**MEE582 ASSIGNMENT**

**TECHNOLOGY POLCY AND PLANNING**

**AGHA IBIAM UCHENNA**

**15/ENG06/004**

1. **SUMMARY OF THE PROJECT**

A feasibility study showing the production of face masks by a pharmaceutical firm for the use in ABUAD community.

1. Name of the firm: Ibiam Pharmaceuticals
2. Location:

Head Office: No. 17 Tokunbo Avenue, Ikoyi, Lagos State

Plant Site: East West Road, along Onne Port, Rivers State.

1. The project is aimed at the manufacturing and distribution of face masks to the ABUAD community for their use and protection against the ongoing pandemic.
2. Due to the ongoing pandemic, various levels of government bodies and institutions have made it mandatory to use a face mask. As a result of this, ABUAD authority has also made the wearing of face masks mandatory by its entire community. This includes visitors to its hospital and everyone within the ABUAD premises set at a number between 9,000 -10,000. I project that in a year a minimum of 144,000 pieces of face masks would be required based on the following usage;
3. Residents (students and staff) would be required to use a minimum of 16 pieces per year while,
4. Visitors and nonresidential staffs would be required to use the face masks while on ABUAD premises.

It is also projected that demand would increase by 2% per annum based on factors such as admission and graduation, employment. Based on our bid submission and assessment per management, we’ve been selected as a sole supplier of reusable face mask. Therefore our market share at ABUAD stands at 100%.The competitive price of N250 per piece. Inflation of direct materials input would be zero over the next ten years.

The project involves initial investment of about N30, 000,000 made up of N22, 150,000 on capital expenditure (capex) and the balance as working capital for operating expenses (opex). Pre operating expenses of N1, 800,000 has been incurred.

It is proposed that the project would be financed from two main sources namely; receipt on issue and allotment of shares to directors and bank loan.

1. Summary of the findings and conclusion on;
2. Marketing feasibility carried out indicates that there is demand for the face masks product in the school community. Population stands at about 9,000 - 10,000 persons (students and staff included). Foreign Supply has been limited as all trade (imports and exports) have been shut down. Prices of face masks to be produced would be determined by factors such as cost of transportation and production as well as price cost set up by other production firm competitors.
3. Technical feasibility also indicates the availability of raw materials as well as the machines and equipment needed to carry out the production process.
4. Financial feasibility displays the sources of financing which include funding from investors (partners) and loans from banks. Studies carried out show that the return on investment would be profitable.
5. **GENERAL INFORMATION**
6. Management of project
7. An Economic Research Group was hired to carry out a market study and research on the product to be manufactured. An accounting firm was also consulted to help attain the capital as well as other expenses needed to startup operation. We also obtained every legal document necessary to ensure a smooth production process. Pre operating expenses amounting to N1, 800,000 were paid by the directors. Pre operating expenses would be amortized over a 5 year period.
8. Ibiam Pharmaceutical is a Private limited Liability Company. It is run by an MD. He is the CEO that overseeing the day to day activities of the company. He holds a master’s degree in mechanical engineering with 15 years working experience in manufacturing and processing company. The production unit is headed by the Production Engineer. He oversees the technical operation, quality assurance program of the company. He is a master’s degree holder in production engineering with 10 years working experience. The account department is tasked with maintaining the financial record of the company. It is headed by the finance manager. She ensures all cash flows are recorded properly. The last department is marketing headed by sales representatives. They sensitize the product and help in providing a bridge between producer and consumer.
9. Skilled individuals in engineering, production, marketing and accounting and finance were all hired and the recruits will undergo a 2 week training program (HSE, machine operation). The company compensation and benefits is structured in line with Nigerian labor law.
10. Accounting and Legal firm services were hired for the purpose of audit for submissions to regulators such as FIRS, CAC etc.
11. Status and Timetable for project

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Operation** | **WK1** | **WK2** | **WK3** | **WK4** | **WK5** |
| **Contract Signing for supply** | STA | FIN |  |  |  |
| **Recruitment and Training** |  | STA | FIN |  |  |
| **Plant Site Construction** | STA | ONG | FIN |  |  |
| **Licenses , Permits and Registration** |  | STA | FIN |  |  |
| **Acquisition of Machinery** | STA | ONG | ONG | FIN |  |
| **Acquisition of Raw Materials** |  |  | STA | ONG | FIN |
| **Test Run and Startup** |  |  |  | STA | ONG |

Bullets;

STA- START

ONG-ONGOING

FIN-FINISH

RED indicates activities that run concurrently.

1. Cost of services provided by professional firms engaged before startup was capitalized in accordance with Companies Allied Matters Act and Accounting Standard. This will be amortized over a period of 5 years on a straight line (equal annual) basis. The cost was for the following services

Market research N350, 000

Engineering studies N500, 000

Training N150, 000

Professional and legal N500, 000

Licenses, permits and registration N300, 000

N1, 800,000

1. **ECONOMIC ASPECTS**
2. Market Study
3. Demand
4. The Face masks consumption was limited to health care workers and providers and environmental management workers.it was not for use for the general public. The pandemic has made government and institutions have made legislation for the mandatory use of face masks. It did not constitute a sizeable percentage of the market.
5. Based on population of ABUAD community, a projection of 144,000 units would be consumed in the first one year and is expected to increase at 2% per annum for the next 9 years. This translates to a sales figure of N394, 209,000 sales volumes. The total consumption over the next 10 years to be 1,576,756 pieces .method adopted was based on population and sole supplier. Factors are new admissions made every year and number of graduates and the regulation will subsist for at least the next 10 years.

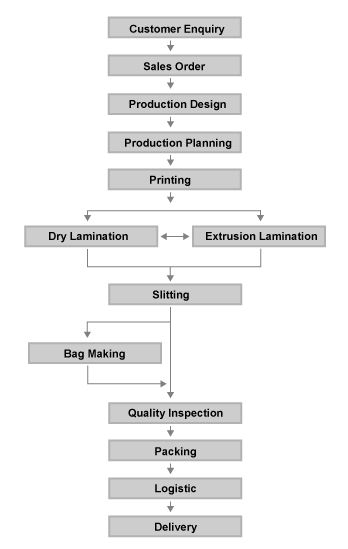
1. Supply
2. Supply in recent years has been limited to both health and environmental workers. The raw materials are sourced locally and the cost of supply is N92, 536,881.
3. Expected supply rate is projected to increase at a fixed rate over the coming years if the regulation subsists for the next 10 years.

Supply in future may be affected by the consumers i.e. rate of employment in the health and admission and graduation of students respectively**.**

1. Competitive position considering substitute products
2. Because of the technology involved, it has reduced the cost of labor making the price highly competitive. Imported finished products cost a minimum of N500 but we acquire the raw materials and manufacture them locally setting our selling price at N250.
3. Marketing Program
4. Current marketing strategies employed by other firms include well finished packaging, branding, implementation of discount sales, issuance of warranties and media advertising.
5. Our market is a closed market. We offer quality branding and person to person interaction with sales representative. There is no return on goods delivered and we also offer direct delivery to the school community which would be once every month. Transportation expense would cost N100, 000 every month.
6. There would also be routine visits from our sales representatives as well as seminars held within the school premises.
7. Projected Sales
8. Expected annual volume sales over the next 10 years are expected to be N394, 209,000.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **TEN YEARS SALES PROJECTION** | | | | | | | | | |
| **Periods** | **YR 1** | **YR 2** | **YR 3** | **YR 4** | **YR 5** | **YR 6** | **YR 7** | **YR 8** | **YR 9** | **YR 10** | **TOTAL** |
|  |  |  |  |  |  |  |  |  |  |  |  |
|  | **N'000** | **N'000** | **N'000** | **N'000** | **N'000** | **N'000** | **N'000** | **N'000** | **N'000** | **N'000** | **N'000** |
|  |  |  |  |  |  |  |  |  |  |  |  |
| **PROJECTED SALES** | **36,000** | **36,720** | **37,455** | **38,205** | **38,970** | **39,750** | **40,545** | **41,355** | **42,183** | **43,026** | **394,209** |

1. The company has a sales contract with the management of ABUAD for the supply of face masks.
2. Contribution to the Nigerian Economy
3. Generation of tax for Nigerian government. A wage bill of N5, 000,000 is remitted to the government from company tax and personal income tax by the individual staff. Workers pay individual income tax to state internal revenue services averaging N1, 000,000 per annum.
4. Sourcing of materials locally helping to generate revenue for local suppliers.
5. Preservation of health.
6. **TECHNICAL FEASIBILITY**
7. Product
8. The face masks are protective gears worn round the mouth and nose region to prevent and filter little particles (dust, sand) most of which are air borne. It is 17.5cm in length and 10cm in breadth. They constitute of a fine mesh of [synthetic polymer](https://en.wikipedia.org/wiki/Synthetic_polymer) fibers, specifically a [nonwoven polypropylene](https://en.wikipedia.org/wiki/Nonwoven_polypropylene) fabric.
9. The face masks are used by health workers as well as the students of the ABUAD community. They are only useful and effective in the absence of oil particles such as lubricant, cutting liquids.
10. Manufacturing Process
11. Face masks are made with non-woven fabric, which has better bacteria filtration and air permeability while remaining less slippery than woven cloth. The material most commonly used to make them is polypropylene. Masks can also be made of polystyrene, polycarbonate, polyethylene, or polyester.20 gsm mask material is made in a spun bond process, which involves extruding the melted plastic onto a conveyor. The material is extruded in a web, in which strands bond with each other as they cool. 25 gsm fabrics is made through melt blown technology, nozzles and blown by hot air to become tiny fibers, again cooling and binding on a conveyor. Face masks are made up of a multi-layered structure, generally by covering a layer of textile with non-woven bonded fabric on both sides. The filtration level of a mask, however, depends on the fiber, the way it’s manufactured, the web’s structure, and the fiber’s cross-sectional shape. Masks are made on a machine line that assembles the nonwovens from bobbins, ultrasonically welds the layers together and stamps the masks with nose strips, ear loops and other pieces. Completed masks are then sterilized before being sent out of the factory.



1. There is a licensing agreement between the ABUAD management and the company.
2. Alternative processes that were considered included manual and semi-automatic machinery. The factors considered in choosing a suitable method of production were health risks, precision and quality assurance, efficiency in material consumption etc.
3. Plant Size and Production Schedule
4. Rated daily and annual capacity at a 12 month operation basis per year would be 600 pieces a day and 180,000 per annum.
5. Expected annual production volume attainable over the next 10 years would be at 1,576,756 face masks pieces produced depending on level of demand by the ABUAD community.
6. Machinery
7. A new and equipped face mask machine has been acquired to carry out the production process. It is fully automated and constitutes of a cutting machine and a sewing machine enhanced with ultrasonic welding. The production rate of the machine is 1 piece per minute.
8. Spare parts have been made available for removable parts of the machine and repair and maintenance services have been put in place to ensure longevity of the machine.
9. The machine comes with a 2 year warranty, a free service and routine check from the supplier for 1 year and its cost value was fully paid. The delivery takes 1 week after payment has been made.
10. Plant Location
11. Jknkjhcih cis
12. The plant site is located close to port (sea and air) for easier and more convenient means of transport of raw materials from neighboring states. It is also located close to large and general market areas in which raw materials can easily be accessed as well as distribution made possible.
13. Plant Layout
14. The plant layout shows that the arrangement and configuration of the machine involved ensure a smooth transition of each of the various processes carried out in the plant.
15. The materials are able to easily be moved from one sub component of the machine into other sub components.
16. We’ve ensured the utilization of space to create room for expansion as well as addition of more production machines if needed in the near future.
17. Structure
18. The building is a two story building spilt into two sections; the factory and the office. It has two wide doors located at each end of the building creating room for cross ventilation as well as easy exit points. The construction was N3, 000,000.
19. Also located in the plant site are generator and security houses to accommodate security personnel. This cost N1, 000,000. Borehole, sump pumps and overhead tanks were all installed at a cost of N600, 000.
20. Raw Materials
21. The major raw material involved in the production is polypropylene fabric. It is a textile product derived from the thermostatic plastic polypropylene. It has a low thermal conductivity and is highly resistant to abrasion. I t also has moisture transferring abilities. Other materials include twill tape, nose strips (aluminium).
22. Factors considered in the selection of raw materials included durability, easy to use, bacteria filtration efficiency rate and should be user friendly.
23. Continuity of supply of this raw material has been made possible upon an agreed contract with the supplier over a specified length of time.

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **COST OF ESTIMATED RAW MATERIALS** | | | | | | | | | |  |
| **Periods** | **YR 1** | **YR 2** | **YR 3** | **YR 4** | **YR 5** | **YR 6** | **YR 7** | **YR 8** | **YR 9** | **YR 10** | **TOTAL** |
|  |  |  |  |  |  |  |  |  |  |  |  |
|  | **N'000** | **N'000** | **N'000** | **N'000** | **N'000** | **N'000** | **N'000** | **N'000** | **N'000** | **N'000** | **N'000** |
|  |  |  |  |  |  |  |  |  |  |  |  |
| **DIRECT MATERIAL** | **8,451** | **8,620** | **8,792** | **8,968** | **9,148** | **9,331** | **9,517** | **9,708** | **9,902** | **10,100** | **92,537** |

1. Utilities
2. Due to the unavailability of reliable electricity public power supply; a 20kva generator set has been installed to provide an alternative source of power. Fuel consumption is estimated at N1, 260,000 per annum and N13, 796, 648 for 10 years.
3. Public power supply is estimated to cost N799, 660 per annum and N8, 757,149 for 10 years.
4. Waste Disposal
5. The waste to be disposed include fabric scraps (polypropylene), torn ear loop scraps etc.
6. These wastes would be bagged and disposed in trash cans located around the site area.
7. Cost of waste disposal is estimated at N100, 000 per annum.
8. **FINANCIAL FEASIBILITY**
9. The total project cost for the 10 year period is estimated to be N328, 191,637 assuming there would be zero inflation on cost of raw materials.
10. The initial capital requirement is N30, 000,000.
11. Sources of financing.
12. The sources selected to be used were shareholders equity and bank loans.
13. The Share capital obtained was N10, 000,000. It is an investment made and the shareholders are entitled to projected dividends at a payout ratio of 40%.The bank loan obtained was N20, 000,000. This investment is backed by an interest at 20% per annum. It is secured on a floating charge over a 5 year tenure.
14. Share capital allotted amount to each director is fully paid and the bank loan approval has been given for fund release.
15. The business will generate enough earnings for working capital as shown in the cash flow statement and cash budget.
16. Financial Statements

In preparing the financial statements, company income tax rate at 30% was applied on the profit before tax to determine the company’s tax payable to the government. Payment of tax is made on a preceding year basis (i.e. tax based on profit of this year would be paid the following year.)Also Value Added Taxes (VAT), (i.e. input and output VATs) are recovered or paid in the year they occur. Depreciation on property, plant and equipment (PPE) with the exception of land is at 10% on straight line basis over a 10 year period while motor vehicle is on a straight line basis over a 5 year period. Rate on building is at 2% while land is not depreciated. Customers pay a moth after sales while suppliers give no credit on purchases.

1. **Projected income statement for 10 years**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| IBIAM PHARMACEUTICALS |  |  |  | - |  |  |  |  |  |  |
| **TEN YEARS PROJECTED INCOME**  **STATEMENT** | | |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
| For the periods | YR 1 | YR 2 | YR 3 | YR 4 | YR 5 | YR 6 | YR 7 | YR 8 | YR 9 | YR 10 |
|  |  |  |  |  |  |  |  |  |  |  |
|  | **N'000** | **N'000** | **N'000** | **N'000** | **N'000** | **N'000** | **N'000** | **N'000** | **N'000** | **N'000** |
|  |  |  |  |  |  |  |  |  |  |  |
| **Sales** | 36,000 | 36,720 | 37,455 | 38,205 | 38,970 | 39,750 | 40,545 | 41,355 | 42,183 | 43,026 |
| **Cost of Goods Sold** | 18,720 | 19,038 | 19,362 | 19,693 | 20,031 | 20,440 | 20,791 | 21,149 | 21,514 | 21,887 |
| **Gross Profit** | 17,280 | 17,682 | 18,093 | 18,512 | 18,939 | 19,310 | 19,754 | 20,206 | 20,669 | 21,139 |
|  |  |  |  |  |  |  |  |  |  |  |
| Selling and Distribution | (2,390) | (2,390) | (2,390) | (2,390) | (2,390) | (2,390) | (2,390) | (2,390) | (2,390) | (2,390) |
| Administrative Expenses | (5,251) | (5,130) | (5,127) | (5,127) | (5,130) | (5,159) | (5,135) | (5,138) | (5,140) | (5,143) |
| Depreciation | (285) | (285) | (285) | (285) | (285) | (360) | (360) | (360) | (360) | (360) |
| Finance Cost | (3,523) | (2,339) | (896) | - | - | - | - | - | - | - |
|  | (11,448) | (10,143) | (8,697) | (7,801) | (7,805) | (7,909) | (7,885) | (7,887) | (7,890) | (7,893) |
|  |  |  |  |  |  |  |  |  |  |  |
| Profit before tax | 5,832 | 7,539 | 9,396 | 10,711 | 11,135 | 11,402 | 11,870 | 12,319 | 12,779 | 13,247 |
| Income tax | (1,749) | (2,262) | (2,819) | (3,213) | (3,340) | (3,420) | (3,561) | (3,696) | (3,834) | (3,974) |
| Profit after tax | 4,082 | 5,277 | 6,577 | 7,498 | 7,794 | 7,981 | 8,309 | 8,623 | 8,945 | 9,273 |

1. **Projected Cash flow Statement for 10 years**

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| IBIAM PHARMACEUTICALS |  |  |  |  |  |  |  |  |  |  |
| **TEN YEARS PROJECTED STATEMENT OF CASH FLOWS** | | | | |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
| For the periods | YR 1 | YR 2 | YR 3 | YR 4 | YR 5 | YR 6 | YR 7 | YR 8 | YR 9 | YR 10 |
|  | **N'000** | **N'000** | **N'000** | **N'000** | **N'000** | **N'000** | **N'000** | **N'000** | **N'000** | **N'000** |
| **Cash flows from operating activities** | |  |  |  |  |  |  |  |  |  |
| Profit for the year before taxation | 5,832 | 7,539 | 9,396 | 10,711 | 11,135 | 11,402 | 11,870 | 12,319 | 12,779 | 13,247 |
| Adjustments: |  |  |  |  |  |  |  |  |  |  |
| Finance costs | 3,523 | 2,339 | 896 | - | - | - | - | - | - | - |
| Operating Profit | 9,355 | 9,878 | 10,292 | 10,711 | 11,135 | 11,402 | 11,870 | 12,319 | 12,779 | 13,247 |
| **Adjustment for non-cash items:** |  |  |  |  |  |  |  |  |  |  |
| Depreciation | 1,897 | 1,897 | 1,897 | 1,897 | 1,897 | 2,397 | 2,397 | 2,397 | 2,397 | 2,397 |
| Amortisation | 360 | 360 | 360 | 360 | 360 | - | - | - | - | - |
| Income before changes in operating assets and liabilities | 11,612 | 12,135 | 12,549 | 12,968 | 13,392 | 13,799 | 14,267 | 14,716 | 15,176 | 15,644 |
| **Cash provided/(used) by current assets and liabilities:** |  |  |  |  |  |  |  |  |  |  |
| (Increase)/Decrease in receivables | (3,000) | (60) | (61) | (63) | (64) | (65) | (66) | (68) | (69) | (70) |
| **Cash generated from operations** | 8,612 | 12,075 | 12,487 | 12,905 | 13,328 | 13,734 | 14,200 | 14,648 | 15,107 | 15,573 |
| Tax paid during the year | - | (1,749) | (2,262) | (2,819) | (3,213) | (3,340) | (3,420) | (3,561) | (3,696) | (3,834) |
| Interest payment | (3,523) | (2,339) | (896) | - | - | - | - | - | - | - |
| Net cash provided/(used) by operating activities | **5,089** | **7,986** | **9,330** | **10,086** | **10,115** | **10,393** | **10,780** | **11,087** | **11,411** | **11,740** |
|  |  |  |  |  |  |  |  |  |  |  |
| **Cash provided/(used) by investing Activities** |  |  |  |  |  |  |  |  |  |  |
| Assets (PPE) purchased | (22,150) | - | - | - | - | (5,000) | - | - | - | - |
| Intangible assets acquired | (1,800) | - | - | - | - | - | - | - | - | - |
| Net cash provided/(used) by investing activities | (23,950) | - | - | - | - | (5,000) | - | - | - | - |
|  |  |  |  |  |  |  |  |  |  |  |
| **Cash provided/(used) by financing Activities** |  |  |  |  |  |  |  |  |  |  |
| Proceed on shares allotment | 10,000 | - | - | - | - | - | - | - | - | - |
| Long Term Borrowing | 20,000 |  |  |  |  |  |  |  |  |  |
| Loans repaid | (5,396) | (6,580) | (8,024) | - | - | - | - | - | - | - |
| Net cash provided/(used) by financing activities | 24,604 | (6,580) | (8,024) | - | - | - | - | - | - | - |
| **Net changes in cash and cash equivalent** | 5,742 | 1,406 | 1,306 | 10,086 | 10,115 | 5,393 | 10,780 | 11,087 | 11,411 | 11,740 |
| Cash and cash equivalent at the beginning of the year | - | 5,742 | 7,148 | 8,455 | 18,541 | 28,656 | 34,049 | 44,829 | 55,916 | 67,328 |
| Cash and cash equivalent at the end of the year | **5,742** | **7,148** | **8,455** | **18,541** | **28,656** | **34,049** | **44,829** | **55,916** | **67,328** | **79,067** |

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| IBIAM PHARMACEUTICALS | | |  | | |  | | |  | |  | |  | |  |  |
| **TEN YEARS PROJECTED BALANCE SHEET** | |  |  |  |  | |  |  | |  | |  | |  |
| For the periods | YR 1 | YR 2 | YR 3 | YR 4 | YR 5 | | YR 6 | YR 7 | | YR 8 | | YR 9 | | YR 10 |
|  | **N'000** | **N'000** | **N'000** | **N'000** | **N'000** | | **N'000** | **N'000** | | **N'000** | | **N'000** | | **N'000** |
| **Assets** |  |  |  |  |  | |  |  | |  | |  | |  |
| **Non-Current Assets** |  |  |  |  |  | |  |  | |  | |  | |  |
| Fixed Assets (PPE) | 20,253 | 18,356 | 16,459 | 14,562 | 12,665 | | 15,268 | 12,871 | | 10,474 | | 8,077 | | 5,680 |
| Intangible Assets | 1,440 | 1,080 | 720 | 360 | - | | - | - | | - | | - | | - |
|  | **21,693** | **19,436** | **17,179** | **14,922** | **12,665** | | **15,268** | **12,871** | | **10,474** | | **8,077** | | **5,680** |
| **Current Assets** |  |  |  |  |  | |  |  | |  | |  | |  |
| Trade Receivable | 3,000 | 3,060 | 3,121 | 3,184 | 3,248 | | 3,313 | 3,379 | | 3,446 | | 3,515 | | 3,586 |
| Cash and Bank Balance | 5,742 | 7,148 | 8,455 | 18,541 | 28,656 | | 34,049 | 44,829 | | 55,916 | | 67,328 | | 79,067 |
|  | 8,742 | 10,208 | 11,576 | 21,725 | 31,904 | | 37,362 | 48,208 | | 59,362 | | 70,843 | | 82,653 |
|  |  |  |  |  |  | |  |  | |  | |  | |  |
| **Total Assets** | **30,435** | **29,644** | **28,755** | **36,647** | **44,569** | | **52,630** | **61,079** | | **69,836** | | **78,920** | | **88,333** |
| **Equity and Liabilities** |  |  |  |  |  | |  |  | |  | |  | |  |
| **Equity** |  |  |  |  |  | |  |  | |  | |  | |  |
| Share Capital | 10,000 | 10,000 | 10,000 | 10,000 | 10,000 | | 10,000 | 10,000 | | 10,000 | | 10,000 | | 10,000 |
| Retained Earning | 2,123 | 4,867 | 8,287 | 12,186 | 16,239 | | 20,389 | 24,709 | | 29,193 | | 33,845 | | 38,667 |
|  | **12,123** | **14,867** | **18,287** | **22,186** | **26,239** | | **30,389** | **34,709** | | **39,193** | | **43,845** | | **48,667** |
| **Non-Current Liabilities** |  |  |  |  |  | |  |  | |  | |  | |  |
| Loan due after 1 year |  | 8,024 |  |  |  | |  |  | |  | |  | |  |
|  |  | 8,024 |  |  |  | |  |  | |  | |  | |  |
| **Current Liabilities** |  |  |  |  |  | |  |  | |  | |  | |  |
| Company tax provision | 1,749 | 2,262 | 2,819 | 3,213 | 3,340 | | 3,420 | 3,561 | | 3,696 | | 3,834 | | 3,974 |
| Projected Dividend | 1,959 | 4,492 | 7,649 | 11,248 | 14,989 | | 18,820 | 22,809 | | 26,948 | | 31,241 | | 35,692 |
| Loan due within 1 year | 14,604 |  |  |  |  | |  |  | |  | |  | |  |
|  | 18,313 | 6,754 | 10,468 | 14,461 | 18,330 | | 22,241 | 26,369 | | 30,643 | | 35,075 | | 39,666 |
|  |  |  |  |  |  | |  |  | |  | |  | |  |
| **Total Liabilities** | **18,313** | **14,778** | **10,468** | **14,461** | **18,330** | | **22,241** | **26,369** | | **30,643** | | **35,075** | | **39,666** |
|  |  |  |  |  |  | |  |  | |  | |  | |  |
| **Total Equity & Liabilities** | **30,435** | **29,644** | **28,755** | **36,647** | **44,568** | | **52,630** | **61,079** | | **69,837** | | **78,920** | | **88,333** |

1. Financial Analysis
2. The unit cost of production is estimated at N130 and the following are the various breakdown of all cost factors;

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | | | | |
|  |  |  |  |  |
| **MATERIALS** |  |  |  |  |
| **Types** | **Measure Per Unit** | **Unit Measure** | **Amount Per Unit Measure** | **Unit Cost** |
|  |  | **Cm** | **Naira** | **Naira** |
| Polypropylene nonwoven fabric | 175 | cm2 | 0.04 | 7.35 |
| Polypropylene nonwoven Felt fabric | 175 | cm2 | 0.04 | 7.35 |
| Light coloured Stitching thread | 110 | Cm | 0.06 | 6.38 |
| Cotton Twill Tape | 24 | Cm | 0.22 | 5.33 |
| 0.4mm aluminium Nose Strips | 9 | Cm | 0.92 | 8.28 |
| 3mm Elastic band | 60 | Cm | 0.40 | 24.00 |
| Total Unit Cost |  |  |  | **58.69** |
|  |  |  |  |  |
|  |  |  |  |  |
| **LABOUR** |  |  |  |  |
| **Labour Category** | **No. of req** | **Unit Per Minute** | **Rate per Hour** | **Rate Per Unit** |
|  |  |  | **Naira** | **Naira** |
| Production Engineer | 1 | 1 | 480.00 | 8.00 |
| Machine Operator | 1 | 1 | 420.00 | 7.00 |
| Assistant Machine Operator | 1 | 1 | 360.00 | 6.00 |
| Packaging Attendant | 1 | 1 | 360.00 | 6.00 |
| **Labour Rate (per hour/per unit** |  |  | **1620.00** | **27.00** |
|  |  |  |  |  |
| **DIRECT OVERHEAD** |  |  |  |  |
| Item Description | **Measure Per Unit** | **Unit Measure** | **Amount Per Unit Measure** | **Unit Cost** |
|  |  |  | **Naira** | **Naira** |
| Packaging materials |  | cartons |  | 10.42 |
| Electricity - external | 1 | kilowatts | 5.55 | 5.55 |
| Diesel for GenSet | 0.08 | litres | 105.42 | 8.75 |
| Total |  |  |  | **24.72** |
|  |  |  |  |  |
| Direct/(Variable Unit Cost |  |  |  | **110.41** |
|  |  |  |  |  |
|  |  |  |  |  |
| **PRODUCTION FIXED OVERHEAD** | |  |  |  |
| **Item Description** | **Measure Per Unit** | **Unit Measure** | **Amount Per Unit Measure** | **Unit Cost** |
|  |  |  | **Naira** | **Naira** |
| PRODUCTION FIXED OVERHEAD |  |  |  |  |
| Waste Management | FIXED |  |  | 2.78 |
| Lubricant & consumables | FIXED |  |  | 1.84 |
| Insurance | FIXED |  |  | 1.27 |
| Amortization | FIXED |  |  | 2.50 |
| Depreciation | FIXED |  |  | 11.20 |
| Total |  |  |  | **19.59** |
|  |  |  |  |  |
| **TOTAL UNIT COST OF PRODUCTION** | |  |  | **130.00** |

1. **Break-even point analysis**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **BREAK-EVEN POINT IN UNITS** | | | | | | | | | | |
| YEAR | TOTAL FIXED COST PER YEAR | | SELLING PRICE PER UNIT | | VARIABLE COST PER UNIT | | CONTRIBUTION PER UNIT | | BREAK EVEN POINT (UNITS) | | |
| 1 | 14,269,620 | | 250 | | 110 | | 140 | | **102,225** | | |
| 2 | 12,964,641 | | 250 | | 110 | | 140 | | **92,877** | | |
| 3 | 11,517,840 | | 250 | | 110 | | 140 | | **82,512** | | |
| 4 | 10,622,243 | | 250 | | 110 | | 140 | | **76,096** | | |
| 5 | 10,626,085 | | 250 | | 110 | | 140 | | **76,124** | | |
| 6 | 10,794,809 | | 250 | | 110 | | 140 | | **77,332** | | |
| 7 | 10,770,823 | | 250 | | 110 | | 140 | | **77,160** | | |
| 8 | 10,773,440 | | 250 | | 110 | | 140 | | **77,179** | | |
| 9 | 10,776,065 | | 250 | | 110 | | 140 | | **77,198** | | |
| 10 | 10,778,746 | | 250 | | 110 | | 140 | | **77,217** | | |
| **TOTAL IN TEN YEARS** | **113,894,313** | | **250** | | **110.41** | | **139.59** | | **815,920** | | |
|  |  | |  | |  | |  | |  | | |
|  |  | |  | |  | |  | |  | | |
|  | | **BREAK-EVEN POINT IN NAIRA SALES VOLUME** | | | | | | | | | |
| YEAR | | TOTAL FIXED COST PER YEAR | | ANNUAL SALES | | TOTAL VARIABLE COSTS PER YEAR | | CONTRIBUTION MARGIN PER YEAR | | BREAK-EVEN POINT IN NAIRA SALES PER YEAR | |
| 1 | | 14,269,620 | | 36,000,000 | | 15,898,832 | | 20,101,168 | | **25,556,043** | |
| 2 | | 12,964,641 | | 36,720,000 | | 16,216,809 | | 20,503,191 | | **23,218,903** | |
| 3 | | 11,517,840 | | 37,455,000 | | 16,541,145 | | 20,913,855 | | **20,627,508** | |
| 4 | | 10,622,243 | | 38,205,000 | | 16,871,968 | | 21,333,032 | | **19,023,212** | |
| 5 | | 10,626,085 | | 38,970,000 | | 17,209,407 | | 21,760,593 | | **19,029,745** | |
| 6 | | 10,794,809 | | 39,750,000 | | 17,553,595 | | 22,196,405 | | **19,331,675** | |
| 7 | | 10,770,823 | | 40,545,000 | | 17,904,667 | | 22,640,333 | | **19,288,719** | |
| 8 | | 10,773,440 | | 41,355,000 | | 18,262,760 | | 23,092,240 | | **19,293,738** | |
| 9 | | 10,776,065 | | 42,183,000 | | 18,628,016 | | 23,554,984 | | **19,298,114** | |
| 10 | | 10,778,746 | | 43,026,000 | | 19,000,576 | | 24,025,424 | | **19,303,149** | |
| **TOTAL IN TEN YEARS** | | 113,894,313 | | 394,209,000 | | 174,087,775 | | 220,121,225 | | **203,970,805** | |

1. Capital recovery and earnings showing the cash payoff period, rate of return and discounted cash flow rate of return.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | **PAYBACK PERIOD** | | | | | |  | |
|  | | |  | | |  |  | |  | |
|  | | |  | | |  |  | |  | |
| YEAR | | | NATURE OF CASH FLOW | | | Annual Net Cash flows | Cumulative Cash flows | |  | |
|  | | |  | | | **N'000** | **N'000** | |  | |
| 0 | | | Initial Investment | | | (30,000.00) | (30,000.00) | |  | |
| 1 | | |  | | | 11,611.60 | (18,388.40) | |  | |
| 2 | | |  | | | 10,385.26 | (8,003.14) | |  | |
| 3 | | |  | | | 10,287.01 | 2,283.86 | |  | |
| 4 | | |  | | | 10,148.98 | 12,432.85 | |  | |
| 5 | | |  | | | 10,178.27 | 22,611.12 | |  | |
| 6 | | |  | | | 10,458.24 | 33,069.36 | |  | |
| 7 | | |  | | | 10,846.03 | 43,915.39 | |  | |
| 8 | | |  | | | 11,154.95 | 55,070.34 | |  | |
| 9 | | |  | | | 11,480.28 | 66,550.62 | |  | |
| 10 | | |  | | | 11,810.00 | 78,360.62 | |  | |
|  | | |  | | |  |  | |  | |
|  | | | **Pay Period =** | | | A+(B/C) |  | |  | |
|  | | |  | | |  |  | |  | |
|  | | | A = | | | 2 |  | |  | |
|  | | | B = | | | 8,003.14 |  | |  | |
|  | | | C = | | | 10,287.01 |  | |  | |
|  | | | **Payback (Pay-out) period** | | | 2.78 |  | |  | |
|  | | |  | | | 2.8 years |  | |  | |
|  | | |  | | | 2year 9 months | | |  | |
|  | | | Approximately | | | 3years |  | |  | |
|  | | | A, is the last period number with a negative cumulative | | | | | |  | |
|  | | | cash flow, | | |  |  | |  | |
|  | | | B is the absolute value (i.e. value without negative sign) of the | | | | | |  | |
|  | | | of the cumulative cash flow at the end of period A. | | | | | |  | |
|  | | | C is the total cash flow during the period flowing period A. | | | | | |  | |
|  | | |  | | |  |  | |  | |
|  | | |  | | | |  | |  | |
|  | **DERIVATION OF NET CASH FLOWS** | | | | | | | |  | | | |
|  | Years | |  | Cash flows | | | Tax Paid | | Net Cash flow | |  |  | |
|  | 1 | |  | 11,611.60 | | | - | | 11,611.60 | |  |  | |
|  | 2 | |  | 12,134.72 | | | (1,749.46) | | 10,385.26 | |  |  | |
|  | 3 | |  | 12,548.57 | | | (2,261.57) | | 10,287.01 | |  |  | |
|  | 4 | |  | 12,967.79 | | | (2,818.80) | | 10,148.98 | |  |  | |
|  | 5 | |  | 13,391.51 | | | (3,213.24) | | 10,178.27 | |  |  | |
|  | 6 | |  | 13,798.60 | | | (3,340.35) | | 10,458.24 | |  |  | |
|  | 7 | |  | 14,266.51 | | | (3,420.48) | | 10,846.03 | |  |  | |
|  | 8 | |  | 14,715.80 | | | (3,560.85) | | 11,154.95 | |  |  | |
|  | 9 | |  | 15,175.92 | | | (3,695.64) | | 11,480.28 | |  |  | |
|  | 10 | |  | 15,643.68 | | | (3,833.68) | | 11,810.00 | |  |  | |
|  |  | |  | 136,254.69 | | | (27,894.07) | | 108,360.62 | |  |  | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **RATE OF RETURN** | | | | | |
|  |  |  |  |  |  |
| YEAR | NATURE OF CASH FLOW | Gross Cash flow | Tax Paid in the Year | Annual Net Cash flows | Annual Rate of Return |
|  |  | **N'000** | **N'000** | **N'000** | **N'000** |
| 0 | Initial Investment | **30,000.00** |  |  |  |
|  |  |  |  |  |  |
| 1 |  | 11,611.60 | - | 11,611.60 | 38.71% |
| 2 |  | 12,134.72 | (1,749.46) | 10,385.26 | 34.62% |
| 3 |  | 12,548.57 | (2,261.57) | 10,287.01 | 34.29% |
| 4 |  | 12,967.79 | (2,818.80) | 10,148.98 | 33.83% |
| 5 |  | 13,391.51 | (3,213.24) | 10,178.27 | 33.93% |
| 6 |  | 13,798.60 | (3,340.35) | 10,458.24 | 34.86% |
| 7 |  | 14,266.51 | (3,420.48) | 10,846.03 | 36.15% |
| 8 |  | 14,715.80 | (3,560.85) | 11,154.95 | 37.18% |
| 9 |  | 15,175.92 | (3,695.64) | 11,480.28 | 38.27% |
| 10 |  | 15,643.68 | (3,833.68) | 11,810.00 | 39.37% |
|  |  |  |  |  |  |
|  | **Simple Average Rate Return** |  |  |  | **36.12%** |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **DISCOUNTED CASH FLOW** | | | | |
|  | DISCOUNT RATE |  |  |  | 25.00% |
|  |  |  |  |  |  |
| YEAR | NATURE OF CASH FLOW | Annual Net Cash flows | Present Value Factor @ 25% | Cash Out flow | Present Value @ 25% |
|  |  | **N'000** |  | **N'000** | **N'000** |
| 0 | Initial Investment | **(30,000.00)** | 1.000 | **(30,000.00)** |  |
| 1 |  | 11,611.60 | 0.8000 |  | 9,289.28 |
| 2 |  | 10,385.26 | 0.6400 |  | 6,646.56 |
| 3 |  | 10,287.01 | 0.5120 |  | 5,266.95 |
| 4 |  | 10,148.98 | 0.4096 |  | 4,157.02 |
| 5 |  | 10,178.27 | 0.3277 |  | 3,335.22 |
| 6 |  | 10,458.24 | 0.2621 |  | 2,741.57 |
| 7 |  | 10,846.03 | 0.2097 |  | 2,274.58 |
| 8 |  | 11,154.95 | 0.1678 |  | 1,871.49 |
| 9 |  | 11,480.28 | 0.1342 |  | 1,540.86 |
| 10 |  | 11,810.00 | 0.1074 |  | 1,268.09 |
|  |  |  |  | (30,000.00) | 38,391.6110 |
|  | **Net Present Value** |  |  |  | **8,391.6110** |
|  |  |  |  |  |  |
|  | Discounted Cash Flow Rate |  |  |  | **27.97%** |
|  |  |  |  |  |  |
|  | Internal Rate of Return |  |  |  | **34%** |

1. Others - **FINANCIAL RATIOS**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | YR 1 | YR 2 | YR 3 | YR 4 | YR 5 | YR 6 | YR 7 | YR 8 | YR 9 | YR 10 |
| **PROFITABILITY** |  |  |  |  |  |  |  |  |  |  |
| Gross (Profit) Margin; Gross Profit/Sales (%) | 48.0% | 48.2% | 48.3% | 48.5% | 48.6% | 48.6% | 48.7% | 48.9% | 49.0% | 49.1% |
| Profit before tax (PBT)/Sales (%) | 16.2% | 20.5% | 25.1% | 28.0% | 28.6% | 28.7% | 29.3% | 29.8% | 30.3% | 30.8% |
| Return on Sales (PAT/Sales) (%) | 11.3% | 14.4% | 17.6% | 19.6% | 20.0% | 20.1% | 20.5% | 20.9% | 21.2% | 21.6% |
| Return on equity (ROE) | 33.7% | 35.5% | 36.0% | 33.8% | 29.7% | 26.3% | 23.9% | 22.0% | 20.4% | 19.1% |
| Return on Assets (ROA) | 19.2% | 25.4% | 32.7% | 29.2% | 25.0% | 21.7% | 19.4% | 17.6% | 16.2% | 15.0% |
| Return on Capital Employed (ROCE) | 48.1% | 32.9% | 51.4% | 48.3% | 42.4% | 37.5% | 34.2% | 31.4% | 29.1% | 27.2% |
|  |  |  |  |  |  |  |  |  |  |  |
| **OPERATING EFFICIENCY** |  |  |  |  |  |  |  |  |  |  |
| Receivable Turnover Ratio | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| Receivable Days | 30.00 | 30.00 | 30.00 | 30.00 | 30.00 | 30.00 | 30.00 | 30.00 | 30.00 | 30.00 |
| Asset Turnover (Sales/Total Assets) | 1.18 | 1.24 | 1.30 | 1.04 | 0.87 | 0.76 | 0.66 | 0.59 | 0.53 | 0.49 |
| Funding Gap (Receivables) | 30.00 | 30.00 | 30.00 | 30.00 | 30.00 | 30.00 | 30.00 | 30.00 | 30.00 | 30.00 |
|  |  |  |  |  |  |  |  |  |  |  |
| **LIQUIDITY RATIO** |  |  |  |  |  |  |  |  |  |  |
| Current Ratio | 0.48 | 1.51 | 1.11 | 1.50 | 1.74 | 1.68 | 1.83 | 1.94 | 2.02 | 2.08 |
| Quick Ratio (Acid Test) | 0.48 | 1.51 | 1.11 | 1.50 | 1.74 | 1.68 | 1.83 | 1.94 | 2.02 | 2.08 |
|  |  |  |  |  |  |  |  |  |  |  |
| **LEVERAGE RATIO** |  |  |  |  |  |  |  |  |  |  |
| Total Debt to Total Capitalization | 54.6% | 35.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Long term Debt to Total Capitalization | 0.0% | 35.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Total Debt to Equity | 120.5% | 54.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Asset Leverage (Total Assets/Equity) | 251.1% | 199.4% | 157.2% | 165.2% | 169.9% | 173.2% | 176.0% | 178.2% | 180.0% | 181.5% |
|  |  |  |  |  |  |  |  |  |  |  |
| **COVERAGE RATIO** |  |  |  |  |  |  |  |  |  |  |
| Times Interest Earned (Solvency) | 2.66 | 4.22 | 11.49 |  |  |  |  |  |  |  |
| Cash Coverage Ratio | 2.74 | 4.34 | 11.81 |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
| **GROWTH** |  |  |  |  |  |  |  |  |  |  |
| Sales Growth Rate |  | 2.0% | 2.0% | 2.0% | 2.0% | 2.0% | 2.0% | 2.0% | 2.0% | 2.0% |
| Gross Profit Growth Rate |  | 2.3% | 2.3% | 2.3% | 2.3% | 2.0% | 2.3% | 2.3% | 2.3% | 2.3% |
| Net PBT Growth Rate |  | 29.3% | 24.6% | 14.0% | 4.0% | 2.4% | 4.1% | 3.8% | 3.7% | 3.7% |