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MATRIC NUMBER: 15/ ENG06/ 035

DEPARTMENT: MECHANICAL ENGINEERING

COURSE TITLE AND CODE: TECHNOLOGICAL POLICY AND
PLANING (ENG 582
)

ASSIGNMENT 1: FEASIBILITY STUDY ON THE SET UP OF
VENTILATOR PRODUCTION FIRM FOR THE USE WITHIN THE
ABUAD COMMUNITY

I. SUMMARY OF THE PROJECT

A. Name of the firm: ELIZABETH Healthcare

B. Location: KM 64, Old Lagos-Ikorodu Road, Sagamu, Ogun State.

C. Project Description:

This project is aimed to set-up within in Lagos, a ventilator production firm in order to ease the urgent need for ventilators and to cut all associated cost that comes with the purchase of ventilators produced by foreign companies.

A ventilator (also Ventilators are sometimes called "respirators") is a machine that provides mechanical ventilation by moving breathable air into and out of the lungs, which deliver breaths to a patient who is physically unable to breathe, or breathing insufficiently. In its simplest form, a modern positive pressure ventilator consists of a compressible air reservoir or turbine, air and oxygen supplies, a set of valves and tubes, and a disposable or reusable "patient circuit". The air reservoir is pneumatically compressed several times a minute to deliver room-air, or in most cases, an air/oxygen mixture to the patient. Ventilators may also be equipped with monitoring and alarm systems for patient-related parameters (e.g. pressure, volume, and flow) and ventilator function (e.g. air leakage, power failure, mechanical failure), backup batteries, oxygen tanks, and remote control.

The need to accomplish this project is of many importance and benefits as there is a mass flow of engineering students which are always in need to practice the theoretical knowledge they have learnt during their course of study and as such the cost incurred from the purchases are always on a rise and also the demand of ventilators is presently higher than the supply since, the cases of COVID-19 is increasing daily. These problems can be potentially solved if Elizabeth healthcare undertakes this project in Nigeria. Nigeria can also make money if production is on the high scale because it would be exported to other countries and thus increasing our GDP.

D. Assumptions:

Market Projection

It is projected that the demand for ventilators during this pandemic would be on a rise as the demand outweighs the supply and hence there is a need to close the gap by producing more ventilators.

E. Market Share

Worldwide, there is an increase in market share as the demand for ventilators grows yearly due to various factors such as the increase in number of surgical procedures across the globe along with the surge in the number of cases of several chronic and respiratory diseases. Hence increasing the market revenue and shares of major competitors. Rival companies keep amplifying the production of their products and even though they still struggle to meet up with the required demands and as a result there is more than enough demand to accommodate a new competitor like Elizabeth. Market shares are fluctuating and are not being dominated by a particular firm. Also, shares are being bought especially in the medical sector as that does not come as a surprise because investments are being made in companies that are believed to have the capacity of finding the cure for the corona virus hence securing a bigger Rate on investment (ROI).

F. Prices

Due to the recent outbreak of the covid-19 virus there is a surge in the demand for ventilators, but this has been made difficult as the prices have increased in order to reduce the order.

G. Investment Costs

The investment cost such as construction cost, cost of land, equipment, processes and so on has been calculated and the project can be undertaken

H. Source of Funding

- I. Large donation from friends and associates.
- II. Loans from small banks like (piggyvest, cowryrise)
- III. Investors
- IV. Initial capital

I. Summary of Findings and conclusion

1. Market feasibility

Since investors are mostly attracted to businesses with high ROI and lower risk this business fits the requirement as there is a higher demand for the product than ever and hence Elizabeth

can venture into this industry and thrive as there is excess demand over supply and there shall be competitive market position to obtain.

2. Technical feasibility

After much research it has been verified that the project technical data has been sourced for and a large quantity of ventilators can be produced at a minimum cost. The cost incurred from building the facilities, buying and renting some equipment, studying the process involved in the ventilator manufacture, observing the method and channels of distribution and quality of the product has been shouldered and can be financed adequately.

3. Financial feasibility

This is also feasible as the initial capital requirements, sources of financing, the total project cost and the financial statement has all been guaranteed. Also, the financing of the management team and qualifications has been looked into while at the same time offering attractive salaries as the rival competitors. In conclusion, the profit to be generated from the business outweighs the initial capital investment.

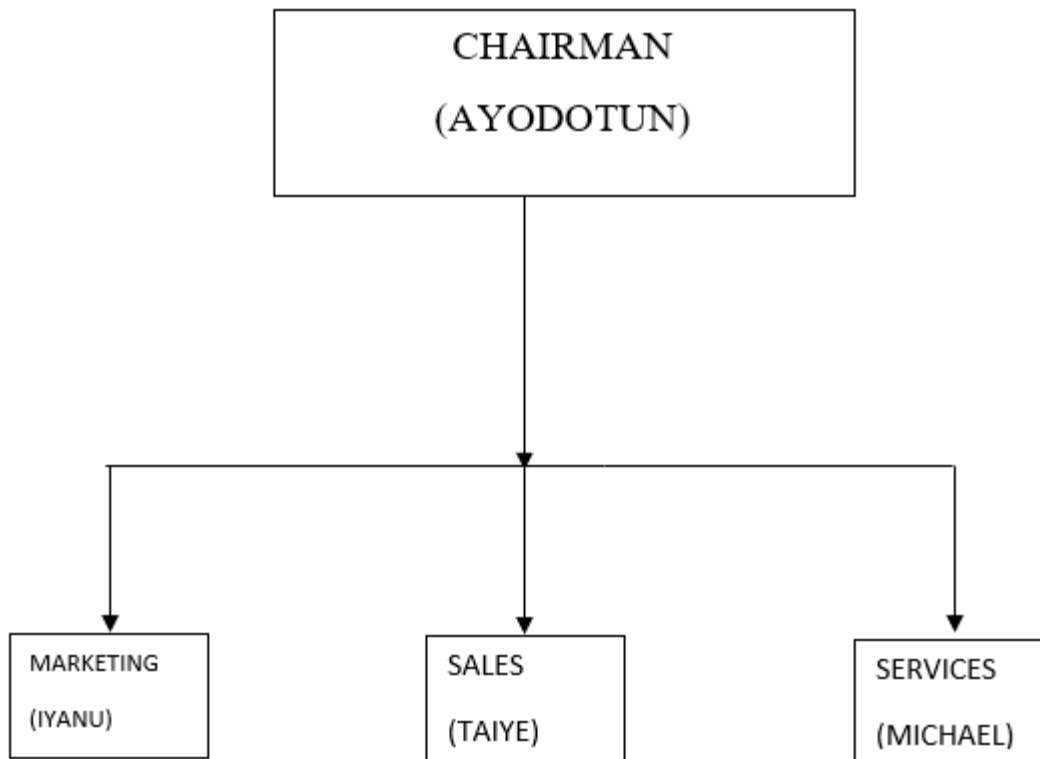
II. GENERAL INFORMATION

A. Management of the Project Pre-operating period

It is necessary to fulfil the pre operating conditions necessary to make a plant fully functional before even looking at its processes. For the success of a company it is very vital to includes planning from little details to important stages. One must have a good decision-making skill to determine if the scheduled activities to be carried out are feasible.

A group of engineers have been hired to determine the best and fastest course of action in order to complete the necessary facilities, an accounting firm Azcentral limited has been hired to make sure the books are balanced as this ensure that the adequate amount of funds go to the required department. The marketing team in charge of running ads are also in place in order to boost sales once the operation is fully functional, Halogen Security Company has been hired for protection against street hoodlums while construction is going on.

This organization is in form of a single proprietorship business organization



B. Roles

1. Chairman:

He is in-charge of the overall company and his decision is final since he is solely in charge of the decision making.

2. Marketing:

They are in charge of market prediction and management of all advertisement related to the ventilators as they seek to push the product aggressively into the market. Price variation, demand and supply forecast, market analysis, advertisement are being controlled by the marketing team with the aim of maximizing sale and profit.

3. Sale:

They are in charge of all the sales and they manage all the distribution channels. They ensure that the product is of standard quality through good quality control procedures. They control the price, demand and supply of the hand glove as their goal is to achieve maximum profit with minimum cost.

A. Services:

They are in charge of goods, production and distribution and they strive to ensure that the customers stay happy at all times. They are in charge of producing high quality product while keeping good customer relations.

C. Labour

The labourers hired are highly skilled in the art of production which most finishing their education at a tertiary level. The recruitment program goes on every 2 years and trainees are recruited for 6 months while being trained in various field of application. The company has a good labour compensation, such as paying for overtime and health benefits.

D. Firms to be hired

- i. AIICO insurance
- ii. Azcentral limited
- iii. Halogen security company
- iv. Andela

E. Status and timetable of project

The project is in progress as production is growing strong and workers work around the clock 8am-5pm. The tapping period and production of rubber is at its peak from September to January and that's when production is at its highest.

III.MARKET DEMANDS A.

Market Study

1. Demand
 - a) The use of ventilators has been on the rise for the last 10 years and the major consumers are Hospitals but they are also used in home care,.

- b) For the next 10 years ventilators consumption is projected to be on a rise as the valuation of the industry will exceed 2 billion USD by 2030 and this is due to the increase in the number of respiratory problems across the globe, the rise in research and development activities by major competitors to manufacture high quality ventilators for increase in the ageing population as they are more susceptible to chronic diseases.

2. Supply

- a) The supply for the last 10 years has been on the rise due to the factors listed above

Ventilators are imported and sold to major hospitals in Nigeria only a few of them can afford it because of the high cost.

For Elizabeth producing ventilators;

- a) The supply is set to be increasing gradually as chronic respiratory diseases is increasing in Nigeria
- b) The factors affecting the production would be low power supply since most production firms relies on diesel generators. Also, unstable government policies.

Competitive position considering imported and/or substitute products

The selling price would be around ₦ 2,000,000 considering the fact that import tariff would affect those importing the ventilators, which would make most people buy from Elizabeth and we are also considering flexible mode of payment for organizations who don't have to money once.

B. Marketing Program

1. Description of the present marketing practice and competitors

Business to business marketing strategy is being used. Marketing practices and strategies have been put in place in order to be ahead of the market and such includes; Paid advertising, relationship marketing, internet marketing, transactional marketing.

The competition is high as every rival firm are striving to be the best but with the development of an R and D department and the creation and improvement of our products our firm is set to be a driving force in the industry.

2. The sales and marketing teams are in charge of the selling organization, terms of sale, channels of distribution, location of sales outlets, transportation and warehousing arrangements and their corresponding costs. E-commerce medium would also be used thus, reducing cost. Location of sales are in at least a state in each geo political zone in Nigeria and delivery would be free. Warehousing cost vary depends on the location.
3. Promoting and advertising plan, including costs.

The marketing team is in charge of this aspect as they are driven towards increasing brand exposure and sales through targeted advertisement which costs about N1,000,000 annually. Promotions are carried out with discounts.

FINANCIAL FEASIBILITY:

- A. Total project cost: it was estimated to cost about ₦1,500,000,000. (1.5billion)
- B. Initial capital requirements: more that 75% of the money was from investors while the rest was bank loan.
- C. Sources of funding
 - I. Large donation from friends and associates.
 - II. Loans from small banks like (piggyvest, cowryrise)
 - III. Investors
 - IV. Initial capital
- D. Financial statement: The business is looking good and it is expected to double it's investment in fourteen years

