18.3 Process flow of UHT milk

5.19 PRODUCTION INPUTS

5.19.1 Milk zone

The livestock sub-sector develops in the areas where factors like grazing-fields, cattle feed, hi-breed/cross breed cattle are available. In that context, the terrains with riverbeds in our country seem to be the most appropriate area for livestock development.

In the nation wide search for largely milk producing area, it is discovered that, the districts situated at the riverside of the Jamuna, the Padma, the Meghna, the riverbeds at the southern districts, and the islands at the mouth of the Bay of Bengal are the mostly milk producing zones of the country. These areas cover the districts of Pabna, Sirajgonj, Bogra, Gaibandha, Rangpur, Dinajpur, Natore, Rajshahi in the North part, and the districts of Comilla, Brahmanbaria, Feni, Noakhali, Laxmipur, Chandpur, Chittagong. Barisal. Bhola, Kustia, Munsiganj, Manikgonj etc. in the south part. Among these areas, the most prospective zones are situated in the districts of *Pabna and Sirajgonj where productivity per cow is high*. Availability of grazing fields, cattle feed, high breeding cows, and centralization of the milk collectors have developed these area as a successful milk producing zones. Produced milk in these locations is quality oriented in terms of fat content.

5.19.2 Milk Pockets

In order to grab a clear picture of the milk zones through out the country, the different milk pockets within the zones are discussed below in a nutshell:

Pabna: The Pabna district reveals as the highest milk-producing district in the country The description below presents the area with estimated quantity and price within the district. It is found that, Demra, Bera is the highest milk producing area with 15,000 to 20,000 liter production of milk per day. The major collector of milk is Milk Vita, BRAC Dairy (capacity of 8,000 ltr/day and utilized capacity is 3,000 ltr/day at present), and local sweet producer (consume about 3,000 ltr/day). They consume the entire milk produced in the area. In fact, they have to compete with each other to ensure regular collection of milk. Further more, 'Akiz Food & Beverage' of Akiz Group has set up a chilling point in Demra with 10,000 liter capacity, which has started operation from the month of November, 2002. But still, there is enough

opportunity to increase production with some development initiatives in the dairy sub-sector and thereby ensure the supply of milk. This area is famous for the production of high quality of milk. The other familiar milk pockets in the district are Ataikula-Sathia, Karmarcha Bazar-Sathia, Sathia Bazar, Shujanagar, Tabunia Bazar-Sadar, Pabna Town Bazar-Pabna, Boalmari-Sathia, Ishwardi-Sadar.

Sirajgonj: The most abundant milk producing area under Sirajgonj district is Shahjadpur thana. Milk Vita is collecting milk from Baghabari, Shahjahadpur area. Here, the plant capacity of Milk Vita is 250,000 litre per day. At present, it is accumulating 1,05,000 liter per day which will be increased to the level of full capacity in the peak season. Milk available in this area is more than 1,00,000 liter per day. BRAC Dairy has its chilling point at Shahjadpur thana with 6,000 litre capacity per day; but right now the capacity is utilized up to 3,000 liter per day. Besides, Aftab and Ammo Milk are collecting milk from Shahjahadpur/Baghabari area about 6,000 and 8,000 liter per/day respectively. 'Akiz Group' has set up a chilling centre at Talgachhi of Shahjadpur with capacity of 10,000 liter/day. So, the collection of milk from this area is challenging. But this area is highly developed in the dairy sector and the potentiality is so great that, there is still opportunity of collecting a handsome amount of milk if some progressive initiatives are undertaken.

Bogra: BRAC Dairy has a chilling center with 3,000 liter capacity per day at Shibgonj thana in Bogra district. Beside this, about 2,000 to 2,500 liter milk is produced surplus which is sold in the open market with minimum price (Tk 11-12/ltr.) Some intermediaries who supply milk to the town for sweetmeat production buy this milk. Kagoil in Peergachha thana is a milk producing pocket. About 2500 liter of milk is bought daily by the intermediaries to supply for the town consumption. *It can be noted that, Kagoil may be a prospective location for setting a chilling center*. There is a potential amount of milk production in the surrounding area. No institutional buyer is available here and that is why the farmers do not get their expected price. A good number of high breeding cows are sold here daily and these cows are shifted to the milk zones of the Pabna district. The people of the locality are eager to get a regular buyer of milk to sell in an encouraging price. They assured that, if a chilling point is set here, they wouldn't sell their cows and this will ensure the collection of a large quantity of milk in future. The Shariakandi bazar is another remarkable milk pocket. Everyday, on average 5,000 to 6,000 liter milk is traded here with a minimum price

(Tk. 8 -10/ltr.) The Shariakandi bazar covers an area of the riverbeds of the Jamuna and the produced milk is transported here by the waterway. The situation of the dairy sector is as like as Kagoil and people waiting to appreciate for a chilling center in this area. The other milk pockets in Bogra district are Peerob bazar, Sonatola, Rameswarpur etc.

Gaibandha: Gaibandha is a prospective milk zone for setting up a chilling centre. The distinguished milk pockets in the district are Sundargonj, Sadullapur, Phulchhari, Palashbari, Gobindaganj, Gidaraa, Uria etc. Among these areas, Gobindogonj and Palashbari are the most abundant milk producing area. It is assumed that, about 6,000 to 7,000 liter could be collected from these area. Since there is no chilling center here potentiality of collecting milk is very high.

Rangpur: A Plenty of collection milk can be collected from Rangpur district. The noteworthy milk pockets in this district are Darshana, Gongachara, Pirgonj, Taragonj, Badargonj, Sewabazar. A chilling center of Milk Vita is located at Kellabari. Its capacity is 20,000 liter per day. But it is observed that Milk Vita cannot consume the entire production. Local people report that about 6,000-8,000 liter of milk is found surplus very often and this quantity of milk is traded in the open market. The dairy farmers are very eager to see a chilling center in this area. They added further that, about 15,000 liter of milk can be collected each day if a chilling center is set at Darshana.

Dinajpur: Dinajpur district may be recommended as an ample milk producing area. The observable milk pockets in the district are Chirirbondor, Birgonj, Parbotipur, Dashmail, Bhoberbazar, Parbatipur, Sadar, Biral, Fulbari. Among them, Dinajpur Sadar and Chirirbondor found to be the higher milk producing areas. Though, there is no chilling centre in Dinajpur district, Milk Vita collects milk with vehicles from Chirirbondor and Parbotipur. But a huge amount of surplus milk production is realized which is traded in the open market with a minimum price. So, it can be proposed to establish a chilling center in this area. It has been referred that, about 10,000 to 12,000 liter of milk can be collected by the proposed chilling center in Dinajpur district.

Rajshahi: In Rajshahi district there are about 250 mini dairies enlisted in the Thana Livestock Office. 30% of them are not operating at present. They contribute about 40% of the total milk production in Rajshahi district. The household dairy farmers produce remaining quantity of milk. Rajshahi metropolitan city consumes the major amount of the milk produced. Local demand for milk is quite high enough to consume the entire production of milk.

Natore: Natore is found to be rich with enough production of milk. The mentionable milk pockets of the district are Dayarampur, Cantonment, Baghatipara, Shingra bazar, Sherkul, Shingra, Ahmedpur and Banpara of Baraigram. Milk vita collects milk from Shingra Bazar with its capacity of 10,000 liter/day. It can he roughly estimated that around 3,000 to 4,000 liter of milk can be collected from this area by setting up a chilling centre at Baghatipara

Barisal - Bhola: The river bed areas (Lalmohon and Char Fashon areas) of these two districts are famous for milk production. Every house of these area maintain livestock (cows & buffaloes) farm. The geographical location, grazing fields, open riverbeds etc have a major contribution to develop the livestock sector. But the cows available in these areas are not high breeding or cross breeding types. They are simply the local categories and productivity is quite low. Each cow, on average provide 1 to 1.5 liter of milk per day. About 20,000 to 23,000 liter of milk is produced in these areas everyday. But the price is quite high, which is Tk 22-23 in the local market. The transportation facility is not well organized in these areas. With a diagnostic study of milk collection in these areas, it is recommended not to set up any chilling center at this area, because it does not seem to be feasible.

Manikgonj: The major milk pockets of Manikgonj district are Daulatpur, Hatipara, Dighi, Tara, Tilli, Shaturia, Ghiore, Shingair, Hemayetpur, Nannar Bazar. Dhamrai and Savar. Milk Vita has a chilling centre at Tara with capacity of 10,000 liter/day. A major quantity of milk is consumed by the local intermediaries (Ghosh) who process the milk for sweetmeat production and supplies to Dhaka city. The price is also relatively high. A total amount of over 20,000 liter of milk is produced here every day. But, as the demand is high, no surplus milk is available. Milk could be collected only with some development initiatives and formulating groups to ensure regular supply of milk.

Munshigonj: As it is very near to Dhaka, the milk price is very high compared to other places. The average daily milk available from the whole district is about 35,000 liter, on an average price of Tk 18 per liter. Milk Vita has its chilling center at Srinagar thana for a long time. It has been collecting milk from the surrounding areas through some enlisted samities at its office. "Ammo milk" used to collect milk from Munshiganj but it is not continuing now. The major milk pockets of the district are Aldi Bazar, Sadar Bazar. Shiranjdi Khan Bazar, Rajanagar Bazar, Srinagar, Bhaggakul Bazar, Shenpara, Kabutar Khola Natun Bazar, Lawpara Bazar, Lawhaganj Bazar, Kukutia, Savar etc.

Brahmonbaria: In Brahmanbaria Sadar area milk is not produced in abundance. It is sold at Tk. 18 per liter in market and in fast food shop it being sold at Tk. 22. . It is learned that surplus milk can be collected at cheaper rate from the following places: Sohelpur Bazar. Kokurnaghat Bazar, Chandpur Bazar. Shalgoan Bazar (Tk 14 average)

From these four bazars(market) at least 500 liter milk is possible to assort through agents.

But milk is ample (in order of abundance) in Nabinagar (Accessible from Comilla district), Ashuganj, Sarail and Cosba. In Ashugonj 800 liter milk can be purchased from market alone at a lower price. In Nabinagor, according to local source, around 2,500 liter of milk is possible to collect at cheaper rate. The condition of dairy farms in the entire district is in doldrums. This cannot be a potential source.

Comilla, Mirersari (Chittagong): Out of 12 thanas of Comilla district, milk is found collectable from everywhere except Laksam, Nagolkot, Chanddagram. But most important milk pockets are traced in Homna, Chandina and Barura thana at a convenient price Mirersharai thana of Chittagong is also found surplus in milk production. Suagaji thana of Comilla is another milk pocket. In fact, from here milk is supplied to Comilla Sadar. Chawddagram and other places. In the 15 thanas, mentioned above. about 400 dairy farms exist (Live Stock Department , Comilla), but in reality only few is found surviving.

Feni: All six thanas of Feni are abundant in milk production and milk is found purchasable only at Sonagazi (around 350 liter.). In general, milk is scarce, 29 registered dairy farms are found shaky. So, scope is limited.

Noakhali: Companyganj is an identified milk pocket in Noakhali district. More than 1500 liter of milk can be collected daily from Basurhat, Chaprasirhat, Baparibazar and Banglabazar daily. Increased effort can raise the figure to 3000 liter per day.

Laxmipur: Among the 4 thanas. Ramgati is very rich in surplus milk. Around 2500 liter of milk can be purchased from Ramgati, and its Char Alexander, Voyar Char, Bibirhat, Jaminderhat, Korunanagar, Hajirhat. In second position, lies the surrounding area of Laxmipur Sadar. From Chakchar, Hajirpara, Char Ruhita and Meghar Char approximately 2000 liter can be collected daily. Haidergonj of Raipur thana can also supply around 800 liter of milk but at a higher rater. The important aspect of its milk market is "dadoni(advance) system". This system can be replaced and be better used for procurement of large quantity of milk in the concerned areas.

Chandpur· Out of the seven thanas of Chandpur district, Chandpur Sadar is prominently rich in surplus milk. Around 7,000 liter of milk is transacted in Puranbazar Arat at wholesale price of Tk. 12 per kg. From this place, milk is supplied to other milk scarce thanas. This Chandpur Puranbazar could obviously be a source of huge quantity milk for use. In other thanas, milk is not that much abundant. And the contribution of existing farms to the milk market is found little.

5.19.3 Milk Collection Procedure

For the proposed project milk could be collected from the different corner of the country. As milk is a perishable product, emphasis to be given on timely milk collection and ensure regular supply of pure milk. For that reason some chilling centers to be established in different prospective areas, where at least 3,000 liter of milk could be collected daily at initial stage. Gradually, the production of milk in the particular areas will be raised with some increasing efforts and accordingly the capacity utilization of chilling centers would be increased.

The most important factor to ensure regular supply of milk is to build a wide network with the dairy farmers. It is discovered that, all existing milk-processing industries

have developed a strong network either with the farmers or with some intermediaries to ensure required collection of milk. Milk Vita collects milk through cooperative society and members of the society are the owner of Milk Vita. Initially a group is to form on the basis of ability to supply 200 to 400 liter milk per day. After successful supply of at least one year they entitle to be the member of the society. Milk Vita provides some facilities to their members such as veterinary treatment at free of cost, provide non-farmable land owned by the Govt. for cattle grazing, cattle feed produced from their own plant, cow breeding center etc. BRAC Dairy also forms group with their micro credit and other beneficiary. It also engages some intermediaries on commission basis. Other milk collecting bodies mostly depend on the intermediaries to get the required quantity of milk.

5.19.4 Proposed chilling centers:

The proposed chilling centers with available quantity and their purchasing average price is illustrated below:

Pabna- Different milk pockets of Pabna district are presented in the following table and illustrated below

Only major collection points	Milk (Qty) in Litre	Price	Chilling point & collection point
Tabunia Bazar, Sadar	720	12	
Pabna Town Bazar, Pabna	1,700	14	
Boalmari, Sathia	18,00	11	
Sathia Bazar, Sathia	2,500	13.5	
Karmarcha Bazar, Sathia	4,500	13	Proposed Chilling Center
R. Ataikula, Sathia	1,200	13.5	
Ishwardi, Sadar	920	11.5	
Demra,	8,200	13.5	Milk Vita, Aarong, Akiz Food & Bevarage
Bera	7,500	14	Proposed Chilling Center
Faridpur	8,000	13	Milk Vita, Aarong
Total:	35,258		

Sirajgonj- Shahajadur thana under Sirajgonj district is the most valuable location for establishing a chilling centre. The milk processing plant of Milk Vita is located at Baghabari. Aarong and Aftab are also located at Shahjadpur thana sadar. Moreover, Akiz Food & Beverage has set its plant at Talgachhi of Shahjadpur. So, collection of milk will be quite challenging. But the potentiality of high quality and large quantity

of milk production is great enough to arrange a huge quantity of milk supply through engaging some intermediaries or forming groups in the farmers' level. Local people refer that the chilling center of Akiz Food & Beverage can collect 5,000 to 6,000 liter of milk per day. The average price would be Tk.15 per liter.

Bogra- Different milk pockets of Bogra district are presented in the following table and illustrated below:

Only Major Collection Points	Milk (Qty) in Litre	Price in Taka	Proposed Chilling & Collection Point
Sherpur	4,800	14	Proposed Chilling Center
Bhabanipur	800	13	
Shibgonj	5,100	13.5	Aarong Chilling center
Daridaha	1,900	13	
Kagoil, Pirgachha	4,400	12	Proposed Chilling Center
Khanpur	1,100	12	
Sughat	1,150	14	
Sariakandi	5,500	12	Proposed Chilling Center
Adamdighi	2,800	13	
Others	1,200	13	
Total:	28,750		

Gaibandha- The milk production scenario in Gaibandha district is presented in the following table and illustrated below:

Only Major Collection Points	Milk (Qty) in Litre	Price in Taka	Proposed Chilling & Collection Point
Sadar	860	12	
Sundorgonj	2,200	12	
Palash Bari + Fulchari	3,850	13	
Gobindagonj + Sundarganj	6,500	12	Proposed Chilling Center
Gidari+Uria	2,150	12	
Total	15,560		

Rangpur- The milk production scenario in Rangpur district is presented in the following table and illustrated below:

Only Major Collection Points	Milk (Qty) in Litre	Price in Taka	Proposed Chilling & Collection Point
Badarganj	5,500	12	
Dorshona	12,000	13	Proposed Chilling Center
Taragonj	6,800	10	
Pirganj	2,600	12	

Gangachere	940	11	
Sewabazar	1500	11	
Total	29.340		

Dinajpur- Location of the proposed chilling center, availability of milk with average price is given below in the table:

Only Major Collection Points	Milk (Qty) in Litre	Price in Taka	Proposed Chilling & Collection Point
Bhaber Bazar	1200	14	
Parbatipur/Chirirbandar	1400	14	
Doshmail	5.700	14	Proposed Chilling Point
Sadar + Birgonj	2.000	16	
Biral + Fulbari	950	14	
Total	11,250		

Natore-The milk production scenario of Natore is shown in brief in the following table:

Only Major Collection Points	Milk (Qty) in Litre	Price in Taka	Proposed Chilling & Collection Point
Shingra Bazar	1,500	14.5	Milk Vita
Dayarampur, Cantonment, Baghatipara	3,500	14	Proposed Chilling point
Sherkul, Shingra	1,000	14	
Ahmedpur, Baraigram	2,600	13.5	
Banpara, Baraigram	660	11.5	
Total:	9,260		

5.19.5 Proposed chilling centers at a glance:

Following table represents the location of the proposed chilling center, their initial and expected quantity of milk to be collected, average price:

District	Proposed chilling center	Initial quantity (liter)	Expected quantity (liter)	Average price
Pabna	1. . Kamarchar, Sathia	4,500	7,000	13
	2 Bera	7,500	12,000	14
Sirajgonj	3 Shahjadpur	5,000	10,000	16
Bogra	4 Sherpur	4,800	7,000	14
	5 Kagoil, Pirgachha	4,400	7,000	12
	6 Sariakandi	5,500	9,000	12

Gaibandha	7 Gobinda gong+ Sundorgonj	4,500	9,000	12
Rangpur	8 Dorshona	12,000	15,000	13
Dinajpur	9 Doshmail	5,700	12,000	14
Natore	10 Dayarampur, Army Cant., Boghatipara	3,500	8,000	14
Total		57,400	96,000	
Average price				13.40

A total of ten (10) locations are identified for setting chilling centers from where nine locations will be selected. After setting chilling centers milks from nearby areas would be rushed to centers. More over when people will come to know that milks can be sold easily and it is rewarding many new farms would be developed. As a result within a few year milk production will mount up.

CHAPTER - 6

MARKET POTENTIALITY

6.01 INTRODUCTION

With the population of about 130 million (as per national census 2001) and with huge (about 0.700 million tons) deficit of protein supply, Bangladesh offers immense potential for production and marketing of milk and milk products and other agro based products that are required to meet the daily protein and nutrition requirement of the people. On a national basis, the per capita availability of milk and other protein supplying items is one of the lowest of the world. The country is still dependent on imported powder milk and other imported sources of protein to some extent. Considering this grim scenario the proposed project envisages producing Milk-based products.

6.02 NATIONAL SCENARIO

Bangladesh is primarily an agrarian and agro-based country and livestock plays a significant role in the national development by providing principal sources of diet in the form of milk, meat and egg. It also creates employment opportunities for a large portion of our rural people.

According to the Bangladesh Agricultural Sample Survey 2005, there are 14.94 million farm holdings. About 80% of the farm holdings are termed as 'Small Farm Holding' having farm sizes measuring 0.05-2.49 acres, 20% termed as 'Medium Farm Holding' having sizes 2.50-7.49 acres and only 2% are labeled as 'Large Farm Holding' which are 7.50 acres and above.

The farmers largely depend on livestock for their existence. Traditionally the land-less and marginal farmers are bulk producers of milk, eggs and meat. The affluent rural families who are the major consumer of the livestock products consider selling of milk and eggs as an inferior trade suited to the poor only.

It is evident that small-scale farmers rearing small number of livestock to supplement income from crop culture dominate the livestock sub-sector. These small-scale farmers would benefit from a commercially established modern dairy farm by selling milk to the establishment. Because of lack of sufficient marketing facilities at local level and

the milk being a perishable item, producers are compelled to sell at low prices to neighbors, sweet shops, etc.

The livestock sector contributes about 6.5% to national GDP and 15.10% to agricultural GDP. In Bangladesh, 25% of the population is directly dependent on this sector and 50% of the total population is indirectly dependent on livestock.

6.03 NATIONAL PRODUCTION

According to Directorate of Livestock, Bangladesh, the national production of milk in the 1991-92 fiscal year was 1.35 million tons, which rose to 1.74 million tons during 2000-01 fiscal year. **The Average growth rate is about 2.82%.**

6.04 IMPORT AND EXPORT

In Bangladesh no fresh milk is being imported. However, powder milk and other milk-based products are imported. Following table shows yearly import of powder milk and other milk based products [7.8]:

('000 Metric Ton)

1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02
23	26	21	24	34	31	24

Source: Foreign Trade Statistics, BBS

	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06
Million US $	37	41	53	53	45	56	60	62	59	61	61	86	73
Crore Tk	148	165	217	226	205	269	302	333	339	353	359	532	489

Source: Annual review of import payments 2005-06, Bangladesh Bank

It is evident from above table that the import of milk products almost remained stagnant during the reporting period.

Usually no milk or milk-based products are exported from Bangladesh. However, according to Foreign Trade Statistics of Bangladesh Bureau of Statistics 24 MT and 2.2 MT of milk and milk based products were exported to Pakistan and Singapore respectively during 1998-99.

6.05 DEMAND

There is no definite figure as to the requirement of diary products in Bangladesh. The nutritional expert group has recommended 300 grams milk for children and 200 grams for adult men/women per day in case of vegetarians; for the non-vegetarians, the recommended rate varies from 200 grams for children to 160 grams for adults.

On the whole, minimum nutritional requirement per head per day is roughly 250 grams. Taking this figure as a conservative estimate for the common people it is observed that the total demand of milk for 130 million people stands at **11.86 million metric tons in a year** as against annual production of 1.78 million metric tons.

6.06 MILK PRODUCTION

According to the ***Directorate of Livestock***, average annual demand for milk in our country is **11.86 million ton** against current supply of only **1.78 million ton [9].**

Year-wise milk production is given below:

Year	Production /year (in Tons)	Production growth rate
91 – 92	1,350,000	- -
92 – 93	1,370,000	1.48
93 – 94	1,490,000	8.76
94 – 95	1,520,000	2.01
95 – 96	1,570,000	3.29
96 – 97	1,590,000	1.27
97 – 98	1,620,000	1.89
98 – 99	1,660,000	2.47
99 – 00	1,700,000	2.41
00 – 01	1,740,000	2.35
01 – 02	1,780,000	2.30

Source: Directorate of Livestock, Dhaka

Milk productions are shown in the following graph.

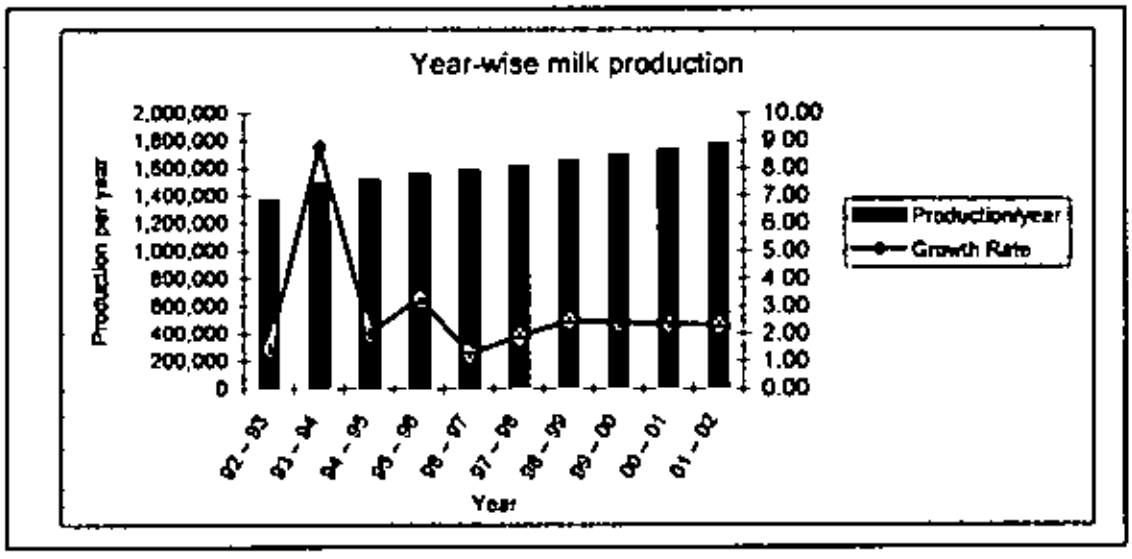


Fig 6.06.1 Year wise milk production in Bangladesh

It is seen from the above table that although milk production has increased year by year but its gradual rate of increase is yet much lower than current average growth of population (1.48%). It is also evident from the above information that current deficit of milk and milk products is 10.0825 million tons considering a standard of per day per head milk intake of 250 gm. Import of powder milk contributes a very insignificant portion to meet the existing demand. The picture is clearer from the above import data 6.04.

6.07 DEMAND PROJECTION (PROCESSED AND PACKED MILK)

Considering the above-mentioned factors a demand projection for the next 10 years can be drawn in the following way.

Year	Population (in million)	Population within required income level (in million)	Per day milk intake (250 gm/day /head) (in million Kg)	Yearly estimated demand for milk/milk products (in million tons)
2002/03	132	38.28	9.570	3.493
2003/04	134	38.86	9.715	3.545
2004/05	136	39.44	9.860	3.600
2005/06	138	40.02	10.005	3.651
2006/07	140	40.60	10.150	3.704
2007/08	142	41.18	10.295	3.757
2008/09	144	41.76	10.440	3.810
2009/10	146	42.34	10.585	3.863
2010/11	148	42.92	10.730	3.916
2011/12	150	43.50	10.875	3.963

6.08 DEMAND SUMMARY

Demand is forecasted focusing on a limited group of people who are basically urban-based and are capable of purchasing the newly introduced products. So, this forecasting reflects demand for only processed and packed milk. The urban income group through out the country with monthly income ranging from Tk. 8,000 – 20,000 and above is thought to be the prospective customer for the products. Export potentiality is not considered here basing on the present situation.

By the end of year 2007 the demand is expected to be around 3.70 million tons and it is expected to increase incongruence with the increase in population. In this way it is expected that the demand may reach around 4.00 million tons by the end of the year 2012. The projected demand is also subject to further change due to variations in different influencing factors.

Although it is pictured from the above table that there remains a large un-served demand for milk but the actual demand may not match exactly to the above scenario. Because, this demand is mostly an aggregate demand of raw, semi-processed and processed products. Moreover, it covers the whole population irrespective of their income level, which is a major filtering factor.

Like income, many other factors may act on the way of shaping the demand for packed/processed milk. The factors may be summarized as follows:

- **Population growth:** According to the Preliminary Census Report January 2001 total population of the country was 12,92,47,233 (Can be rounded at 130 million), which is reported to be increasing at a rate of 1.48% per year.
- **Food habit of the people:** People in our country are very much fond of taking fresh and boiled milk. Packed liquid milk is yet to get mass familiarity and acceptance among people.
- **Income level:** It can be assumed that population within the income group of Tk. 8,000 – 20,000+ per month are the prospective customers of these products. From Statistical Year Book 1999 it is found that about 29% of the total households fall within this group.
- **Current limited market:** The main concentration of the packed milk producers is in Dhaka City. Other than Dhaka it is gradually spreading in Chittagong and Sylhet. So competition is intensifying in these major parts. The reason behind such a

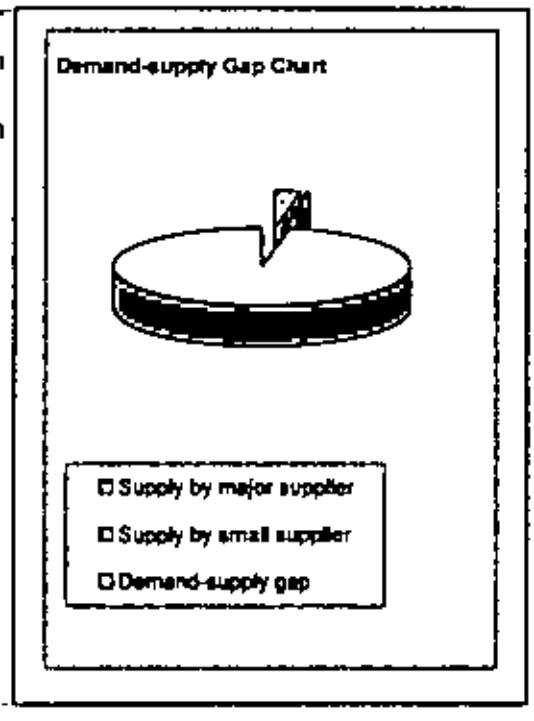
limited market for packed liquid milk and lack of initiative from the producers' side is mainly due to carrying costs.

- **Exploring export market:** The country has not yet entered into export market in this sector. Rather every year a huge quantity of milk is imported for meeting local demand. In this situation, we will need much effort to get access to export market.
- **Competitors:** In packed liquid milk market there are many competitors like – Milk Vita. Aarong, Aftab, Amomilk, Ultra Milk, Bikrampur Milk. Among them only Milk Vita and Aarong cover almost 70% - 80% of this packed liquid milk market with their existing rated capacity of 260, 000 and 60,000 liters per day. Akiz Group has recently appeared in the market with packet milk.
- **Seasonal variation:** It is learnt from the experience of established producers that demand and supply of milk is high during dry or winter season and it is low during rainy season.
- **Pack size:** It is also learnt that pack size is an important factor. In most of the cases it is found that for plain/pasteurized milk less than half liter and one liter or more than one-liter pack are always slow moving. On the other hand for flavored milk less than half-liter pack size is a very fast moving item.
- **Nutrition requirement:** Supply of protein includes milk, meat, egg, pulses. etc. So, nutrition requirement is also another important factor for determining the demand for milk and pulse based products.

6.09 DEMAND-SUPPLY GAP AND ESTIMATED DEMAND FOR THE PROPOSED PRODUCT

Estimation of demand-supply gap (only for processed and packed milk)

Identifying factors	Quantity
Population by the end of the year 2002	130 million
Population over monthly income level Tk. 8,000+ (29%)	37.70 million
Per day milk requirement for the target population considering a standard milk requirement of 250 ml. per head.	9.425 million liters
Daily supply (Milk Vita + Aarong + Aflab)	0.37 million liters
Other Mini Suppliers (L.S.)	0.03 million liters
Total daily supply of packed processed milk	0.40 million liters
Country wide Demand-supply gap per day	9.025 million liters
Percentage of Demand-supply gap per day	95.76%



The above demand-supply gap analysis shows a very positive signal for the new entrants as 95.76% of the total current demand is still unmet. But once again it is important to say that this is not a ready demand, rather it is to be created. And obviously it is subject to all the demand influencing factors mentioned in 6.08.

6.10 COMPETITION SITUATION FOR THE PROPOSED PRODUCTS

Milk is available almost all over the country in a rather raw or unorganized way. But there are very a few organized companies and importers who dominate in the supply and production of processed and packed milk. Although the proposed project is going to appear with a mix of existing ranges of products and new products and a large part of the country remains un-served yet so the project will not face much competition in the market.

Still we believe it to be justified to consider them as potential competitor for the proposed one. Because –

- They have plant set-up and they can easily diversify to these kinds of products once the market is created.
- Currently they are producing substitute products that may affect the demand for the proposed products to some extent.
- They use the same sources of raw material that the proposed project will be using.

A brief profile of such organized milk producers along with their supply capacity is given below:

Bangladesh Milk Producers' Cooperative Union Limited (Milk Vita)

It is the largest and oldest milk processing company and is still the market leader. It produces different types of milk products and has network all over Bangladesh. It collects milk through its own established societies and gives a package of different benefits to the members of the societies. The different milk collection and chilling points of Milk Vita are –

1. Baghabari, Sirajgonj
2. Company Bazar, Rangpur
3. Parbatipur, Dinajpur
4. Singra, Natore
5. Bhangura, Pabna
6. Srinagar, Munsiganj
7. Tara, Manikganj
8. Amtali, Patuakhali
9. Takerhat, Faridpur

It has two processing plants – one is in Baghabari, Sirajgonj and the other in Mirpur, Dhaka. The biggest collection and processing plant of Milk Vita is in Baghabari. It has a daily capacity of collecting 150,000 liters of milk. During the off-season it comes down to 100,000 – 120,000 liters per day. The Baghabari plant supplies 50,000 to 60,000 liter per day to Mirpur plant for packing pasteurized milk. Remaining quantity is processed here for the production of butter, ghee, cream and powder milk. Mirpur plant has a total capacity of producing 120,000 liters of pasteurized milk per day.

Milk Vita collects milk by forming society group. The group is formed on the basis of ability to supply milk at a quantity of 200 to 400 liter per day. The farmers first form a group and apply for registration to Milk Vita. After a trial time regular supply of milk for about two years, a group is registered as a member of Milk Vita Cooperative Society and possesses right to attain following benefit package –

- Owning of non-cultivatable land for grazing their cattle
- Cultivation of "Napier" grass
- Supply of balanced cattle feed
- Artificial breeding
- On demand treatment, check-up and medication program
- Credit facility of up to Tk 20,000 without any interest.
- Yearly incentive bonus (apprx. @ 0.75% on the total amount of milk supplied by the society)
- The society members also possess the right to elect their representative to the Management committee.

The Milk Vita authority controls the supply/collection of milk. For that reason, they provide a pre-notice about the expected collection of milk and set up a quota for the groups according to their capacity and market demand. By law, the members of Milk Vita cannot provide milk to other organizations or buyers. There is a provision for financial and other penalties in case of breaking the regulatory obligations of the groups/societies.

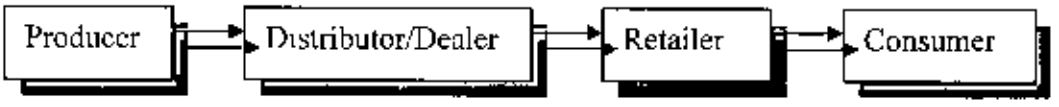
The trend of yearly milk collection of Milk Vita is as follows:

Year	million liter
1994-1995	11.0
1995-1996	12.5
1996-1997	12.6
1997-1998	17.0
1998-1999	24.0
1999-2000	26.0

Milk Vita has an expected target to increase their capacity/collection of milk to **2.5 lac** liter per day by the next year.

The main customers of Milk Vita are the people of metropolitan areas who have a regular income of Tk 8,000 and above. Currently Milk Vita is supplying their product only in Dhaka, Chittagong and Sylhet metropolitan areas. It is not exploring in the other towns because it is not cost effective to supply a limited quantity of milk to those towns. According to them, the consumers of those local towns will not prefer to buy Milk Vita at a higher price to open market milk, which sells at a lower price.

The product distribution channel that Milk Vita follows :



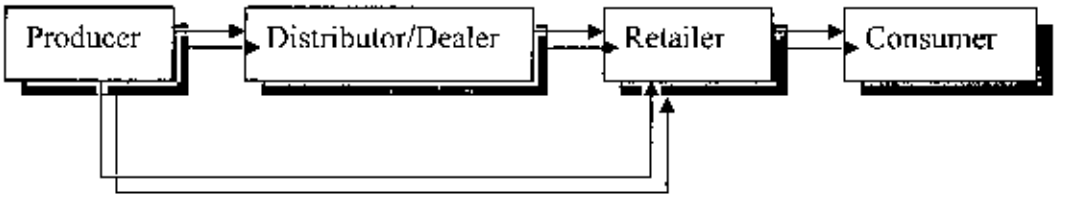
BRAC Dairy and Food Project:

BRAC dairy operates as a commercial project of **BRAC,** which claims to the world's largest NGO. BRAC Dairy started its operation in 1998 and now it is the second largest and a very dynamic milk processing company in Bangladesh. Through the wings of BRAC and its development works its network is spread to the roots of every village where milk is produced in bulk quantity. It collects milk from its beneficiaries under micro credit program as well as from milk producers' associations developed by them. Although BRAC doesn't offer benefit package like Milk Vita but it offers a comparative higher price for the growers. It has 22 chilling points and different milk collection routes spread all over the country. The chilling points are mainly concentrated in the following areas –

1.	Manikgonj	5.	Bogra
2.	Pabna	6.	Joypurhat
3.	Sirajgonj	7.	Dinajpur
4.	Kustia	8.	Rangpur

The capacity of the chilling points ranges from 3000 ltr. – 10,000 ltr. Its milk-processing unit is situated in Gazipur, Dhaka, which has current rated capacity of 50,000 ltr. per day. Like Milk Vita BRAC also produces different types of milk products like UHT packed yoghurt. Currently BRAC is the only producer of yoghurt in Bangladesh. Its international linkage and development image help it much in building its market.

BRAC is marketing its product with the brand name **"Aarong".** The distribution channel it follows is given below –

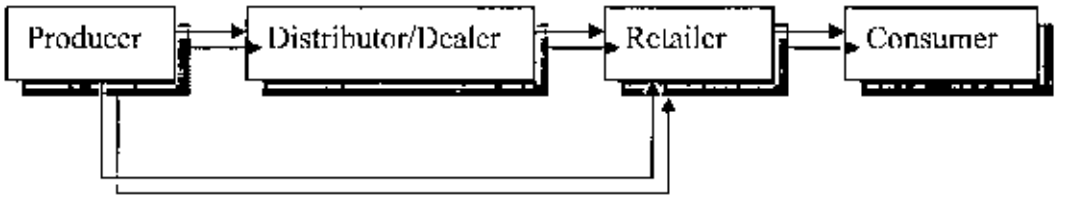


Aftab Bahumukhi Foundation Limited (ABFL):

The milk plant of ABFL is situated in Bhagalpur, Bajitpur in Kishorgonj. This dairy farm collects milk from Kishorgonj, Sirajgonj and Pabna districts. For milk collection they select potential farmers and bring them under their micro credit program to buy milky cows. The different milk collection and chilling points of ABFL are –

1. Kotiadi, Kishorgonj
2. Kuliarchar, Kishorgonj
3. Akbarnagar, Kishorgonj
4. Baghabari, Sirajgonj
5. Faridpur, Pabna

ABFL markets its products mainly in the Dhaka metropolitan area. Recently it has taken initiative to spread in different parts of the country. To distribute their products they use about 30 rickshaw vans and 8 pick-up vans. The distribution channel they follow is indicated below –



Other competitors:

Although it seems that there are only a few organized dairy farms operating in the market but it is also found that existing organizations are expanding their capacity and some new entrants are also setting up their plants. Among them **"Akiz Food and Beverage"** from "Akiz Group" has set up five chilling point at the Baghabari and surrounding area like Talgachhi. Demra, Bera, Bhangura and Faridpur. The capacity of these chilling points are 10,000 liter per day each.

Production capacity of major processed milk producers are

Sl. No.	Brand Name	Rated Capacity per day
1	Milk Vita	260,000 ltr.
2	Aarong	50,000 ltr.
3	Aftab	60,000 ltr.
	Total	370,000 ltr.

Source: Primary

The capacity utilization fluctuates on the basis of availability of raw milk and demand for milk in the market. It is found that production is low in the rainy season due to scarcity in input level and production is high from November to February.

Products, pack size and retail price of the major processed milk producers

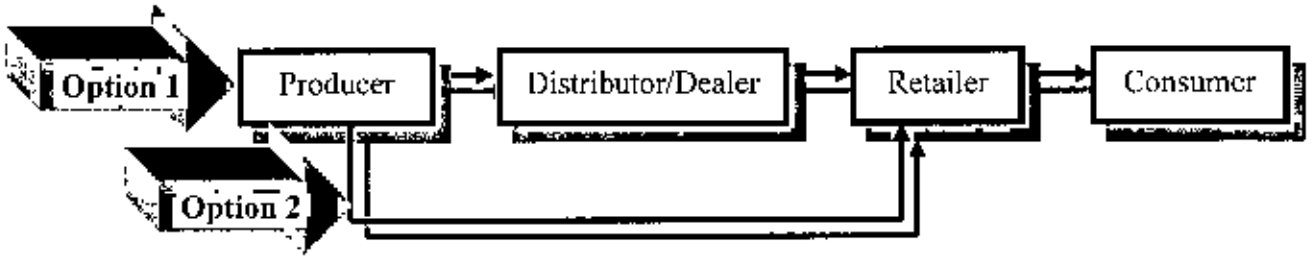
Pasteurized milk is produced by all the producers. Flavored one is produced by both Milk Vita and Aarong. Butter, Ghee and Ice-cream are produced by both Milk Vita and Aftab. Aarong is the only producer of Yoghurt in the present market.

Name, size and price of different products of major producers are as follows:

Sl. No.	Name of the product	Pack size	Retail price /pack
A	Bangladesh Milk producers' Cooperative Union Limited (Milk Vita)		
1	Pasteurized Milk	1 Litre 0.5 Litre 0.25 Litre	26.00 13.00 8.00
2	Flavored milk	0.20 Litre	10.00
3	Butter	200 gm 100 gm	50.00 26.00
4	Ghee	900 gm 450 gm 200 gm	280 135 70
B	BRAC Dairy Farm (Aarong Milk)		
1	Pasteurized Milk	1 Litre 0.5 Litre 0.25 Litre	26.00 13 8.00
2	Chocolate Milk	0.25 Litre	10.00
3	Yoghurt	0.25 Litre	150.00
C	Aftab Bahumukhi Farm Limited (Aftab Fresh Milk)		
1	Pasteurized Milk	1 Litre 0.5 Litre 0.25 Litre	

6.11 DISTRIBUTION CHANNEL

For enhancing quick and prompt distribution to the consumers the project will follow the following distribution channel.



The project will mainly follow option-1. Option-2 can be followed only in Dhaka city and neighboring areas. For reaching the customers it will engage distributors or dealers District-wise. The distributor should be capable enough to purchase bulk quantity (the quantity that is cost-effective in terms of its transportation cost) and meet the daily target. The transportation cost up to distributor will be borne by the company.

Display outlets

The products can be displayed in departmental stores, confectioneries and hotels in commercial and posh residential areas. The products can also be displayed in supermarkets, chain stores and shopping malls. The sales out-let should contain small sign-boards notifying its availability or point-of-eye that can easily catch the attention of the customers. It can also go for joint arrangement with the shop-owner for printing illuminated polymer sign-board.

6.12 PROMOTIONAL MEASURES

To boost up sales, the company will use different media to advertise their products. Most widely used advertising media will be daily Newspapers, magazines, Illuminated Polymer Sign-board, Hoarding, Billboard and Television. Retailers' incentive, free delivery and replacement facilities are also part of the promotional strategies.

Good start leads to better run. So, for a better running of the product the launching should be very successful. As a result extensive promotional measures are to be taken. Given below are some suggestions about the promotional measures:

Advertisement through mass media – Mass media like daily newspapers, magazines, flyers/leaflet, TV, billboard sign can be used to remind and influence people to buy the products.

Distributing free sample – To let the people know about the product at the initial stage. free sample can be distributed among them in smaller packs. Crowded commercial places like – shopping mall, super markets are ideal places for such sample testing. An observer may take notes of the peoples' comments. A psychological study on consumer behavior shows that people remain more in buying mood in the evening. Their curiosity and mental acceptance for new things remains very positive at this moment. ***So, it is better to conduct such sample testing in the evening.***

Free sample distribution can also be extended to some targeted group like – English medium schools and institutions.

Attending fairs – Attending different trade fairs can also be a way to reach the mass people.

Sponsoring sports and events – It can sponsor national or institutional level events (specially sport events) to promote its health drinks in particular.

Developing a brand image – In the course of its promotion it should also try to develop a brand image by gaining the confidence of the people through its superior quality and nutritional contents. Notifying people about its foreign affiliation, its hygiene and modern production technique, nutritional contents, etc. might help to a great extent to gain the confidence of the people. Several awareness programs can be arranged for this purpose. A good name can also help in developing brand image.

Eye catching product display – Eye catching product display can also help to a great extent in promoting the products and attracting the customers. The appointed sales executives should be careful enough to motivate the shop owners to display the products at the front end. Point of eye, small sign-board (e.g. – XYZ milk is available here), and illuminated polymer signboard can also be used.

Maintaining regular stock in shop level – Regular stock supply is also an important factor. Regular availability of the specific milk product will encourage customers to fix a brand. If the customer loyalty is achieved shop owner will be automatically interested to maintain an adequate stock level.

Free Refrigerator set-up – To ensure quality in preservation facility, refrigerators (65 litre capacity) will be distributed throughout the country among the sales-outlets. For distributing refrigerators the company may consider to take a security deposit of Tk 3,000/- to Tk 5,000/-

6.13 CONCLUSION

Currently the country has a total demand for milk of 12 million tons whereas only 2 million ton is currently being supplied from local commercial production. The rest is met by conventional production and from import market. During the last few decades a drastic transformation has taken place in the field of processed milk production and consumption.

It is quite clear that there will be a big demand-supply gap in processed milk market in next few years. This sub-sector could be an opportunity for enterprising people. The plant is based on imported technology and it would help the economy in many ways.

CHAPTER - 7

FINANCIAL ASPECTS

7.1 COST OF THE PROJECT

The **total cost** of the project has been estimated at **Tk 198,183,380/-**including **net working capital** of **Tk 19,268,000/-** The total cost of the project including working capital is shown in Annex-2.

The detailed estimates of fixed and working capital requirement have been shown at Annexure 3 and 4 respectively.

A summary break-up of the total cost of the project has been shown below:

Table 7.1.1: Cost of the Project

(Amount in Taka)

PARTICULARS	TOTAL
Land & Land Development	21,561,580
Chilling Points, Building & Civil Construction	**22,000,000**
Machinery & Equipment	117,655,000
Furniture & Fixtures	1,046,800
Vehicles	13,450,000
Security Deposit	350,000
Preliminary Expenses	2,852,000
Working Capital	**19,268,000**
TOTAL COST OF THE PROJECT	**198,183,380**

Note: The authorized capital of the company is Tk 300,000,000/-. It is to be increased to facilitate equity participation by the Bangladesh Bank.

7.2 TENTATIVE FINANCING PLAN

Particulars	Sponsors Equity	Bank Finance
Land & Land Development	21,561,580	
Building & Civil Construction	11,000,000	11,000,000
Capital Machinery	37,655,000	80,000,000
Furniture & Fixtures	1,046,800	
Vehicles	8,450,000	5,000,000
Security Deposit	350,000	
Preliminary Expenses	2,852,000	
Total Fixed Cost	**82,915,380**	**96,000,000**
Working Capital	14,194,476	5,073,524
TOTAL COST OF THE PROJECT	**97,109,856**	**101,073,524**
Equity Participation Ratio (%)	**49%**	**51%**

7.3 FINANCIAL EVALUATION

(Amount in Taka '000')

Particulars	Year-1	Year-2	Year-3	Year-4	Year-5
Capacity Utilization	65%	70%	80%	85%	85%
A. Profitability					
Sales Revenue	317,877	345,507	394,681	419,624	419,872
Gross Profit	15,161	14,447	12,281	10,115	7,949
Net Profit (After Tax)	27,316	33,482	46,565	53,482	54,289
B. Ratios					
Gross profit to sales (%)	31.05%	31.41%	32.19%	32.36%	32.08%
Net profit to sales (%)	7.73%	8.80%	10.77%	11.73%	12.02%
Return on Equity (%)	28.13%	34.76%	48.58%	56.18%	57.56%
Return on Investment (%)	21.43%	24.18%	29.69%	32.09%	31.40%
Debt-Equity Ratio (% of Debt)	0.73%	0.73%	0.73%	0.68%	0.60%
Fixed assets Coverage (times)	1.44	1.36	1.26	1.10	0.85

The detailed sales estimates and cost of goods sold have been shown at Annexure 5 and 6 respectively.

Whereas the detailed general, administrative & selling expenses earning forecast have been shown at Annexure 7 and 8 respectively.

7.4 BREAK-EVEN ANALYSIS

The break-even analysis has been carried out on the basis of cost and sales data of 5th year projected operation. The project is expected to **break-even at 42.95%** of the rated capacity. The details of break-even analysis have been given at Annexure-9.

7.5 INTERNAL RATE OF RETURN (IRR)

The internal rate of return has been computed following the DCF technique, the details of which may be seen at Annexure-10. The Internal Rate of Return is **38.60%**.

CHAPTER - 8

SOCIO-ECONOMIC ASPECTS

The socio-economic implications of the proposed project are immense for a least developed country like Bangladesh. A few major impacts are detailed below:

8.1 EMPLOYMENT GENERATION

The project will generate direct employment for 125 persons. In addition, at farmer level about 2000 homesteads can be engaged into milk producing activities. About fifty percent of these employments would be for women.

8.2 SOCIAL BENEFITS

The net incremental benefit will accumulate through the growth of local supply chain and the growth of business transactions with the project in the center.

8.3 CONTRIBUTION TO GDP

At 65% capacity, the project is expected to contribute **Tk 91,926,253/-** to the country's GDP in the first year. The calculation of GDP contribution is shown below:

(Amount in Taka)

Particulars	Year : 1	Year : 2	Year : 3	Year : 4	Year : 5
Net Revenue (A)	317,876,637	345,507,452	394,680,795	419,623,963	419,872,302
Inter-firm Transactions: (B)	225,950,384	244,281,171	279,745,641	298,101,801	299,126,703
Contribution to GDP:	**91,926,253**	**101,226,281**	**114,935,153**	**121,522,162**	**120,745,600**

The detailed calculation of GDP have been shown at Annexure 11.

CHAPTER – 9

ENVIRONMENTAL ASPECTS

9.1 BACKGROUND

Now-a-days protection of environment (both natural and human environment) is one of the burning issues. In response to growing environmental awareness in Bangladesh over the last few years, the concerned authorities have now begun to consider the need for sound management approaches for the protection of the environment without jeopardizing the badly needed industrial and economic progress. Emphasis has, therefore, been placed on good planning and management systems that are essential in addition to appropriate technical solution.

Bangladesh is one of the highest population densities in the world. This puts tremendous pressure on its limited resources management program, which can only be effective if they are environmentally sound. Natural and man made environment hazards coupled with limited resources make it imperative to incorporate the environmental dimension in the delicately balanced ecosystem that exists in Bangladesh.

Since the process of development in Bangladesh is still in its initial stage, it is advantageous to incorporate the environmental dimension in the development program. For instance, the incorporation of EIA (Environmental Impact Assessment) as part of overall planning process would help avoid some of the adverse effects of development experienced by industrialized nations.

9.2 INTRODUCTION

The United Nations Environment program (1978) EIA has a method "to identify, predict and to describe in appropriate terms the pros and cons (penalties and benefits) of proposed development. To be useful, the assessment needs to be communicated in terms understandable by the community and decision-makers and the pros and cons should be identified on the basis of criteria relevant to the countries affected".

The purpose of the environmental assessment can therefore be defined as to serve as a management tool not only to assess impacts but also to improve the quality of decision. Although ECHO MILK PRODUCTS LIMITED is an environment friendly project, it is

necessary to be conducted by EIA to assess the impacts on surrounding natural and man-made environment.

9.3 LEGAL FRAMEWORK

There is a legal requirement for the completion of environmental assessments for a variety of different types of projects that are considered as having the potential for causing the significant environmental effects. The Environment Conservation Act 1995 and Environment Conservation Rules (ECR) 1997 constitutes the legal basis for undertaking EIA for any development industries or development projects.

9.4 SCREENING OF PROPOSED PROJECT

As ECHO MILK PRODUCTS LIMITED is an agro-based project; it is friendly to the environment. As per ECR 1997, a normative screening procedure is to be followed according to which industries and projects have been divided into four categories: Green, Orange A, Orange B and Red. This screening is based on several important criteria such as type of project, its size, location and pollution potential. According to the ECR 1997, this project is of Orange B category. So the full scale of EIA is not necessary for determining the environmental assessment of the project. Besides, the proposed location is an agricultural land at a remote area of Gazipur.

9.5 EIA PROCEDURES

A baseline study is one of the most important parts of EIA. This term refers to the collection of background information on the environmental and socio-economic setting for a proposed development project, and it is normally one of the first activities undertaken in an EIA. A study team surveyed the project area and collected the necessary information of the proposed project. The adjacent land of the project is agricultural land. No rehabilitation is necessary for the implementation of the project. The social survey reveals that if the project is implemented, it will bring an economic contribution to the society.

9.6 EVALUATION OF THE IMPACTS

Short-term Impacts: From the checklist it has been seen that most of the short-term impacts are minor category. When the construction and

installation activities are completed, the impacts would be overcome.

Long-term Impacts: The proposed project is one kind of agricultural project. So the project will not bring any severe harm to the adjacent agricultural land. Most of the long-term impacts are positive. If the project is implemented, it will accelerate the ultimate development of the country bringing contribution to GDP and creating employment opportunities. Although some long-term impacts are adverse to the natural environment, most of them have either minor impacts or might be treated.

9.7 PROPOSED MEASURES FOR ADDRESSING THE ENVIRONMENTAL ISSUES

The following measures should be undertaken to mitigate the adverse impacts on the surrounding environment:

Structural measures:

(a) There should be adequate treatment facilities to mitigate the impacts of solid and liquid waste.

(b) There should have adequate safety provision both for the health of labor and the whole processing plant such as protection from fire hazard.

Non-structural measures:

(a) There should have an effective Environmental Management Plan for each of the selected protection and enhancement measure.

(b) There should have an implementation schedule indicating the timing of work plan as to when the protection measures are to be installed and / or be operational.

CHAPTER - 10
SWOT ANALYSIS

10.01 STRENGTHS:

i. The main strength of the project lies in the business experience and expertise of the key person and the directors of this project having exposure of corporate management. The Managing Director possesses more than 40 years of business experience in different sectors and extraordinary management capability. He would be supported by a group of experienced people involved in this trade for a considerable period.

ii. The location of the project provides an advantage for maintaining a good networking with the mainstream business people.

iii. The reputation of the sponsors already gained will help to make an easy penetration into the market.

iv. The project will introduce innovative products, flavors, etc. which will have advantages over existing products available in the market.

10.02 WEAKNESSES:

i. For technical expertise the project will completely depend on hired experts/personnel.

ii. People still believe that Bangladesh cannot maintain the quality that foreign products can do.

iii. For competing in the international market, the volume should be significantly high to attain economy of scale.

10.03 OPPORTUNITIES:

i. The market potential of these products, as has been assessed, is quite substantial.

ii. Because of a large and growing population the market is still growing.

iii. The company can research and develop new product lines with higher nutritive and qualitative value.

iv. Unlimited growth potential of the agro- processing sector will create backward linkage.

v. Overseas markets may also be explored if the quality can be ensured.

vi. The main raw materials of these products are locally available.

10.04 THREATS:

i) Brand image is very important in this industry. Some renowned brand like Milk Vita, Aarong, Aftab, Savar Dairy, etc. have already got very strong footage and it will not be easy for this project to compete with them.

ii) In Bangladesh, any sector that shows signs of good and quick return attracts high concentration of investors. Competition pushes down the marginal return.

iii) Low quality fake products may enter the market through unscrupulous traders and may create some difficulties for the time being.

iv) The quality of products has to be strictly ensured because milk items are very sensitive and any deviation from the required quality may be severely destructive to the brand image.

v) The market is very competitive and huge promotional efforts would be required to penetrate the market.

vi) Entry of new entrepreneurs is also apprehended since there is a huge and fast increasing demand for these products in the country.

CHAPTER - 10

CONCLUSION AND RECOMMENDATION

10.01 CONCLUSION

(a) Project: The project is completely agro-based. It is a growing industry in the country. New projects with innovative idea will come to this sub-sector and its market eventually will expand throughout the country. Quality milk and milk products will always be in demand as long as people keep on consuming the products like those of the proposed project. It will also be a good source of export earnings.

(b) Management Capability: Management may be considered the strongest determinant in efficient and effective implementation of the project. With a technically competent Managing Director on the fore the project bears a greater chance of success. Other Directors also have a clear understanding of the market and also have good academic background and knowledge in this sector. This will give leverage to the project.

(c) Marketing Prospect: A large demand -supply gap exists in the market. With only a few players on the supply side and a huge demand, the project can enter the market with minimum effort. The growing population and changing food habit will certainly push the expanding market forward.

An expanding market is waiting to be profitably exploited by real entrepreneurs. Projections suggest that the proposed 6,205,000 liter (packed in 1 and ½ lt. bottles) of Pasteurized White Milk, 1,095,000 liter Pasteurized Flavored Milk (packed in 1 and ½ lt. bottles) 15,184,000 liter (180 ml bottles) lassi ; 5,110.000 liters of curd (120 ml, ½ lt and 1 lt. cups), 7,602,950 liter of youghurt, 17,520,000 liter of whey drinks (250 ml pack) and 62,050 kg of ghee (different packet sizes) annual capacity will be satisfying only a small portion of the total demand. With low involvement in promotion and personal selling expenditure. the profitability curve will rise substantially if distribution cost and raw material costs can be managed properly.

(d) Technical Feasibility: The technology of the project will be fully automated. There are quite a few big companies in the industry using the same technology and there will be no dearth of expertise to operate the plant efficiently.

(e) Financial Sustainability: The financial ratios obtained from calculations are within acceptable ranges. With a ready market, the cash flow seems to be on the positive side. Breakeven analysis is reasonable. Satisfactory earnings forecast reinforces the notion that the project will be viable.

(f) Socio Economic Impact: The project is expected to make quite a significant socio-economic impact in and around the project area. Though it will be located in the industrial belt, the area concerned is still to be exploited fully. It will have other indirect socio-economic benefits due to forward and backward linkages with the related sectors.

However the project will face the following constraints:

(a) Lack of an appropriate dairy policy to address product standardization, taxation, infrastructure development, stable price, import rationalization and product safety measures.

(b) Competition from imported milk powder and milk products along with threats from the local competitors.

(c) Absence of the Dairy Development Board in Bangladesh and lack of autonomy in functioning.

(d) Shortage of quality cattle feed at a reasonable price.

(e) Lack of support from the government, national and international donor agencies to undertake a massive dairy development.

(f) Absence of adequate training facilities and support to adopt new technologies.

10.02 RECOMMENDATION

Some suggestions may be considered to ensure regular supply of milk:

(a) Some groups could be formed at the dairy farmers level, who will be bound to supply milk regularly to the proposed chilling centers. They will be given assurance of purchasing milk regularly with a desired price. The farmers can be given some assistance in the form of interest free credit. veterinary treatment etc.

(b) Farmers can be bring into a contract by giving advance and veterinary treatment. breeding facilities, etc. can be given free of cost.

(c) Some agents may be employed on commission basis that will supply a definite quantity of milk every day.

(d) To increase belongingness farmers can be invited at least once a year to gather in a feast and the Chairman of the project can reward large supplier openly.

(e) Local NGOs are very much interested to come into a contract to supply milk regularly. These NGOs have grass root level connection with local people and local peoples are also somehow or other beneficiary of such NGOs. Advance or credit can be given fruitfully by these NGOs.

(f) Further scope of study to calculate Economic Rate of Return (ERR), Bruno Ratio as such more realistic information will be available towards social contribution.

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APPENDIX

Annexure –1 : List of imported & local machinery

Annexure –2 : Cost of the project including working capital

Annexure –3 : Fixed cost of the project

Annexure –4 : Estimates of working capital requirement

Annexure –5 : Sales Estimate

Annexure –6 : Cost of goods sold

Annexure –7 : Estimates of general, administrative and selling expenses

Annexure –8 : Earning forecast

Annexure –9 : Break-even analysis

Annexure –10 : Discounted cash flow

Annexure –11 : Contribution to GDP

Annexure –12 : Repayment Position of Equity of Bangladesh Bank

Annexure –13 : Payback period

Annexure –14 : Projected balance-sheet

Annexure –15 : Financial ratios

Annexure –16 : Projected cash-flow statement

Annexure –17 : Sensitivity Analysis

Annexure –18 : Implementation chart

ANNEXURES

Annexure –1

List of Plant and machinery

Details of the Plant and Machinery are as follows:

(a) Imported machinery

Sl. No.	Item	Quantity	Unit
1.	**High Temperature Short Time (HTST) Pasteurization plant (1000 liter/hour)** consisting of a) 1 Float Hopper of 50 liter capacity b) 1 Milk Pump 2 HP c) 1 S.S. Flow Controller d) 1 S.S. Plate Heat Exchanger (PHE) e) 1 set Hot water System 2 HP pump f) 1 S.S. Control Panel g) 1 Milk Filter made of S.S.	1	Set
2.	Auto Claves / Sterilizers	2	
3.	Plate Milk Chiller (1000 lph)	1	
4.	Bottle washing machines (Fitted with 2 Heads with 2 Brushes in each Head)	2	Sets
5.	Homogenizer 2 stage 250 kg/cm^2 pressure	1	
6.	**Steam Generator** 400 kg/hr capacity consist of a) 1 set Boiler with 0.75 motorized feed water pump and motorized pressure type oil burner. b) 1 set 30' height M.S. chimney. c) 1 feed water tank (500 liter) d) 1 set feed water preheating tank e) 1 feed oil tank f) 1 hand gear pump g) 1 set water softener plant (1.50 m^3/hr capacity) h) 1 set oil storage tank (2000 liter capacity)	1	Set
7.	**Refrigeration plant** 41000 kcal/hr capacity consist of a) 1 ammonia compressor b) 1 25 HP induction motor c) 1 set atmospheric condenser with 3 rows of 50 mm diameter pipes d) 1 condenser water recalculating pump 14,000 liter per hour capacity with 2 HP motor. e) 1 liquid receiver 640 liter capacity f) 1 liquid separator g) 1 oil separator with oil return arrangement h) 1 M.S. chilled water tank 4500x2000x15000 mm^3 i) 1 set ice accumulation coil with 32 mm bore 420 long pipe j) 1 chilled water pump 20,000 liter/hr with 3 HP motor k) Refrigeration controls l) Air cooling unit	1	Set
8.	Storage Tanks (2000 liter capacity, made of S S. insulated)	2	
9.	Storage Tanks (1000 liter capacity, made of S.S. insulated)	3	
10.	Sachet Filling machine (2500 sachets per hour)	1	
11.	Flavored Milk Processing Tanks (500 liter capacity, made of S.S. insulated and jacketed)	2	

Sl. No.	Item	Quantity	Unit
12.	Dump Tanks (1000 liter capacity, made of S.S.)	1	
13.	Cream Separator (550 liter/hr)	1	
14.	Butter oil melting VAT (250 liter capacity, made of S.S. insulated and jacketed)	1	
15.	Recombination milk pump with 3.5 HP motor	1	
16.	Bottle filling machine fitted with 4heads	2	
17.	Sugar Syrup Tank (250 liter capacity. made of S.S. insulated and jacketed)	1	
18.	Butter Churn (100 liter of cream per churn)	1	
19.	S.S. Tank (550 liter/hr)	1	
20.	Butter Oil pump with 1 HP motor	1	
21.	Flavored milk pump with 1 Hp motor	1	
22.	Power Hopper (70 kg capacity powder funnel made of S.S.)	1	
23.	In-line pipe filter (made of S S.)	1	
24.	Freon Condensed unit (4800 kcal/hr capacity)	1	Set
25.	Freon Condensed unit (6000 kcal/hr capacity with 3 HP motor)	1	Set
26.	Freon Condensed unit (9000 kcal/hr capacity with 5 HP motor)	1	Set
27.	Standby Generator 75 KVA	1	
28.	Factory Cold Storage size (20'x11'x8')	1	Set
29.	Aluminium Milk Cans (20 liter capacity)	148	
30.	Aluminium Milk Cans (40 liter capacity)	25	
31.	CIP Tank with pump 400 liter capacity with 3.5 HP	1	Set
32.	Float Hopper / Balance Tank (50 liter , made of S.S.)	1	
33.	Air Compressor (43/44 m^3/hr with 7.5 HP motor)	1	
34.	Insulated cold doors	2	
35.	Air Compressor (0.2/44 m^3/hr with 7.5 HP motor)	1	
36.	Pedal operated crown corking machine	2	
37.	Hand operated butter moulds	1	
38.	Butter moulds	5	
39.	Wooden Butter Scotch Hands	2	
40.	Wooden Butter Scoops	1	
41.	Centrifugal mono block pump	2	
42.	High pressure air vessel	1	
43.	Pressure filter	1	
44.	Water pipes and fittings	1	Set
45.	Steam pipes and fittings	1	Set
46.	Chilled water pipes and fittings	1	Set
47.	Ammonia pipes and fittings	1	Set
48.	S.S. pipes and fittings	1	Set
49.	Laboratory equipment a) Milk sampling b) Specific gravity test c) Acidity and alcohol test	Assorted	
50.	Steam and water mixing (Fat test by Gerber meter)	5	Set
51.	Can Tipping bar	1	
52.	Weigh bowl (250 liter capacity made of S.S.)	1	
53.	Can washing Trough	1	Set
54.	Can Steaming Block	1	Set
55.	No foam can filling valve	1	

Sl. No.	Item	Quantity	Unit
56.	Switch Board for the individual machine	1	Set
57.	Switch Board for the main line	1	Set
58.	Manually operated butter workers	1	
59.	Tools	Assorted	
60.	Spares	Assorted	
61.	Sweet Yogurts making equipment	Assorted	

(b) Local machinery

Project will procure following local machineries:

Sl. No.	Items	Qty	Unit
1	Electrical substation (1000 KVA) including switch gears, fitting-fixing, cables, etc.	1	Set
2	Deep Tube well	1	
3	Waste water treatment plant	1	Set

ANNEXURE -2

ECHO MILK PRODUCTS LIMITED
Keowa, Sreepur
Gazipur

COST OF THE PROJECT

(Amount in Taka)

PARTICULARS	FORIEGN CURRENCY	LOCAL CURRENCY	TOTAL
Land & Land Development	0	21,561,580	21,561,580
Building & Civil Construction	0	22,000,000	22,000,000
Machinery & Equipment	0	117,655,000	117,655,000
Furniture & Fixtures	0	1,046,800	1,046,800
Vehicles	0	13,450,000	13,450,000
Security Deposit	0	350,000	350,000
Preliminary Expenses	0	2,852,000	2,852,000
Total Fixed Cost	0	178,915,380	178,915,380
Working Capital	0	19,268,000	19,268,000
TOTAL COST OF THE PROJECT	**0**	**198,183,380**	**198,183,380**
INTEREST ACCRUED DURING IMPLEMENTATION PERIOD	0	687,500	687,500

FINANCING PLAN

	Percentage	Amount
Bank Loan	51%	101,073,524
Sponsors' Equity	49%	97,109,856
Total	**100%**	**198,183,380**

ANNEXURE - 3

ECHO MILK PRODUCTS LIMITED
Keowa, Sreepur
Gazipur

FIXED COST OF THE PROJECT

(Amount in Taka)

PARTICULARS			FOREIGN CURRENCY (Tk)	LOCAL CURRENCY (Tk.)	TOTAL COST (Tk.)
1. Land					
Land including Registration			0	19,000,000	19,000,000
Land development			0	2,561,580	2,561,580
Sub-Total			0	21,561,580	**21,561,580**
2. Building & Civil Construction					
Factory Building			0	6,040,125	6,040,125
Boundary wall			0	1,000,000	1,000,000
Office Building			0	12,770,030	12,770,030
Other Civil Construction			0	2,189,845	2,189,845
Sub-Total			0	22,000,000	**22,000,000**
3 Machinery & Equipment					
A. Imported:					
Machinery (C&F value)			0	94,000,000	94,000,000
Exchange rate fluctuation	5.0%	of C&F value)	0	4,700,000	4,700,000
Insurance rate	2.0%	of C&F value)	0	1,880,000	1,880,000
Import Duty	0.0%	of CIF value)	0	0	0
Pre Shipment Inspection	0.5%	of C&F value)	0	470,000	470,000
L/C Com,Clr & Others	7.0%	of CIF value)	0	6,580,000	6,580,000
Sub-Total			0	107,630,000	**107,630,000**
B. Local:					
Machinery			0	7,000,000	7,000,000
Value Added Tax (VAT)			0	490,000	490,000
Freight & Other charges			0	35,000	35,000
Sub-Total			0	7,525,000	**7,525,000**
C. Erection & Installation:					
Technical Know-how Services			0	750,000	750,000
Civil			0	750,000	750,000
Mechanical			0	500,000	500,000
Electrical			0	500,000	500,000
Sub-Total			0	2,500,000	**2,500,000**
Total Cost of Machinery & Equipment			0	117,655,000	**117,655,000**
4 Furniture					
Furniture and Fixtures			0	406,000	406,000
Office equipment computer and others			0	150,000	150,000
Office Machine			0	360,800	360,800
Safety Equipment			0	100,000	100,000
Miscellaneous			0	30,000	30,000
Sub-Total			0	1,046,800	**1,046,800**

5	Vehicles			
	Truck	0	6,000,000	6,000,000
	Micro bus	0	7,450,000	7,450,000
	Sub-Total	0	13,450,000	**13,450,000**
6.	Security Deposit.			
	Power connection	0	200,000	200,000
	Gas connection	0	100,000	100,000
	Others(Telephone, etc.)	0	50,000	50,000
	Sub-Total	0	350,000	**350,000**
7	Preleminery Expenses			
	Legal expenses	0	50,000	50,000
	Consultancy Fee	0	200,000	200,000
	Trial Run & Commissioning	0	1,200,000	1,200,000
	Incidental Expenses for Utilities Connection	0	50,000	50,000
	Initial Promotional Expenses	0	1,000,000	1,000,000
	Initial Training & Pre-startup Salary Expenses	0	302,000	302,000
	Commission against Capital Issue & Intt. against Breeze Financing	0	0	0
	Miscellaneous Expenses	0	50,000	50,000
	Sub-Total	0	2,852,000	**2,852,000**
	TOTAL ESTIMATED FIXED COST OF THE PROJECT	**0**	**178,915,380**	**178,915,380**

ECHO MILK PRODUCTS LIMITED **ANNEXURE - 4**
Keowa, Sreepur
Gazipur

ESTIMATES OF WORKING CAPITAL REQUIREMENT

(Amount in Taka)

PARTICULARS	TIED-UP	YEAR : 1	YEAR : 2	YEAR : 3	YEAR : 4	YEAR : 5
Capacity Utilization	PERIOD	65%	70%	80%	85%	85%
1. INVENTORIES						
Imported Raw Materials	0 day(s)	0	0	0	0	0
Imported Packing Materials	0 day(s)	0	0	0	0	0
Local Raw Materials	5 day(s)	1,663,838	1,791,825	2,047,800	2,175,788	2,175,788
Local Packing Materials	15 day(s)	3,579,167	3,854,487	4,405,128	4,680,449	4,680,449
Stores & Spares	90 day(s)	114,714	247,076	423,558	600,041	750,051
Work-in-Process	1 day(s)	737,922	792,989	895,745	949,641	953,768
Finished Goods	2 day(s)	1,470,925	1,590,497	1,796,121	1,904,925	1,913,877
2 **EXPENSES**						
Wages & Salaries	1 month(s)	324,772	342,782	362,225	380,691	398,219
Other Expenses	1 month(s)	5,869,220	6,413,109	7,375,760	7,910,565	7,997,008
3 **ACCOUNTS RECEIVABLE**	7 day (s)	7,417,122	8,061,841	9,209,219	9,791,226	9,797,020
Gross Working Capital		21,177,678	23,094,604	26,515,555	28,393,323	28,666,179
LESS : ACCOUNTS PAYABLE	7 day (s)	1,670,278	1,798,761	2,055,726	2,184,209	2,184,209
Amount Blocked in Working Capital		19,507,401	21,295,844	24,459,829	26,209,114	26,481,970
Less Depreciation included in the Value of W-i-P & FG	3 day (s)	239,336	239,336	239,336	239,336	239,336
TOTAL WORKING CAPITAL REQUIRED		19,268,064	21,056,508	24,220,493	25,969,778	26,242,634
Provision for Cash Credit Loan		0	0	0	0	0
NET WORKING CAPITAL REQUIRE MENT		19,268,064	21,056,508	24,220,493	25,969,778	26,242,634
PROPOSED NET WORKING CAPITAL		**19,268,000**				

ANNEXURE - 5

ECHO MILK PRODUCTS LIMITED
Keowa, Sreepur
Gazipur

SALES ESTIMATE

Quantity in Qty &Amount in TK.

PARTICULARS	YEAR : 1	YEAR : 2	YEAR : 3	YEAR . 4	YEAR · 5
Capacity Utilization	65%	70%	80%	85%	85%
Production at Rated Capacity					
Pasteurized White Milk	1,095,000	1,095,000	1,095,000	1,095,000	1,095,000
Pasteurized White Milk	5,110,000	5,110,000	5,110,000	5,110,000	5,110,000
Pasteurized Flavored Milk	365,000	365,000	365,000	365,000	365,000
Pasteurized Flavored Milk	730,000	730,000	730,000	730,000	730,000
Lassi	15,184,000	15,184,000	15,184,000	15,184,000	15,184,000
Curd-I	4,562,500	4,562,500	4,562,500	4,562,500	4,562,500
Curd-ii	365,000	365,000	365,000	365,000	365,000
Curd-iii	182,500	182,500	182,500	182,500	182,500
Yoghurt	7,602,950	7,602,950	7,602,950	7,602,950	7,602,950
Whey Drink (Mango)	17,520,000	17,520,000	17,520,000	17,520,000	17,520,000
Ghee	62,052	62,052	62,052	62,052	62,052
Production at Utilized Capacity:					
Pasteurized White Milk	711,750	766,500	876,000	930,750	930,750
Pasteurized White Milk	3,321,500	3,577,000	4,088,000	4,343,500	4,343,500
Pasteurized Flavored Milk	237,250	255,500	292,000	310,250	310,250
Pasteurized Flavored Milk	474,500	511,000	584,000	620,500	620,500
Lassi	9,869,600	10,628,800	12,147,200	12,906,400	12,906,400
Curd-I	2,965,625	3,193,750	3,650,000	3,878,125	3,878,125
Curd-ii	237,250	255,500	292,000	310,250	310,250
Curd-iii	118,625	127,750	146,000	155,125	155,125
Yoghurt	4,941,918	5,322,065	6,082,360	6,462,508	6,462,508
Whey Drink (Mango)	11,388 000	12,264,000	14,016,000	14,892,000	14,892,000
Ghee	40.334	43,436	49,642	52,744	52,744
Add: Opening Stock of W-i-P					
Pasteurized White Milk	0	2,373	2,563	2,929	3,112
Pasteurized White Milk	0	11,072	11,960	13,667	14,524
Pasteurized Flavored Milk	0	791	854	976	1,037
Pasteurized Flavored Milk	0	1 582	1,709	1,952	2,075
Lassi	0	32,899	35,539	40,609	43,157
Curd-I	0	9,885	10,679	12,202	12,968
Curd-ii	0	791	854	976	1,037
Curd-iii	0	395	427	488	519
Yoghurt	0	16,473	17,795	20,334	21,609
Whey Drink (Mango)	0	37,960	41,007	46,857	49,796
Ghee	0	134	145	166	176
Total Work-in-Process					
Pasteurized White Milk	711,750	768,873	878,563	933,679	933,862
Pasteurized White Milk	3,321,500	3,588,072	4,099,960	4,357,167	4,358,024
Pasteurized Flavored Milk	237,250	256,291	292,854	311,226	311,287
Pasteurized Flavored Milk	474,500	512,582	585,709	622,452	622,575
Lassi	9,869,600	10,661,699	12,182,739	12,947,009	12,949,557
Curd-I	2,965,625	3,203,635	3,660,679	3,890,327	3 891,093
Curd-ii	237,250	256,291	292,854	311,226	311,287
Curd-iii	118,625	128,145	146,427	155,613	155,644

Yoghurt	4,941,918	5,338,538	6,100,155	6,482,841	6,484,117
Whey Drink (Mango)	11,388,000	12,301,960	14,057,007	14,938,857	14,941,796
Ghee	40,334	43,571	49,787	52,910	52,921
Less: Closing Stock of W-i-P					
Pasteurized White Milk	2,373	2,563	2,929	3,112	3,113
Pasteurized White Milk	11,072	11,960	13,667	14,524	14,527
Pasteurized Flavored Milk	791	854	976	1,037	1,038
Pasteurized Flavored Milk	1,582	1,709	1,952	2,075	2,075
Lassi	32,899	35,539	40,609	43,157	43,165
Curd-I	9,885	10,679	12,202	12,968	12,970
Curd-ii	791	854	976	1,037	1,038
Curd-iii	395	427	488	519	519
Yoghurt	16,473	17,795	20,334	21,609	21,614
Whey Drink (Mango)	37,960	41,007	46,857	49,796	49,806
Ghee	134	145	166	176	176
Quantity Produced for Sale					
Pasteurized White Milk	709,378	766,310	875,634	930,566	930,749
Pasteurized White Milk	3,310,428	3,576,111	4,086,294	4,542,643	4,343,497
Pasteurized Flavored Milk	236,459	255,437	291,878	310,189	310,250
Pasteurized Flavored Milk	472,918	510,873	583,756	620,378	620,500
Lassi	9,836,701	10,626,160	12,142,130	12,903,852	12,906,392
Curd-I	2,955,740	3,192,957	3,648,477	3,877,360	3,878,122
Curd-ii	236,459	255,437	291,878	310,189	310,250
Curd-iii	118,230	127,718	145,939	155,094	155,125
Yoghurt	4,925,444	5,320,743	6,079,821	6,461,232	6,462,503
Whey Drink (Mango)	11,350,040	12,260,953	14,010,150	14,889,060	14,891,990
Ghee	40,199	43,426	49,621	52,734	52,744
Add: Opening Stock of FG					
Pasteurized White Milk	0	4,729	5,140	5,872	6,243
Pasteurized White Milk	0	22,070	23,988	27,402	29,134
Pasteurized Flavored Milk	0	1,576	1,713	1,957	2,081
Pasteurized Flavored Milk	0	3,153	3,427	3,915	4,162
Lassi	0	65,578	71,278	81,423	86,569
Curd-I	0	19,705	21,418	24,466	26,012
Curd-ii	0	1,576	1,713	1,957	2,081
Curd-iii	0	788	857	979	1,040
Yoghurt	0	32,836	35,691	40,770	43,347
Whey Drink (Mango)	0	75,667	82,244	93,949	99,887
Ghee	0	268	291	333	354
Quantity Available for Sale					
Pasteurized White Milk	709,378	771,039	880,775	936,438	936,992
Pasteurized White Milk	3,310,428	3,598,181	4,110,282	4,370,045	4,372,631
Pasteurized Flavored Milk	236,459	257,013	293,592	312,146	312,331
Pasteurized Flavored Milk	472,918	514,026	587,183	624,292	624,662
Lassi	9,836,701	10,691,738	12,213,408	12,985,275	12,992,960
Curd-I	2,955,740	3,212,662	3,669,894	3,901,825	3,904,135
Curd-ii	236,459	257,013	293,592	312,146	312,331
Curd-iii	118,230	128,506	146,796	156,073	156,165
Yoghurt	4,925,444	5,353,579	6,115,512	6,502,002	6,505,850
Whey Drink (Mango)	11,350,040	12,336,620	14,092,394	14,983,010	14,991,877
Ghee	40,199	43,694	49,912	53,067	53,098
Less: Closing Stock of FG					
Pasteurized White Milk	4,729	5,140	5,872	6 243	6,247

Pasteurized White Milk	22,070	23,988	27,402	29,134	29,151
Pasteurized Flavored Milk	1,576	1,713	1,957	2,081	2,082
Pasteurized Flavored Milk	3,153	3,427	3,915	4,162	4,164
Lassi	65,578	71,278	81,423	86,569	86,620
Curd-I	19,705	21,418	24,466	26,012	26,028
Curd-ii	1,576	1,713	1,957	2,081	2,082
Curd-iii	788	857	979	1,040	1,041
Yoghurt	32,836	35,691	40,770	43,347	43,372
Whey Drink (Mango)	75,667	82,244	93,949	99,887	99,946
Ghee	268	291	333	354	354
Quantity Estimated for Sale					
Pasteurized White Milk	704,648	765,899	874,903	930,195	930,746
Pasteurized White Milk	3,288,359	3,574,193	4,082,880	4,340,911	4,343,480
Pasteurized Flavored Milk	234,883	255,300	291,634	310,065	310,249
Pasteurized Flavored Milk	469,766	510 599	583,269	620,130	620,497
Lassi	9,771,123	10,620,459	12,131,985	12,898,707	12,906,340
Curd-I	2,936,035	3,191,244	3,645,428	3,875,813	3,878,107
Curd-ii	234,883	255,300	291,634	310,065	310,249
Curd-iii	117,441	127,650	145,817	155,033	155,124
Yoghurt	4,892,608	5,317,889	6,074,742	6,458,655	6,462,478
Whey Drink (Mango)	11,274,373	12,254,376	13,998,445	14,883,123	14,891,931
Ghee	39,931	43,402	49,579	52,713	52,744
Sales Value (in Taka)					
Pasteurized White Milk	16,911,560	18,381,564	20,997,667	22,324,685	22,337,897
Pasteurized White Milk	42,748,665	46,464,510	53,077,436	56,431,842	56,465,239
Pasteurized Flavored Milk	7,046,483	7,658,985	8,749,028	9,301,952	9,307,457
Pasteurized Flavored Milk	7,516,249	8,169,584	9,332,296	9,922,082	9,927,954
Lassi	68,397,863	74,343,216	84,923,898	90,290,947	90,344,382
Curd-I	20,552,243	22,338,707	25,517,998	27,130,693	27,146,749
Curd-ii	6,811,600	7,403,686	8,457,394	8,991,887	8,997,208
Curd-iii	6,576,718	7,148,386	8,165,759	8,681,822	8,686,960
Yoghurt	39,140,865	42,543,110	48,597,934	51,669,242	51,699,821
Whey Drink (Mango)	90,194,985	98,035,010	111,987,558	119,064,984	119,135,449
Ghee	11,979,407	13,020,694	14,873,827	15,813,828	15,823,187
TOTAL REVENUE	**317,876,637**	**345,507,452**	**394,680,795**	**419,623,963**	**419,872,302**

ASSUMPTIONS

Inventory

Work-in-Process	:	1 day(s)
Finished Goods	:	2 day(s)

Selling Price (Tk)

Pasteurized White Milk	:	24 00 Qty
Pasteurized White Milk	:	13.00 Qty
Pasteurized Flavored Milk	:	30 00 Qty
Pasteurized Flavored Milk	:	16 00 Qty
Lassi	:	7.00 Qty
Curd-I	:	7 00 Qty
Curd-ii	:	29.00 Qty
Curd-iii	:	56.00 Qty
Yoghurt	:	8.00 Qty
Whey Drink (Mango)	:	8.00 Qty
Ghee	:	300.00 Qty

ANNEXURE - 6

ECHO MILK PRODUCTS LIMITED
Keowa, Sreepur
Gazipur
COST OF GOODS SOLD

(Amount in Taka)

PARTICULARS Capacity Utilization	YEAR : 1 65.0%	YEAR : 2 70.0%	YEAR 3 80.0%	YEAR : 4 85.0%	YEAR : 5 85.0%
Raw & Packing Materials	171,413,580	184,599,240	210,970,560	224,156,220	224,156,220
Wages & Salaries	3,709,125	3,937,106	4,189,244	4,407,211	4,591,426
Factory Rent (if any)	0	0	0	0	0
Stores & Spares	382,379	823,585	1,411,860	2,000,135	2,500,169
Repair & Maintenance	453,879	900,585	1,499,860	2,093,635	2,593,669
Carriage Inwards	8,570,679	9,229,962	10,548,528	11,207,811	11,207,811
Insurance	1,789,154	1,789,154	1,789,154	1,789,154	1,789,154
Water, Power, Fuel & Lubricants	9,824,300	10,545,400	11,987,600	12,708,700	12,708,700
Depreciation	23,933,606	23,933,606	23,933,606	23,933,606	23,933,606
Other Service Overhead	1,300,000	1,400,000	1,600,000	1,700,000	1,700,000
Total Processing Cost	**221,376,702**	**237,158,638**	**267,930,412**	**283,996,472**	**285,180,754**
Add: Opening Stock of W-i-P (1 days)	0	737,922	792,989	895,745	949,641
Total Work in Process	221,376,702	237,896,561	268,723,401	284,892,217	286,130,395
Less: Closing Stock of W-i-P (1 days)	737,922	792,989	895,745	949,641	953,768
Total Cost of Goods Processed	**220,638,779**	**237,103,572**	**267,827,656**	**283,942,576**	**285,176,627**
Add: Opening Stock of FG (2 days)	0	1,470,925	1,590,497	1,796,121	1,904,925
Total Cost of Goods Available for Process	220,638,779	238,574,497	269,418,153	285,738,697	287,081,552
Less: Closing Stock of FG (2 days)	1,470,925	1,590,497	1,796,121	1,904,925	1,913,877
TOTAL COST OF GOODS SOLD	**219,167,854**	**236,984,001**	**267,622,032**	**283,833,773**	**285,167,675**

ANNEXURE -7

ECHO MILK PRODUCTS LIMITED
Keowa, Sreepur
Gazipur

ESTIMATE OF GENERAL, ADMINISTRATIVE AND SELLING EXPENSES

(Amount in Taka)

PARTICULARS	YEAR : 1	YEAR : 2	YEAR : 3	YEAR : 4	YEAR : 5
Capacity Utilization	65.0%	70.0%	80.0%	85.0%	85.0%
Administrative Salaries	4,085,400	4,289,670	4,504,154	4,729,361	4,965,829
Office Rent	0	0	0	0	0
Transportation	15,893,832	17,275,373	19,734,040	20,981,198	20,993,615
Office Supplies	32,500	35,000	40,000	42,500	42,500
Postage, Telephone, Telegram & Telex	165,000	170,000	180,000	185,000	185,000
Travelling	82,500	85,000	90,000	92,500	92,500
Auditor's Fees	25,000	25,000	25,000	25,000	25,000
Selling & Sales Promotion	31,787,664	34,550,745	39,468,079	41,962,396	41,987,230
Depreciation & Write-off	4,035,434	4,035,434	4,035,434	4,035,434	4,035,434
Miscellaneous Administrative Expenses	123,750	127,500	135,000	138,750	138,750
TOTAL GENERAL, ADMIN. & SELLING EXPENSES	56,231,079	60,593,722	68,211,706	72,192,139	72,465,858

ANNEXURE - 8

ECHO MILK PRODUCTS LIMITED
Keowa, Sreepur
Gazipur
EARNING FORECAST

(Amount in Taka)

PARTICULARS		YEAR 1	YEAR . 2	YEAR : 3	YEAR : 4	YEAR : 5
Capacity Utilization		65%	70%	80%	85%	85%
Sales Revenue		317,876,637	345,507,452	394,680,795	419,623,963	419,872,302
Adjustment on VAT Payables		0	0	0	0	0
Net Revenue		317,876,637	345 507.452	394,680,795	419,623,963	419,872,302
Cost of goods sold		219,167,854	236,984,001	267,622,032	283,833,773	285,167,675
Gross Profit		**98,708,783**	**108,523,452**	**127,058,763**	**135,790,190**	**134,704,628**
General, Admin & Selling Exp.		56,231,079	60,593,722	68,211,706	72,192,139	72,465,858
Operating Profit		**42,477,704**	**47,929,730**	**58,847,057**	**63,598,051**	**62,238,769**
Financial Expenses		15,161,029	14,447,045	12,281,184	10,115,322	7,949,461
Net Profit before Taxes		27,316,675	33,482,685	46,565,873	53,482,729	54,289,308
Income Tax		0	0	0	0	0
Net Profit after Taxes		**27,316,675**	**33,482,685**	**46,565,873**	**53,482,729**	**54,289,308**
Appropriation of Profit @ for Purchase of Govt. Bond	10.00%	2,731,668	3,348,269	4,656,587	5,348,273	5,428,931
Net Profit after Purchase of Govt. Bond		**24,585,008**	**30,134,417**	**41,909,286**	**48,134,456**	**48,860,377**
Return on Govt Bond @	10.00%	0	273,167	607,994	1,073,652	1,608,480
Net Profit after Return on Govt. Bond		**24,585,008**	**30,407,584**	**42,517,279**	**49,208,108**	**50,468,857**
Appropriation of Profit @ for Dividend	0.00%	0	0	0	0	0
Retained Earnings		**24,585,008**	**30,407,584**	**42,517,279**	**49,208,108**	**50,468,857**
Cumulative Retained Earnings		24,585,008	54,992,591	97,509,870	146,717,979	197,186,835
Earning Per Share (Tk 100 Each)		**BDT 24.32**	**BDT 54.41**	**BDT 96.47**	**BDT 145.16**	**BDT 195.09**

Operating Ratio	86.64%	86.13%	85.09%	84.84%	85.18%
Gross Profit Ratio	**31.05%**	**31.41%**	**32.19%**	**32.36%**	**32.08%**
Operating Profit to Sales	**13.36%**	**13.87%**	**14.91%**	**15.16%**	**14.82%**
Pre-tax Net Profit to Sales	**8.59%**	**9.69%**	**11.80%**	**12.75%**	**12.93%**
Pre-tax Net Profit to Equity(ROE)	**28.13%**	**34.48%**	**47.95%**	**55.07%**	**55.91%**
Raw Material Cost to Sales	53.92%	53 43%	53 45%	53.42%	53 39%

Raw Material Cost to Total Cost	58 55%	59.13%	60.55%	61.19%	61.31%
Factory Wage & Salary to Total Cost	1.27%	1 26%	1.20%	1.20%	1 26%
Factory OH to Total Cost	15.80%	15 57%	15.15%	15.13%	15 44%
Gen Adm Cost to Total Cost	19 21%	19.41%	19.58%	19.71%	19 82%
Financial Cost to Total Cost	5 18%	4.63%	3.52%	2.76%	2.17%
	100.00%	100 00%	100.00%	100.00%	100 00%

ANNEXURE - 9

ECHO MILK PRODUCTS LIMITED
Keowa, Sreepur
Gazipur
BREAK-EVEN ANALYSIS

(Amount in Taka)

1. Revenue (Based on 5th year Production and net of VAT) 419,872,302

2. Total Production, Administrative, Selling and Financial Expenses (5th Year) 369,637,421

ITEMS	FIXED COST	VARIABLE COST	TOTAL COST
Raw & Packing Materials	0	224,156,220	224,156,220
Wages & Salaries	3,902 926	688,500	4,591,426
Factory Rent (if any)	0	0	0
Stores & Spares	0	2,500,169	2,500,169
Repair & Maintenance	0	2,593,669	2,593,669
Carriage Inwards	0	11,207,811	11,207,811
Insurances	1,789,154	0	1,789,154
Water, Power, Fuel & Lubri	450,000	12,258,700	12,708,700
Depreciation & Write-off	27,969,040	0	27,969,040
Other Manufacturing Overh	0	1,700,000	1,700,000
Administrative Salary	4,965,829	0	4,965,829
Office Rent	0	0	0
Transportation	0	20,993,615	20,993,615
Office Supplies	0	42,500	42,500
Postage, Telephone, Telex	100,000	85,000	185,000
Travelling	50,000	42,500	92,500
Audit Fees	25,000	0	25,000
Selling & Sales Promotion	0	41,987,230	41,987,230
Miscellaneous Administrati	75,000	63,750	138,750
Interest Expenses	11,990,808	0	11,990,808
Income Tax	0	0	0
TOTAL	51,317,757	318,319,664	369,637,421

a Profit Volume (P/V) Ratio $= \frac{S - V}{S} = \frac{419,872,302 - 318,319,664}{419,872,302}$

$= 0\ 24$

b Break-even Sales in Taka $= \frac{\text{Fixed Cost}}{\text{P/V Ratio}}$

$= 212,174,741$

$=$ **50.53%** of Utilised Capacity

$=$ **42.95%** of Rated Capacity

ANNEXURE - 10

ECHO MILK PRODUCTS LIMITED
Keowa, Sreepur
Gazipur
DISCOUNTED CASH FLOW STATEMENT

(Amount in Taka)

Year	Capital Outlay	Profit before Intt & Tax	Non-cash Expenses	Financial Expenses	Income Tax 40 00%	Net Operating Inflow
0	178,915,380	0	0	0	0	-178,915,380
1	19,268,000	42,477,704	27,943,740	15,161,029	0	51,153,444
2	0	47,929,730	27,943,740	14,447,045	0	75,873,470
3	0	58,847,057	27,943,740	12,281,184	0	86,790,797
4	0	63,598,051	27,943,740	10,115,322	0	91,541,791
5	0	62,238,769	27,943,740	7,949,461	0	90,182,509
6	0	89,030,169	1,152,340	5,820,752	35,612,068	54,570,442
7	0	89,030,169	1,152,340	5,279,287	35,612,068	54,570,442
8	0	89,030,169	1,152,340	4,737,821	35,612,068	54,570,442
9	0	89,030,169	1,152,340	4,467,089	35,612,068	54,570,442
10	0	89,030,169	1,152,340	3,654,891	35,612,068	54,570,442
11	0	89,030,169	1,152,340	0	35,612,068	54,570,442
12	0	89,030,169	1,152,340	0	35,612,068	54,570,442
13	0	89,030,169	1,152,340	0	35,612,068	54,570,442
14	0	89,030,169	1,152,340	0	35,612,068	54,570,442
15	0	89,030,169	1,152,340	0	35,612,068	54,570,442
16	0	89,030,169	1,152,340	0	35,612,068	54,570,442
17	0	89,030,169	1,152,340	0	35,612,068	54,570,442
18	0	89,030,169	1,152,340	0	35,612,068	54,570,442
19	0	89,030,169	1,152,340	0	35,612,068	54,570,442
20	0	89,030,169	1,152,340	0	35,612,068	54,570,442
Salvage Value of Project Assets						21,911,580

IRR (Initial guess) 22.00%

IRR		=	**38.60%**
Net Present Value @	15 00%	=	206,077,838

ANNEXURE - 11

ECHO MILK PRODUCTS LIMITED
Keowa, Sreepur
COMPUTATION OF CONTRIBUTION TO GDP

(Amount in Taka)

	Particulars	Year : 1	Year : 2	Year : 3	Year : 4	Year : 5
A.	**Net Revenue**	317,876,637	345,507,452	394,680,795	419,623,963	419,872,302
B.	**Inter-firm Transactions :**					
	Raw and Packing Materials	171,413,580	184,599,240	210,970,560	224,156,220	224,156,220
	Stores & Spares	382,379	823,585	1,411,860	2,000,135	2,500,169
	Repair & Maintenance	453,879	900,585	1,499,860	2,093,635	2,593,669
	Carriage Inward	8,570,679	9,229,962	10,548,528	11,207,811	11,207,811
	Insurance	1,789,154	1,789,154	1,789,154	1,789,154	1,789,154
	Water, Power Fuel & Lubricant	9,824,300	10,545,400	11,987,600	12,708,700	12,708,700
	Other Manufacturing Overhead	1,300,000	1,400,000	1,600,000	1,700,000	1,700,000
	Office Supplies	32,500	35,000	40,000	42,500	42,500
	Postage, Telephone, Telex, Fax, etc	165,000	170,000	180,000	185,000	185,000
	Travelling	82,500	85,000	90,000	92,500	92,500
	Auditor's Fee	25,000	25,000	25,000	25,000	25,000
	Selling & Sales Promotion Exp.	31,787,664	34,550,745	39,468,079	41,962,396	41,987,230
	Miscellaneous Exp	123,750	127,500	135,000	138,750	138,750
C.	**Total of B:**	225,950,384	244,281,171	279,745,641	298,101,801	299,126,703
D.	**Contribution to GDP :**	**91,926,253**	**101,226,281**	**114,935,153**	**121,522,162**	**120,745,600**

ANNEXURE - 12

ECHO MILK PRODUCTS LIMITED
Keowa, Sreepur
Gazipur
REPAYMENT OF EQUITY of BANGLADESH BANK

(Amount in Taka)

Instal. No.	Principal due after Repayment	Repayment of Principal	Interest Charge	Deffered Intt Due	Repayment of Def Intt.	Interest on Deferred Intt	Total Payment
0	101,073,524	0	0	687,500	0		0
1	101,073,524	0	3,790,257	687,500	0	0	3,790,257
2	101,073,524	0	3,790,257	687,500	0	0	3,790,257
3	101,073,524	0	3,790,257	687,500	0	0	3,790,257
4	101,073,524	0	3,790,257	687,500	0	0	3,790,257
5	101,073,524	3,609,769	3,790,257	687,500	24,554	0	7,424,579
6	97,463,755	3,609 769	3,654,891	662,946	24,554	0	7,289,213
7	93,853,986	3,609,769	3,519,524	638,393	24,554	0	7,153,847
8	90,244,218	3,609,769	3,384,158	613,839	24,554	0	7,018,480
9	86,634,449	3,609,769	3 248,792	589,286	24,554	0	6,883,114
10	83,024,680	3,609,769	3,113,426	564,732	24,554	0	6,747,748
11	79,414,912	3,609,769	2,978,059	540,179	24,554	0	6,612,381
12	75,805,143	3,609,769	2,842,693	515,625	24,554	0	6,477,015
13	72,195,374	3,609,769	2,707,327	491,071	24,554	0	6,341,649
14	68,585,605	3,609,769	2,571,960	466,518	24,554	0	6,206,282
15	64,975,837	3,609,769	2,436,594	441,964	24,554	0	6,070,916
16	61,366,068	3,609,769	2,301,228	417,411	24,554	0	5,935,550
17	57,756,299	3,609,769	2,165,861	392,857	24,554	0	5,800,184
18	54,146,531	3,609,769	2,030,495	368,304	24,554	0	5,664,817
19	50,536,762	3,609,769	1,895,129	343,750	24,554	0	5,529,451
20	46,926,993	3,609,769	1,759,762	319,196	24,554	0	5,394,085
21	43,317,224	3,609,769	1,624,396	294,643	24,554	0	5,258,718
22	39,707,456	3,609,769	1,489,030	270,089	24,554	0	5,123,352
23	36,097,687	3,609,769	1,353,663	245,536	24,554	0	4,987,986
24	32,487,918	3,609,769	1,218,297	220,982	24,554	0	4,852,619
25	28,878,150	3,609,769	1,082,931	196,429	24,554	0	4,717,253
26	25,268,381	3,609,769	947,564	171,875	24,554	0	4,581,887
27	21,658,612	3,609,769	812,198	147,321	24,554	0	4,446,520
28	18,048,844	3,609,769	676,832	122,768	24,554	0	4,311,154
29	14,439,075	3,609,769	541,465	98,214	24,554	0	4,175,788
30	10,829,306	3,609,769	406,099	73,661	24,554	0	4,040,421
31	7,219,537	3,609,769	270,733	49,107	24,554	0	3,905,055
32	3,609,769	3,609,769	135,366	24,554	24,554	0	3,769,689
33	0	0	0	0	0	0	0
34	0	0	0	0	0	0	0
35	0	0	0	0	0	0	0
36	0	0	0	0	0	0	0
37	0	0	0	0	0	0	0
	TOTAL	101,073,524	70,119,757	13,406,250	687,500	0	171,880,781

ANNEXURE - 13

ECHO MILK PRODUCTS LIMITED
Keowa, Sreepur
Gazipur
PAYBACK PERIOD

Year	Investment	Net Revenue	Non Cash Expenses	Total Cash Inflow	Total Cash Flow till the Year	Balance	Payback Period
0	198,183,380	0	0	0	0	198,183,380	
1	0	27,316,675	27,943,740	55,260,415	55,260,415	142,922,965	
2	0	33,482,685	27,943,740	61,426,425	116,686,840	81,496,540	
3	0	46,565,873	27,943,740	74,509,613	191,196,453	6,986,927	**3.09**
4	0	53,482,729	27,943,740	81,426,469	272,622,922	-74,439,542	**Years**
5	0	54,289,308	27,943,740	82,233,048	354,855,970	-156,672,590	
6	0	54,289,308	1,152,340	55,441,648	410,297,618	-212,114,238	
7	0	54,289,308	1,152,340	55,441,648	465,739,266	-267,555,886	
8	0	54,289,308	1,152,340	55,441,648	521,180,914	-322,997,534	
9	0	54,289,308	1,152,340	55,441,648	576,622,562	-378,439,182	
10	0	54,289,308	1,152,340	55,441,648	632,064,210	-433,880,830	

ANNEXURE - 14

ECHO MILK PRODUCTS LIMITED
Keowa, Sreepur
Gazipur
PROJECTED BALANCE SHEET

(Amount in Taka)

PARTICULARS	CONSTN PERIOD	YEAR : 1	YEAR 2	YEAR : 3	YEAR : 4	YEAR : 5
ASSETS						
Current Assets						
Cash and Bank Balance	19,268,000	52,314,647	94,463,753	147,347,012	208,335,800	272,061,766
Other Current Assets	0	21,177,678	23,094,604	26,515,555	28,393,323	28,666,179
Total Current Assets	19,268,000	73,492,325	117,558,357	173,862,567	236,729,123	300,727,945
Other Assets						
Deffered Interest Due (Net)	687,500	687,500	589,286	491,071	392,857	294,643
Preliminary Expenses (Net)	2,852,000	2,281,600	1,711,200	1,140,800	570,400	0
Investment in Govt. Bonds	0	2,731,668	6,079,936	10,736,523	16,084,796	21,513,727
Fixed Assets (Net)	176,063,380	148,664,740	121,266,100	93,867,460	66,468,820	39,070,180
Total Other Assets	179,602,880	154,365,508	129,646,522	106,235,855	83,516,873	60,878 550
TOTAL ASSETS	**198,870,880**	**227,857,833**	**247,204,879**	**280,098,422**	**320,245,997**	**361,606,495**
LIABILITIES & OWNERS' EQUITY						
Liabilities						
Accounts Payable	0	1,670,278	1,798,761	2,055,726	2,184,209	2,184,209
Short Term Liabilities	0	0	0	0	0	0
Total Liabilities	0	1,670,278	1,798 761	2,055,726	2,184,209	2,184,209
Owners' Equity						
Paid-up Capital						
Sponsor' equity	97,109,856	97,109 856	97,109,856	97,109,856	97,109,856	97,109,856
Bangladesh Bank Equity	101,761 024	101,761,024	87,223,735	72,686,446	58,149,156	43,611,867
Investment in Govt. Bonds	0	2,731,668	6,079,936	10,736,523	16,084,796	21,513,727
Retained Earnings	0	24,585,008	54,992,591	97,509,870	146,717,979	197,186,835
Total Equities	198,870,880	226,187,555	245,406,118	278,042,696	318,061,787	359,422,286
TOTAL LIABILITIES & OWNERS' EQUITY	**198,870,880**	**227,857,833**	**247,204,879**	**280,098,422**	**320,245,997**	**361,606,495**

ANNEXURE - 15

ECHO MILK PRODUCTS LIMITED
Keowa, Sreepur
Gazipur

FINANCIAL RATIOS

	PARTICULARS Capacity Utilization	YEAR . 1 65 0%	YEAR 2 70 0%	YEAR . 3 80.0%	YEAR : 4 85.0%	YEAR : 5 85.0%
1	Gross Profit to Sales	31 05%	31.41%	32.19%	32.36%	32.08%
2.	Net Profit After Taxes to Sales	7 73%	8.80%	10 77%	11 73%	12 02%
3.	Return(EAROB) on Initial Equity	28.13%	34.76%	48 58%	56 18%	57.56%
4.	Return(EBIT) on Initial Investment	12.41%	24 18%	29 69%	32.09%	31.40%
5	Profit to Total Assets	10 79%	12 30%	15.18%	15.37%	13.96%
6	Debt-Equity Ratio (% of Debt)	0 73%	0.73%	0.73%	0 68%	0.60%
7.	Current Ratio (Times)	44.00	65.36	84 57	108.38	137.68
8.	Fixed Assets Coverage (Times) (Net fixed assets : Total debt)	1.44	1.36	1 26	1 10	0.85
9.	Sales Turn Over (Times) (to Initial Investment)	1 60	1.74	1.99	2 12	2.12

* **Calculation of Debt-Service Coverage Ratio**

(Amount in Taka)

	Income					
	Pretax Profit	27,316,675	33,482,685	46,565,873	53,482,729	54,289,308
Add :	Depreciation & Write-off	27,969,040	27,969,040	27,969,040	27,969,040	27,969,040
	Interest expense	15,161,029	14,447,045	12,281,184	10,115,322	7,949,461
	Total Cash Surplus	**70,446,744**	**75,898,770**	**86,816,097**	**91,567,091**	**90,207,809**
	Debt Obligations					
	Repayment of Principal	0	14,439,075	14,439,075	14,439,075	14,439,075
	Repayment of Deferred Interest	0	0	49,107	49,107	49,107
	Interest expense	15,161,029	14,447,045	12,281,184	10,115,322	7,949,461
	Total Repayable Debts	**15,161,029**	**28,886,120**	**26,720,259**	**24,554,397**	**22,388,536**
	Debt Service Coverage Ratio	**4.65**	**2.63**	**3.25**	**3.73**	**4.03**
	DSCR (Average)					**3.66**

ANNEXURE -16

ECHO MILK PRODUCTS LIMITED
Keowa, Sreepur
Gazipur
PROJECTED CASHFLOW STATEMENT

(Amount in Taka)

	PARTICULARS	CONSTN PERIOD	YEAR . 1	YEAR : 2	YEAR : 3	YEAR : 4	YEAR : 5
A	**Sources of Fund**						
	Paid-up Capital	97,109,856	0	0	0	0	0
	Bangladesh Bank Equity	101,073,524	0	0	0	0	0
	Increase in Cash Credit Loan	0	0	0	0	0	0
	Net Profit before Tax & Intt	0	42,477,704	47,929,730	58,847,057	63,598,051	62,238,769
	Depreciation & Write-off	0	27,969,040	27,969,040	27,969,040	27,969,040	27,969,040
	Return on Govt Bond	0	0	273,167	607,994	1,073,652	1,608,480
	Interest Accrued during Implementation Period	687,500	0	0	0	0	0
	TOTAL SOURCES OF FUND	198 870,880	70,446,744	76,171,937	87,424,090	92,640,743	91,816,289
B	**Utilisation of Fund**						
	Capital Expenditure(Fixed Assets)	176 063,380	0	0	0	0	0
	Preliminary Expenses	2 852,000	0	0	0	0	0
	Increases in Working Capital	0	19 507,401	1,788,443	3,163,985	1,749,285	272,856
	Deffered Interest Provision	687,500	0	0	0	0	0
	Repayment of Loan	0	0	14,439,075	14 439,075	14,439,075	14,439,075
	Financial Expenses	0	15,161,029	14,447,045	12,281,184	10,115,322	7,949,461
	Increase of Inv. in Govt. Bond	0	2,731,668	3,348 269	4,656,587	5,348,273	5,428,931
	Dividend Paid	0	0	0	0	0	0
	TOTAL UTILISATION OF FUNDS	179,602,880	37,400,097	34,022,831	34,540 831	31,651,955	28,090,323
	CASH SURPLUS (DEFICIT)	19,268,000	33,046,647	42,149,106	52,883,259	60,988,788	63,725 966
	OPENING CASH BALANCE	0	19,268,000	52,314,647	94,463,753	147,347,012	208,335,800
	CLOSING CASH BALANCE	**19,268,000**	**52,314,647**	**94,463,753**	**147,347,012**	**208,335,800**	**272,061,766**

ANNEXURE - 17

ECHO MILK PRODUCTS LIMITED
Keowa, Sreepur
Gazipur

SENSITIVITY ANALYSIS

PARTICULARS		IRR	NPV(15%)	BEP	ROE	GPTS	NPTS	PTTA	DSCR Times	Sales Turnover	CR Times
ORIGINAL SITUATION		38.60%	Tk 206,077,838 48	42 95%	45 0%	31 82%	10.21%	13 52%	3.66	1.91	88 00
a.	5 0% increase in RM & PM price	33.14%	Tk 157,634,232.16	48 60%	33 8%	29.02%	7.64%	11.29%	3.18	1.91	71 20
b.	5 0% decrease in Selling price	30 45%	Tk 133,400,171 34	52 07%	28.2%	28 23%	6.65%	10 03%	2.95	1.82	67.49
c.	5.0% decrease in Capacity Utilization	36 65%	Tk 180,364,080.25	42.88%	39.0%	31.26%	9.34%	12.40%	3 41	1.80	84.65

ACRONYMS & ASSUMPTIONS

IRR	INTERNAL RATE OF RETURN
BEP	BREAK-EVEN POINT (AT RATED CAPACITY)
ROE	RETURN ON EQUITY
GPTS	GROSS PROFIT TO SALES
NPTS	NET PROFIT TO SALES
PTTA	PROFIT TO TOTAL ASSETS
DSCR	DEBT SERVICE COVERAGE RATIO
CR	CURRENT RATIO
EAROB	EARNING AFTER RETURN ON BOND

Annexure –18

Implementation chart

Sl. No.	Activities	Months																	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	Project approved and goes for implementation																		
2	Loan sanction and documentation																		
3	Land preparation and site office																		
4	L/C opening for imported machinery																		
5	Ordering for local machinery																		
6	Construction work																		
7	Arrival of imported machinery at port																		
8	Delivery of imported machinery to site																		
9	Delivery local machinery to site																		
10	Erection and installation																		
11	Trial run and commissioning																		
12	Commercial operation