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DEPARTMENT: MECHNICAL ENGINEERING

COURSE: TECHNOLOGICAL POLICY AND PLANNING

ASSIGNMENT

FEASIBLITY STUDY ON THE SET UP OF A FACE MASK PRODUCTION FIRM FOR USE AT THE ABUAD COMMUNITY

1. **SUMMARY OF THE PROJECT**

Protection Tech Production LLC is a firm that produces face mask which is located at 3 Negroe Crescent Maitama, Abuja.

This project is aimed to set-up within the ABUAD community a face mask production firm in order to stop the never ending need for face masks and to cut all associated cost that comes with the purchase of face masks being produced by other companies.

The production of face masks within the school environment will help the students and also the health care workers (doctors, nurses and supporting staffs) at the ABUAD Hospital to have quick access to the face masks whenever they are in need of it rather than contacting external producers to bring the products to the school which can waste precious time and amount of money. The university can make the face masks readily available for the students and health care workers at the Hospital.

We have carried out lots of research work and we have found out that there are other face mask production companies around the school area. Our company is very easy to locate and we already have wholesale distributors at Ado-ekiti ready for distribution.

We know how to keep our customers very comfortable knowing that there is 100% transparency between the customers and the company. Our customers comfort is our top priority.

**ASSUMPTIONS**

Market Projection

During this pandemic it has been projected that the demand for face masks would be on a rise as the demand outweighs the supply and hence there is a need to close the gap by producing more face masks.

Prices

Due to the recent outbreak of the covid-19 virus there is a surge in the demand for face mask for the protection of medical practitioners but this has been made difficult as the prices of non-woven fabric has increased due to its increase in demand and hence affecting the prices of hand sanitizers.

Source of Funding

1. Large donation from friends and associates.
2. Loans from banks with attractive interest rates.
3. Revenue from Abuad tuition fee
4. Investors
5. Initial capital

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

1. Technical feasibility

After much research it has been verified that the project technical data has been sourced for and a large quantity of face masks 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 glove manufacture, observing the method and channels of distribution and quality of the product has been shouldered and can be financed adequately.

1. 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.

Management of the Project

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 preparation is very vital as it includes planning from little details to important stages. One must have a good decision making skills 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 Haywire limited has been hired to make sure the check books are balanced as this ensure that the adequate amount of funds go to the required department.

**Roles:**

Members

A member is an individual who has an ownership stake in the company. A more detailed description of the roles of members is found in the company operating agreement that lays out how the company will operate, obligations of members and managers, and the distribution of profits. A managing member is a member appointed to run the company on a daily basis. Unlike a corporation, stock in the company is not issued to outside investors and a member need not be an investor in the company to have a controlling interest. Ownership of the company is expressed either by ownership percentage or membership units, and all members have the right to vote on important matters and share in any profits the company may create.

Managers

A manager of a company is not a member, but instead an individual who plays a role in the operation of the business on a daily basis. There are generally two instances where managers play an important part in the management of a company One is the case where the members prefer to act as passive investors and remain detached from day-to-day operations. The other is when requires expertise beyond the scope of the members to run the business entirely. members oversee the business on a daily basis and merely delegate responsibilities to ensure that the business is more competently managed. Often, but not always, states may require that a company document whether they are member-managed or manager-managed in the articles of incorporation.

Registered Agents:

registered agent is usually only an individual registered in a state in which the company wishes to file articles of incorporation with the authority to receive official state communications on behalf of the company Registered agents rarely have any role within an company beyond this responsibility.

Client Service Executive

Welcomes guests and clients by greeting them in person or on the telephone; answering or directing inquiries. Ensures that all contacts with clients (e-mail, walk-In center, SMS or phone) provides the client with a personalized customer service experience of the highest level

Through interaction with clients on the phone, uses every opportunity to build client’s interest in the company’s products and services

Production Workers/Machine Operators:

Operates machines and Assists in packaging and loading hand sanitizers and related products into distribution trucks

Distribution Truck Drivers

Maintains a logbook of their driving activities to ensure compliance with federal regulations governing the rest and work periods for operators.

**Market Study**

1. Demand:

 The demand for face masks is influenced by several related factors. As the face masks are consumed by surgeons during surgeries, the demand is influenced by the following factors:

i. Prevalence of diseases requiring surgery

ii. Development in health care, hospital facilities and operation theatres.

iii. Medical education and growth of surgeons in society.

The demand goes up when medical facilities, number of surgeons and surgeries taken place show improvement.

The main factors that drive the medical drive market is the growing awareness of health and safety measures that have to be employed in order to stop spread of diseases. Patients and health medics have recognized the increasing need for gloves globally. The healthcare and the medical industry is growing at a fast rate thus increasing the growth of face mask market as it is the staple product required in this industry.

 Face masks may be disposable, but in the operating room they are indispensable. Despite lingering effects of a down economy and declining medical equipment and supply sales, the market for face masks continues to grow. There exists immense opportunities for growth in the global surgical face masks market the fact that dozens of face masks are utilized in a single day in hospitals and laboratorial settings, and the inherent intrinsic indispensability of the product among surgeons, practitioners, and healthcare workers.

2) Supply

a) The supply is set to be increasing gradually as medical surgeries have seen a slight

increase in Nigeria

b) The factors affecting the production would be adverse weather conditions slowing down the production of the fabric industry, unstable government policies and the emergence of deadly viruses would see the supply of the products increase.

B. Marketing Program

1. No pre-existing practice or competitors exist in this space (ABUAD). The company is a pioneer in this field.

2. For ease of access to the face masks, they will be sold and distributed in highly active areas with large number of people.

3. The university will be responsible for sensitizing its students about the use and the need of the face masks.

**TECHNICAL FEASIBILITY**

 A. Product (s)

1. Description of the product including specifications relating to their physical, mechanical and chemical properties.

The face mask is a loose-fitting, disposable device that creates a physical barrier between the mouth and nose of the wearer and potential contaminants in the immediate environment. They are effective barriers for retaining large droplets from the mouth and nose by the wearer in public. They help in reducing the exposure of the wearer’s saliva and respiratory secretions to others.

Physical form

The design of the face mask depends on the mode; usually, the masks are three-ply (three layers). This three-ply material is made of a melt-blown polymer, most commonly polypropylene, placed between non-woven fabrics. The melt-blown material acts as the filter that stops microbes from entering or exiting the mask. Pleats are commonly used to allow the user to expand the mask such that it covers the area from the nose to the chin. The masks are secured to the head with ear loops, head ties, or elastic straps.

2. Uses of the product(s)

i. Used during surgical operations and health care procedures to catch microorganisms in liquid droplet

ii. Used in reducing the risk of infection among health care workers and the community

iii. Used in reducing the exposure of the wearer to to infectious aerosols and airborne diseases

iv. Used in the community for maintaining good hygiene

v. Used in certain areas such as Asia to reduce the rising issue of smog

vi. vi. Also to remind wearers not to touch their mouth, nose which could otherwise transfer bacteria after having touched a contaminated surface

B. Manufacturing Process

1. Description of the process

The production: The 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, either 20 or 25 grams per square meter (gsm) in density. 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 melted plastic onto a conveyor. The material is extruded in a web, in which strands bond with each other as they cool. 25 gsm fabric is made through melt blown technology, which is a similar process where plastic is extruded through a die with hundreds of small nozzles and blown by hot air to become tiny fibers, again cooling and binding on a conveyor. These fibers are less than a micron in diameter. The masks are made up of a multi-layered structure, generally by covering a layer of textile with non-woven bonded fabric on both sides. Non-wovens, which are cheaper to make and cleaner thanks to their disposable nature, are made with three or four layers. These disposable masks are often made with two filter layers effective at filtering out particles such as bacteria above 1 micron. 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 strip, ear loops, and other pieces. Completed masks are then sterilized before being sent out to the factory.

**FINANCIAL FEASIBILITY**

A. Total Project Cost- All items considered and assumptions made.

It has an estimated cost of about 300 million naira

B. Initial Capital Requirements- All items considered and assumptions made. At least half the money was sourced for and the other half contributed by investors after stating the initial capital at hand which was about 90 million naira.

C. Sources of Financing

i. Large donation from friends and associates.

ii. Loans from banks with attractive interest rates.

iii. Revenue from Abuad tuition fee

 iv. Investors

1. Initial capital

D. Financial statement

1. Projected income statements for 10 years

Business has been looking good and it is projected to rise over the next couple of years.