

PREFEASIBILITY STUDY ON CATTLE RAISING FOR DAIRY AND MEAT PRODUCTION IN SOUTHERN NIGERIA

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ACKNOWLEDGMENT

Startup Business Foundation is thankful to all organizations and individuals who have helped in several ways in preparation of this prefeasibility study.

We also wish to extend our gratitude to all those who reviewed the content and provided valuable inputs for improving the quality, coherence, and content presentation of this prefeasibility study.

ABOUT THIS REPORT

This prefeasibility study is designed to provide potential and startups entrepreneurs' valuable information on setting up cattle raising business in the food production industry of Nigeria's market; aimed at encouraging and facilitating industrial activities across the country. It is our realization that industrialization is at the heart of economic development and that every effort has to be made to bring about industrial growth and encourage our people to be part of it.

The cattle raising business shows over 80% local content in terms of availability of raw material, equipment and machinery, manpower and other requirements.

The key areas covered in this report include:

- i) Technical and economic analysis of the production, marketing and profitability of the project.
- ii) Recommendations in respect of procurement of equipments and associated problems.
- iii) Recommendation on suitable agronomic management practices to ensure efficient running of the projects.
- iv) Detailed financial analysis including project cash flows for the projects.

This prefeasibility report provides a comprehensive and detailed coverage of the above terms of reference and is designed to facilitate investment decisions.

The implementation of this project will also impact positively on the economy of the immediate community where the project is located. This is in terms of employment-direct and indirect, skilled and unskilled. Government also stands to benefit from internal revenue from taxation.

In view of the result of the analysis using some economic indicators as stated in the proposed project, it is hereby recommended that the project is viable.

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PART

EXECUTIVE SUMMARY

1.0

This prefeasibility is for setting up cattle ranch for dairy products and meat production in the southern part of Nigeria.

There are three cattle production systems in Nigeria: the extensive or pastoral system, the semi-intensive or agro-pastoral system and the intensive or commercial system (FAO, 2018). For the purpose of this investment profile, the commercial system is proposed.

The report leveraged on research conducted using the average household expenditure for all the zones on all the different dairy products. The outcome shows that average households in the northern zones consistently out-spend their western and southern counterparts on fresh milk with the reverse the case for processed (imported) dairy products like powdered milk, tinned milk, ice cream, butter, cheese and yogurt.

This project is exclusively rural or semi rural orientated enterprise. It is proposed to be established on one hundred acre of land.

The farm capacity has estimated capacity of 100 cows per annum, at 60% capacity utilization. The sale is expected to commence in the 2nd year.

1.1 SUMMARY OF TOTAL PROJECT COST

S/N	DESSCRIPTION	COST INCURED	COST TO BE INCURRED	TOTAL
1	Land and building (100 acres)	-	1,100,000	12,000,000
2	Machinery & equipment	-	520,000	520,000
3	Vehicle	-	2,200,000	2,200,000
	Total Capital Cost	-	3,820,000	14,720,000
4	Working capital	-	4,200,000	4,200,000
5	10% contingencies & preliminary expenses.	-	1,692,000	1,692,000
	Total Project Cost	-	7,472,000	20,612,000

1.2 FINANCIAL ACCOUNTING RATIOS ANALYSIS

PERFORMANCE RATIOS AVERAGES

- (a) Return on Sales = 23%
- (b) Return on Equity = 77%
- (c) Return on Investment = 32%
- (d) Positive NPV = ₦22,900,772
- (e) IRR = 47%
- (f) ARR = 32%
- (g) Payback Period = 4 years and 4months

PAPRT II MARKET ANALYSIS

2.1 INTRODUCTION

Nigeria's population will grow swiftly and transform extensively in the next three decades. Between 2020 and 2050 the population will double to almost 400 million and the number people living in urban areas will triple from the current 94 million to 280 million. GDP per capita will almost triple up to around 7, 137 USD PPP. Importation of food amounts up to 3-5 billion USD per year, out of which milk accounts for 1.3 billion USD (NLTP, 2019). Including net trade, the per capita food supply of animal source foods is 8 litres of milk, 9 kg of meat and 3.5 kg or 55 eggs per year. Consumption levels of milk and meat are lower than the continental averages that are 44 litres and 19kg, respectively (FAOSTAT, 2019).

2.2 MARKET AREA ANALYSIS

Dairy products in the Nigerian market are sourced locally and internationally. The major local dairy products in the market include Nono (sour milk), Kindrimo (sour yogurt), Cuku (Fulani cheese) and Wara (Yoruba cheese). The imported varieties as reported in official trade statistics come as sweetened (not concentrated) and unsweetened (concentrated) milk and cream; milk and cream in solid forms; butter, butter milk, cheese and curd. In the market place, however, these imported dairy products come either whole or in processed forms as evaporated milk, powdered milk, baby milk, cream, butter, cheese and yogurt. The traditional dairy products in the Nigerian market are particularly prevalent in the urban and rural market outlets in Northern Nigeria where the tradition and culture of the people favour cattle rearing and where the consumption of fresh and locally processed milk had long been part of the local diet.

The foregoing stem from the fact that, the relatively dry climatic condition prevalent in both the northern and southern parts of Nigeria supports grassland vegetation, which provides the basic food for these milk producing animals. On the other hand, the imported dairy products are available across the country, in virtually all urban and rural market outlets. The consumption of dairy products, particularly the imported varieties had been part of the diet of educated Nigerians for many years.

2.3 DEMAND AND SUPPLY GAP ANALYSIS

Over the last 60 years or so, and with more people exposed to western education and pattern of life, the consumption of meat and dairy products has increased. This is particularly true of the western and southern Nigeria where the people have an earlier exposure to western education and way of life, are more educated and with more working mothers than people in the north. The demand for dairy products is principally based on the perceived health benefits to adults, pregnant mothers, babies and children. With increased

urbanization and education the potential for increased demand exists but local production has been limited. Many supply constraints limit the availability of dairy products in the market despite several interventions in the past.

Therefore, this prefeasibility study proposed the establishment of cattle ranch centre for meat production and mobile dairy collection in the southern part of Nigeria given the increasing demand and return on investment. The demand supply gap show that many Nigerians depend wholly on the imported milk and sweeteners for their domestic and commercial purposes (production of ice-cream, butter, cheese and yogurt etc.).

2.4 INDUSTRY ANALYSIS

When considering Nigeria's future dairy and meat industry, it reasonable to conclude that demand is going to continue to grow. There is need for entrepreneur to invest in the production and marketing of both domestic and imported dairy products which will strengthened and enhance supply. This is particularly true of the production of fresh milk which is in currently being undertaken by nomadic Fulani herdsman using traditional manual technology which constraint supply. It is now time to entrepreneurs most especially in the southern part Nigeria to undertake a more sedentary form of cattle rearing and fresh milk dairy production in Nigeria to meet the potential large market in the country. In the face of growing population, increasing number of educated Nigerians, increase personal income and influence of western culture, the country needs an efficient dairy industry that will produce sufficient quantity and high quality and safe dairy products for the her people.

2.5 PRODUCT CONSUMPTION ANALYSIS

According to the study conducted by Journal of economic and rural development, overall, the household heads in the southern zones are more educated than those in the northern zones. This is in agreement with statistics from other surveys and from official statistics on education. These demographic characteristics have some bearing on the consumption of dairy products; that is, the observed regional variation in the expenditure of households on different dairy products is in line with the regional variations in age distribution of the population and levels of exposure to western education of the heads of the households across the zones A further interesting finding from the survey data was the breath of the consumption of dairy products in Nigeria. All the dairy products (fresh milk, powdered milk, tinned milk and the others like ice cream, butter, cheese and yogurt) are consumed across the country.

PART III TECHNICAL ANALYSIS

3.1 PRODUCTION DESCRIPTION

Milk is the most complete food item because of its great biological value as it contains a variety of nutrients and these nutrients in milk help make it nature's most perfect food. Hence plays an important role in improving human nutrition especially for growing children, pregnant women, the sick and the old of the smallholder household members as whole. This prefeasibility study intends to expose whole lots of investment opportunities for entrepreneurs in the southern part of Nigeria to take advantage of the lingering supply gap of natural dairy products and high dependence on import products for domestic and industrial purposes.

3.2 LOCATION ANALYSIS

The project can be established in the rural or semi urban area in any part of the southern Nigeria. Research shows favourable environment for breeding of cattle in southern part of Nigeria because of the availability of arable green vegetation of grasses for feeding of the cattle.

3.3 RAW MATERIAL

The basic raw material for production of cattle is grass. However, in the conventional cattle rearing system, the farmer might combine hay, fodder in the feeding of the cow along medications through veterinary doctor. The production of animal feeds is capital intensive, therefore, the entrepreneur is advised to purchase quality feeds from vendor at the early startup stage of this project.

3.3 PRODUCTION CAPACITY

One acre should contain one animal when supplemented with additional feeds but 100 acres should contain an average of 60 animals.

3.4 PRODUCTION PROCESS

The meat and milk production begins with a cow-calf farmer maintaining a breeding herd of cows that raise calves every year. The farmer begins with a cow-calf producer who maintains a breeding herd of cows that raise calves every year. Calves leave their ranch or farm of origin between six and 12 months of age.

Similarly, the calves at maturity can be milked using vacuum cups which are attached to the cow's teats. The milk is sent through stainless steel pipes to large refrigerated vats, then stored at 5°C or less. Within 48 hours, milk is taken in tankers to a milk factory

where it's pasteurized and homogenized. However, for the purpose of this study, only the meat production capacity is considered in the financial analysis.

3.4 SOURCES OF FUNDS

The project can be funded through a number of sources which include but not limited to the following; Agric-Business, Small & Medium Scale Investment Scheme (AGSMEIS), Bank of Industry, Bank of Agriculture (BOA), Nigeria Export-Import (NEXIM) Bank, International Finance Corporation (IFC), grants etc., though the conditions and criteria for accessing the loans and grants varies.

PART IV FINANCIAL ANALYSIS

Basically, the financial section of this prefeasibility study consists of three financial statements: Income statement, Balance sheet, Cash flow projection. This section determines whether or not the project is viable using some economic indicators such as Net Present Value (NPV), Internal Rate of Return (IRR), and payback period as are detailed in the appendices below.

4.1 ASSUMPTIONS

1. Assuming that the project will last for the period of five years and the salvage value at the end of the project life ignored.
2. The Machineries, Equipments and Utility Equipment have uniform depreciation of 20%.
3. The farm capacity has estimated capacity of 100 cows per annum at 60% capacity utilization.
4. The proposed capacity utilization are 60% in the first year of commercial production, 70%, 80% in the 2nd and 3rd year respectively and 90% in the 4th and 5th years.
5. Raw materials will be sourced locally and Market for the product is readily available.
6. Staff and labour cost will increase by 10% yearly.
7. Prices and unit costs are assumed unchanged in the five years of projection.
8. The valuation currency used is Naira.

4.2 ACCOUNTING /FINANCIAL ANALYSIS

4.2.1 NET PROFIT

The projected Annual Trading Profit and Loss Account is proposed to make the following Net Profit after tax during the corresponding projected periods – all things being equal.

4.2.2 NET PRESENT VALUE (NPV)

NPV is one of the four methods of discounted cash flows techniques which state that money that is immediately available for use, has a greater value than same amount receivables in future date.

Using this method however, all net cash inflows will be discounted to present value using the estimated interest rate of 60% discount factor. At 12% discount factor the project produced a positive **NPV NGN 14,179,520**

4.2.3 INTERNAL RATE OF RETURN (IRR)

This is the discount rate which gives zero NPV or the rate which equates the present value of cash inflows with present value of cash outflows of the project.

The cash flow of this project was discounted systematically until the NPV of the project finally become zero. The project produces the **IRR** of **46%**. Thus, the project accepted as being viable. This is because **IRR** is more than the cost of capital.

4.2.4 ACCOUNTING RATE OF RETURN (ARR)

ARR uses accounting information as revealed by financial statements (Income Statement) to measure profitability of the project under consideration. The forecast **ARR** of the project is **42%**.

4.2.5 PROFITABILITY INDEX (PI)

This is the present value of future cash flows over the present value of cash outlays. The project PI further confirm the viability of the project , because as the rules of the accepting and rejecting hold, a project should be accepted if the PI is equal or greater than one (1). Consequently, the PI of this project is **1.72** and thus recommended as being viable to be accepted for financing.

4.2.6 PAYBACK PERIOD

The payback period of any project is the length of time it would take the business investors to recover the capital invested in a project in spite of asset replacement. For this particular project the capital investment is expected to be fully recovered in about 4 years and 3 months.

APPENDIX I
TOTAL PROJECT COST

S/N	DESCRIPTION	QTY	UNIT PRICE	TOTAL
	LAND AND BUILDING			
1	Construction of farm house with stores	2	1,000,000	2,000,000
2	Acres of land	100	100,000	10,000,000
	Sub total	102	1,100,000	12,000,000
	MACHINERY & EQUIPMENT			
2	Feeding trough and water cans		80,000	80,000
3	Water storage system		180,000	180,000
4	Other auxiliary equipments		200,000	200,000
	Sub total		520,000	520,000
	VEHICLE			
	Delivery van		2,200,000	2,200,000
	Sub total		2,200,000	2,200,000
	Total Capital Cost		3,820,000	14,720,000
5	Working capital		4,200,000	4,200,000
6	10% contingencies & preliminary expenses		1,692,000	1,692,000
	Total Project Cost		7,472,000	20,612,000

APPENDIX II
ESTIMATION OF WORKING CAPITAL REQUIREMENT
N'

Year of Commercial Operation	2 months
% Capacity Utilization (Inventory)	60%
Purchase of Paddocks	2,400,000
Medications, Feeds (Fodders, Roughages)	400,000
Bank/ Cash (5% sales of the products)	1,600,000
Working capital	4,200,000

APPENDIX III
FINANCING PLAN
N

DESCRIPTION	EXISTING	PROPOSED	TOTAL
Equity	8,612,000		8,612,000
Term loan from	-	12,000,000	12,000,000
Total project cost	8,612,000	12,000,000	20,612,000
% Contribution	15%	75%	100%

APPENDIX IV
TERM LOAN REPAYMENT SCHEDULE

LOAN AMOUNT: 12,000,000 (Twelve Million Naira)
 TYPE : ANY LOCAL AVAILABLE SME FUND
 INTEREST RATE USED: 12%
 REPAYMENT: 5 YEARS EQUAL INSTALLMENT (Annually)

YEAR	OPENING BALANCE	REPAYMENT	INTEREST DUE	TOTAL YEAR INTEREST
1	12,000,000	2,400,000	1,440,000	3,840,000
2	10,600,000	2,400,000	1,272,000	3,672,000
3	8,200,000	2,400,000	984,000	3,384,000
4	6,800,000	2,400,000	816,000	3,216,000
5	2,400,000	2,400,000	288,000	2,688,000
Total		12,000,000	4,800,000	16,800,000

APPENDIX V
FORECAST STAFFING SCHEDULE (1ST OPERATIONAL YEAR)
N'ooo

POSITION	No	Unit Scale	Scale/ Month	Scale / Year
DIRECT LABOUR				
Farm Manager	1	80	80	960
Production Manager	1	60	60	720
Skilled labour	4	50	200	2,400
Sub total	6	190	240	4,080
INDIRECT LABOUR				
Accounts/ Admin	1	60	60	720
Marketing Officer	1	50	50	600
Driver	1	40	40	480
Sub total	3	150	150	1,800
Total on staff (1st year)	9	340	290	5,880

APPENDIX VI
ESTIMATE OF ANNUAL DEPRECIATION ALLOWANCE
N'

ITEMS	INITIAL VALUE	DEPRECIATION (20%)
Machinery & Equipments	520,000	104,000
Vehicle	2,200,000	440,000
TOTAL	2,720,000	544,000

APPENDIX VII
ESTIMATION OF ADMINISTRATIVE / OVERHEAD EXPENSES
N'

COST ITEM	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5
Selling and Distribution	1,240,000	1,294,000	1,248,000	1,312,800	1,312,800
Miscellaneous	80,000	98,000	116,000	137,600	137,600
Administrative expenses	1,270,000	1,297,000	1,324,000	1,356,400	1,356,400
TOTAL	2,590,000	2,689,000	2,688,000	2,806,800	2,806,800

APPENDIX VIII
ESTIMATION OF PRODUCTION AND OPERATION COSTS
N'

Cost item	Units	@	Qty/ day	Cost/ day	Cost/ month	Cost/2year
Direct Costs						
Animals	no	60,000	100	-	-	6,000,000
Feeds (Additional feed)	Kg	150	500	75,000	1,950,000	27,300,000
Drugs		540	5	2,700	70,200	842,400
Pesticides	ltrs	750	5	300	27,000	648,000
Subtotal		60,300	600	75,000	1,950,000	34,790,400

APPENDIX IX
ESTIMATION OF RAW MATERIAL/PRODUCTION COST AND SALES

Year of Commercial Production	Year 2	Year 3	Year 4	Year 5	Year 6
% Capacity Utilization	60%	70%	80%	90%	90%
1. Output					
Cattle	100	128	152	184	184
Total output	100	128	152	184	184
2. Cost of Production	N'	N'	N'	N'	N'
Cattle @ N59,830 (kgs)	5,983,600	6,581,960	7,180,320	7,898,352	7,898,352
Total cost of production	5,983,600	6,581,960	7,180,320	7,898,352	7,898,352
3. SALES					
Cattle meat & dairy @ N250,000 (kgs)	25,000,000	27,500,000	30,000,000	33,000,000	33,000,000
TOTAL SALES/ TURNOVER	25,000,000	27,500,000	30,000,000	33,000,000	33,000,000

APPENDIX X
FORECAST INCOME STATEMENT (PROFIT & LOSS ACCOUNT)

Year of commercial operation	Year 1	Year 2	Year 3	Year 4	Year 5
% Capacity Utilization	60%	70%	80%	90%	90%
1. SALES	N'	N'	N'	N'	N'
Gross Sales	25,000,000	27,500,000	30,000,000	33,000,000	33,000,000
VAT @ 5%	1,250,000	1,375,000	1,500,000	1,650,000	1,650,000
Net Revenue	23,750,000	26,125,000	28,500,000	31,350,000	31,350,000
2. OPERATION COST					
Cost of Raw materials consumed	5,983,600	6,581,960	7,180,320	7,898,352	7,898,352
Staff and labour	5,880,000	6,468,000	7,056,000	7,762,000	7,762,000
Admin. & Overhead Expenses	2,590,000	2,689,000	2,688,000	2,806,800	2,806,800
Depreciation	544,000	544,000	544,000	544,000	544,000
Total Operating Cost	14,997,600	16,282,960	17,468,320	19,011,152	19,011,152
3. OTHER COSTS					
Interest on Term Loan (12%)	1,440,000	1,272,000	984,000	816,000	288,000
Loan Repayment	2,400,000	2,400,000	2,400,000	2,400,000	2,400,000
Total (Other Costs)	18,837,600	19,954,960	20,852,320	22,227,152	21,699,152
Profit Before Tax	4,912,400	6,170,040	7,647,680	9,122,848	9,650,848
Tax @ 12%	589,488	740,404.8	917,721.6	1,094,741.76	1,158,101.76
Profit after tax (NET PROFIT)	4,322,912	5,429,635	6,729,958	8,028,106	8,492,746
% Return on Sales	0.18	0.21	0.24	0.26	0.27
% Return on Equity	0.50	0.63	0.78	0.93	0.99
% Return on Investment	0.21	0.26	0.33	0.39	0.41

APPENDIX XI

FORECAST HIGH RATE AND LOW RATE COMPUTATION

Year	C/F	DF 12%	NPV
	N'		N'ooo
0	(20,612,000)	1	(20,612,000)
1	4,322,912	0.893	3860360.42
2	5,429,635	0.797	4327419.1
3	6,729,958	0.712	4791730.1
4	8,028,106	0.636	5105875.42
5	8,492,746	0.567	4815386.98
Total Profit	33,003,357		22,900,772
Average Profit	6,600,671.4		

Year	C/F	DF 60%	NPV
	N'		N'
0	(20,612,000)	1	(20,612,000)
1	4,322,912	0.625	2701820
2	5,429,635	0.3906	2120815.43
3	6,729,958	0.2441	1642782.75
4	8,028,106	0.1526	1225088.98
5	8,492,746	0.0954	810207.968
Total Profit	33,003,357		8,500,715
Average Profit	6,600,671.4		

APPENDIX XII

FORECAST IRR AND ARR COMPUTATION

$$IRR = a + \left(\frac{A}{A+B} \right) * (b-a)$$

Where

$$a = 12\%$$

$$b = 60\%$$

$$A = 22,900,772$$

$$B = 8,500,715$$

$$12\% + \frac{22,900,772}{22,900,772 + 8,500,715} (60-12)$$

$$12\% + 35$$

$$47\%$$

$$ARR = \frac{\text{Estimated Average Profit} \times 100}{\text{Estimated initial investment}}$$

$$ARR = \frac{6,600,671.4 \times 100}{20,612,000}$$

$$32\%$$

**APPENDIX XIII
CASH FLOW PROJECTION**

Year of Comm. Production	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
% Capacity Utilization		60%	70%	80%	90%	90%
A) CASH RECEIPTS	N'	N'	N'	N'	N'	N'
Equity Capital	8,612,000	-	-	-	-	-
Term Loan	12,000,000	-	-	-	-	-
Gross Revenue	-	23,750,000	26,125,000	28,500,000	31,350,000	31,350,000
Total Receipts	20,612,000	23,750,000	26,125,000	28,500,000	31,350,000	31,350,000
B) CASH PAYMENTS						
Capital Payment						
Machinery & Equipments	520,000	-	-	-	-	-
Vehicle	2,200,000	-	-	-	-	-
TOTAL	2,720,000	-	-	-	-	-
(ii) Operating Expenses						
Depreciation	-	544,000	544,000	544,000	544,000	544,000
Change in working capital	17,892,000	14,453,600	15,738,960	16,924,320	18,467,152	18,467,152
Sub total	17,892,000	14,997,600	16,282,960	17,468,320	19,011,152	19,011,152
(iii) Financial Expenses						
Repayment of Term Loan	-	2,400,000	2,400,000	2,400,000	2,400,000	2,400,000
Interest on Term Loan	-	1,440,000	1,272,000	984,000	816,000	288,000
Value Added Tax	-	1,250,000	1,375,000	1,500,000	1,650,000	1,650,000
Corporate Tax	-	589,488	740,404.8	917,721.6	1,094,741.76	1,158,101.76
Sub total	-	5,679,488	5,787,405	5,801,722	5,960,742	5,496,102
Total cash payment (ii)-(iii)	17,892,000	8,774,112	9,951,555	11,122,598	12,506,410	12,971,050
Net cash flow c/f	17,892,000	8,774,112	9,951,555	11,122,598	12,506,410	12,971,050

**APPENDIX XIV
BALANCE SHEET PROJECTION**

Year of comm. Operation	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
ASSETS	N'000	N'000	N'000	N'000	N'000	N'000
(i) Fixed assets						
Machinery and Equipments	520,000	-	-	-	-	-
Vehicle	2,200,000	-	-	-	-	-
Value at Acquisition	-	2,720,000	2,720,000	2,720,000	2,720,000	2,720,000
Less Cumulated Depreciation	-	544,000	1,088,000	1,632,000	2,176,000	2,720,000
Net fixed assets	2,720,000	2,176,000	1,632,000	1,088,000	544,000	0
(ii)Current Assets/ liability						
Stock of Raw Materials	16,200,000	16,819,376	21,853,921	23,269,776	25,414,132	24,642,213
Debtors /prepayment	-	6,453,000	7,098,000	8,308,000	9,139,000	10,653,000
Bank and Cash Balances	1,692,000	4,150,024	5,160,031	6,170,539	7,180,674	7,180,741
Creditor / accruals	-	(4,074,000)	(6,039,000)	(8,947,000)	(11,013,000)	(13,785,000)
Company Tax	-	(589,488)	(740,404.8)	(917,721.6)	(1,094,741.76)	(1,158,101.76)
Net current assets		22,758,912	27,332,547	27,883,593	29,626,064	27,532,852
TOTAL NET ASSETS	17,892,000	24,934,912	28,964,547	28,971,593	30,170,064	27,532,852
(ii) FINANCED BY						
Equity Capital	8,612,000	8,612,000	8,612,000	8,612,000	8,612,000	8,612,000
P&L	-	4,322,912	5,429,635	6,729,958	8,028,106	8,492,746
Retained Profit	-	-	4,322,912	5,429,635	6,729,958	8,028,106
SHAREHOLDERS FUND	8,612,000	12,934,912	18,364,547	20,771,593	23,370,064	25,132,852
Long Term Loan	12,000,000	12,000,000	10,600,000	8,200,000	6,800,000	2,400,000
TOTAL EQUITY & LIABILITY	20,612,000	24,934,912	28,964,547	28,971,593	30,170,064	27,532,852