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**DEPARTMENT: MECHANICAL ENGINEERING**

**COURSE TITLE: TECHNOLOGICAL POLICY AND PLANNING**

**COURES CODE: ENG 582**

FEASIBILITY STUDY ON THE SETUP OF A FACEMASK PRODUCTION FROM FOR THE USE OF THE ABUAD COMMUNITY

1. **SUMMARY OF THE PROJECT**
2. Name of the firm: Segun Adedipe Face Mask Production Company
3. Location: Km. 8.5 Afe Babalola way, Ado-Ekiti.
4. Brief description of the Project

Face mask production business is part of the Surgical Apparel Manufacturing industry and players in this industry manufacture sterile surgical apparel such as surgical gowns, drapes, shoe covers and face masks. Surgical apparel is used to reduce the transfer of bacteria from surgical staff to the patient, while also protecting the staff from blood, urine, saline or other chemicals and bodily fluids during surgical procedures.

During this corona virus pandemic, most new entrants into the face mask production line of business are small to medium – sized establishments that cater to the local community. Some of the factors that encourage aspiring entrepreneurs to venture into starting a face mask production company is the fact that the market for face masks and similar products is pretty huge, even though it is seasonal.

Segun Adedipe Face Mask Production Company, LLC is a licensed face mask production company that will be located in Ekiti - Nigeria. We have been able to secure a long – term lease for a facility in a strategic location with an option of renewal on terms and conditions that are favorable to us. The facility has government approval for the kind of production business we want to run and the facility is easily accessible.

Segun Adedipe Face Mask Production Company, LLC is in the Surgical Apparel Manufacturing industry to produce widely accepted face masks such as cloth face masks, medical (non-surgical) masks, surgical masks, and filtering facepiece respirators such as N95 masks and FFP masks.

Beyond producing quality face masks, our customer care is going to be second to none. We know that our customers are the reason why we are in business which is why we will go the extra mile to get them satisfied when they purchase our face masks.

1. Assumptions

Market Projection

It is projected that the demand for face masks 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 gloves.

Prices

Due to the recent outbreak of the covid-19 virus there is a surge in the demand for face masks for the protection of medical practitioners and other citizens.

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.

Source of Funding

1. Generate part of the startup capital from personal savings and sell of stocks
2. Source for soft loans from family members and friends
3. Apply for loan from the Bank
4. Summary of the findings and conclusions regarding the following
5. 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 gloves 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.

1. **GENERAL INFORMATION**
2. Management of Project

Segun Adedipe Face Mask Production Company, LLC is established with the aim of competing favorably with other leading face mask brands in the industry. This is why we will ensure that we put the right structures in place that will support the kind of growth that we have in mind while setting up the business.

We will ensure that we only hire people that are qualified, honest, hardworking, customer centric and are ready to work to help us build a prosperous business that will benefit all the stake holders (the owners, workforce, and customers).

As a matter of fact, profit-sharing arrangement will be made available to all our senior management staff and it will be based on their performance for a period of ten years or more depending how fast we meet our set target. In view of that, we have decided to hire qualified and competent hands to occupy the following positions;

1. Chief Executive Officer – CEO (Owner):
2. Increases management’s effectiveness by recruiting, selecting, orienting, training, coaching, counseling, and disciplining managers; communicating values, strategies, and objectives; assigning accountabilities; planning, monitoring, and appraising job results
3. Responsible for fixing prices and signing business deals
4. Responsible for providing direction for the business
5. Creates, communicates, and implements the organization’s vision, mission, and overall direction – i.e. leading the development and implementation of the overall organization’s strategy.
6. Responsible for signing checks and documents on behalf of the company
7. Evaluates the success of the organization.
8. Factory Manager
9. Responsible for overseeing the smooth running of the face mask production factory
10. Part of the team that determines the types, quantities and quality of face masks that are to be produced.
11. Maps out strategies that will lead to efficiency amongst workers in the plant
12. Responsible for training, evaluation and assessment of factory workers
13. Ensures that the steady flow of both raw materials and other packaging materials to the factory and easy flow of finished products through wholesale distributors to the market
14. Ensures operation of equipment by completing preventive maintenance requirements; calling for repairs.
15. Ensures that the factory meets the expected safety and health standard at all times.
16. Human Resources and Admin Manager
17. Responsible for overseeing the smooth running of HR and administrative tasks for the organization
18. Enhances department and organization reputation by accepting ownership for accomplishing new and different requests; exploring opportunities to add value to job accomplishments.
19. Defines job positions for recruitment and managing interviewing process
20. Carries out staff induction for new team members
21. Responsible for training, evaluation and assessment of employees
22. Oversees the smooth running of the daily office and factory activities.
23. Merchandize Manager
24. Manages vendor relations, market visits, and the ongoing education and development of the organizations’ buying teams
25. Responsible for the purchase of raw materials and packaging materials
26. Responsible for planning sales, monitoring inventory, selecting the merchandise, and writing and pricing orders to vendors
27. Sales and Marketing Manager
28. Manages external research and coordinate all the internal sources of information to retain the organizations’ best customers and attract new ones
29. Models demographic information and analyze the volumes of transactional data generated by customer purchases
30. Identifies, prioritizes, and reaches out to new partners, and business opportunities et al
31. Responsible for supervising implementation, advocate for the customer’s needs, and communicate with clients
32. Documents all customer contact and information
33. Represents the company in strategic meetings
34. Helps to increase sales and growth for the company
35. Accountant/Cashier
36. Responsible for preparing financial reports, budgets, and financial statements for the organization
37. Provides managements with financial analyses, development budgets, and accounting reports
38. Responsible for financial forecasting and risks analysis.
39. Performs cash management, general ledger accounting, and financial reporting
40. Responsible for developing and managing financial systems and policies
41. Responsible for administering payrolls
42. Ensuring compliance with taxation legislation
43. Handles all financial transactions for the organization
44. Serves as internal auditor for the organization
45. Client Service Executive
46. Welcomes guests and clients by greeting them in person or on the telephone; answering or directing inquiries.
47. 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
48. Through interaction with clients on the phone, uses every opportunity to build client’s interest in the company’s products and services
49. Manages administrative duties assigned by the manager in an effective and timely manner
50. Consistently stays abreast of any new information on the company’s products, promotional campaigns etc. to ensure accurate and helpful information is supplied to clients
51. Receives parcels / documents for the company
52. Distributes mails in the organization
53. Handles any other duties as assigned by the line manager
54. Factory Workers/Sewing Machine Operators:
55. Operates machines used in cutting and sewing clothe face masks and surgical face masks and also operate machines used in the production of N95 mask
56. Assists in packaging and loading face masks into distribution trucks
57. Distribution Truck Drivers
58. Assists in loading and unloading face masks meant for distribution
59. Maintains a logbook of their driving activities to ensure compliance with federal regulations governing the rest and work periods for operators.
60. Keeps a record of vehicle inspections and make sure the truck is equipped with safety equipment
61. Assists the transport and logistics manager in planning their route according to a delivery schedule.
62. Local-delivery drivers may be required to sell products to stores and businesses on their route, obtain signatures from recipients and collect cash.
63. Transports finished goods and raw materials over land to and from manufacturing plants or retail and distribution centers
64. Inspects vehicles for mechanical items and safety issues and perform preventative maintenance
65. Comply with truck driving rules and regulations (size, weight, route designations, parking, break periods etc.) as well as with company policies and procedures
66. Collects and verifies delivery instructions
67. Reports defects, accidents or violations
68. Timetable of Project

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| --- | --- |
| MILESTONE | STATUS (Completed/Ongoing) |
| Business Name Availability Check |  |
| Business Registration |  |
| Securing Point of Sales (POS) Machines |  |
| Opening of Corporate Bank Accounts |  |
| Opening Mobile Money Accounts |  |
| Opening Online Payment Platforms |  |
| Application and Obtaining Tax Payer’s ID |  |
| Application for business license and permit |  |
| Purchase of Insurance for the Business |  |
| Leasing of facility and construction of standard face mask production factory |  |
| Conducting Feasibility Studies |  |
| Generating capital from family members and friends |  |
| Applications for Loan from the bank |  |
| Writing of Business Plan |  |
| Drafting of Employee’s Handbook |  |
| Drafting of Contract Documents and other relevant Legal Documents |  |
| Design of the Company’s Logo: Completed |  |
| Printing of Packaging Marketing and Promotional Materials |  |
| Recruitment of employees |  |
| Purchase of the needed sewing machines, cutting machines, furniture, racks, shelves, computers, electronic appliances, office appliances and CCTV |  |
| Creating Official Website for the Company |  |
| Creating Awareness for the business both online and around the community |  |
| Health and Safety and Fire Safety Arrangement (License) |  |
| Establishing business relationship with vendors – wholesalers, raw materials production companies, suppliers and merchants |  |
|  |  |

1. **ECONOMIC ASPECT**
2. Market Study

Demand

The market of disposable face mask is unstoppable. Surgical mask is a product that have demand on every time in the world. In every hospital, surgical mask is used to their procedure. Not only in operation theaters, but also in casualties the doctors and nurses use masks.

Now a days, world is facing a big problem and that is pollution. So, people use masks to prevent pollution. much types of masks are made with cotton cloths. Because it has a merit and that is it can be used for more times after washing.

We know that, while spreading covid-19, many places didn’t have enough masks. We see through social medias that the counties like America didn’t have enough masks for use.

Not only in this situation, but also now onward mask become the part of the daily life of the people. So, there is a chance to enter many people to this sector. Because mask can be sold with a good profit.

The major demanded areas of this business are hospitals, health care centers, companies and production sectors. Like this, this product will be an essential thing in our daily life.

According to the latest trends as released by IBISWorld, their analysts constantly monitor industry impacts of current events in real-time – here is an update of how this industry is likely to be impacted as a result of the global COVID-19 pandemic:

Revenue growth for the Surgical Apparel Manufacturing industry has been adjusted from 1.9 percent to 16.6 percent in 2020 due to rapidly surging demand. Since a huge percentage of face masks are currently manufactured in China, the industry’s purchase costs are expected to fluctuate, leading to unsteady profit margins.

Supply

When it comes to selling different types of face masks, there is indeed a wide range of available customers. In essence, our target market can’t be restricted to just the health care industry, but all those who reside in our target market locations. We are in business to retail our face masks to the following groups of people;

1. Pharmacies and Supermarkets
2. Hotels
3. Hospitals and Medical Facilities
4. Laboratories
5. Corporate Organizations
6. Government Offices
7. Business Premises
8. Laundries and Laundromats
9. Schools
10. Public Facility Operators
11. Everybody in our target market location

Our Competitive Advantage

A quick preview of the Surgical Apparel Manufacturing industry reveals that the market has become much more intensely competitive in recent time. As a matter of fact, you have to be highly creative, customer centric and proactive if you must survive in this industry especially after this current novel corona virus pandemic in the world.

We are aware of the stiff competition and we are prepared to compete favorably with other surgical apparel and face mask production companies in Nigeria.

Part of what is going to count as competitive advantage for Segun Adedipe Face Mask Production Company, LLC is the vast experience of our management team, we have people on board who are highly experienced and understand how to grow business from the scratch to becoming a national phenomenon.

So also, closeness to some of the largest raw materials producers, our large and far reaching national distribution network and of course our excellent customer service culture will definitely count as a strong strength for the business.

Lastly, our employees will be well taken care of, and their welfare package will be among the best within our category in the Surgical Apparel Manufacturing industry, meaning that they will be more than willing to build the business with us and help deliver our set goals and achieve all our aims and objectives. We will also give good working conditions and commissions to freelance sales agents that we will recruit from time to time.

1. Marketing Program

After choosing a location to start Segun Adedipe Face Mask Production Company, LLC and also the types of face mask to produce, we conducted a thorough market survey and feasibility studies in order for us to be able to penetrate the available market in our target market locations.

We have detailed information and data that we were able to utilize to structure our business to attract the number of customers we want to attract per time and also for our products to favorable compete with other leading face mask brands in Nigeria.

We will hire experts who have good understanding of the Surgical Apparel Manufacturing industry to help us develop marketing strategies that will help us achieve our business goal of winning a larger percentage of the available market in Ekiti state and throughout Nigeria.

In summary, Segun Adedipe Face Mask Production Company, LLC will adopt the following sales and marketing approach to sell our face masks;

1. Introduce our face mask brand by sending introductory letters to hospitals, residents, merchants, retailers and other stakeholders in Ekiti State.
2. Engage in roadshow in targeted communities from time to time to sell our products
3. Advertise our products in community –based newspapers, local TV and radio stations
4. List our business and products on newspapers ads (local directories)
5. Leverage on the internet to promote our face mask brands
6. Engage in direct marketing and sales
7. Encourage the use of word of mouth marketing (referrals)

Publicity and Advertising Strategy

Segun Adedipe Face Mask Production Company, LLC has a long – term plan of distributing our face masks in various locations all around Nigeria which is why we will deliberately build our brand to be well accepted first in Ekiti before venturing out.

As a matter of fact, our publicity and advertising strategy is not solely for selling our products but to also effectively communicate our brand. Here are the platforms we intend leveraging on to promote and advertise Segun Adedipe Face Mask Production Company, LLC;

1. Place adverts on both print (community – based newspapers and magazines) and electronic media platforms
2. Sponsor relevant community programs
3. Leverage on the internet and social media platforms like; Instagram, Facebook, twitter, et al to promote our face mask brand
4. Install our Bill Boards on strategic locations all around major cities in Nigeria
5. Engage in roadshow from time to time in targeted communities
6. Distribute our fliers and handbills in target areas
7. Position our Flexi Banners at strategic positions in the location where we intend getting customers to start patronizing our products.
8. Ensure that our products are well branded and that all our staff members wear our branded face mask, customized clothes, and all our official cars and distribution vans are customized and well branded.
9. Projected Sales

Sources of Income

Segun Adedipe Face Mask Production Company, LLC is established with the aim of maximizing profits in the Surgical Apparel Manufacturing industry in Nigeria and we are going to ensure that we do all it takes to generate income from;

Sale of different types of face masks such as cloth face masks, medical (non-surgical) masks, surgical masks, and filtering facepiece respirators such as N95 masks and FFP masks.

Sale of face shields and medical goggles and other types of protective equipment often used together with face masks.

Sales Forecast

When it comes to face mask production, if your products are well – packaged and branded and if your factory is centrally positioned and easily accessible, you will always attract customers cum sales and that will sure translate to increase in revenue.

We are well positioned to take on the available market in Ekiti and every city where our face masks will be sold and we are quite optimistic that we will meet our set target of generating enough income/profits from the first six months of operation and grow the business and our clientele base.

We have been able to critically examine the Surgical Apparel Manufacturing industry; we have analyzed our chances in the industry and we have been able to come up with the following sales forecast.

Below are the sales projections for Segun Adedipe Face Mask Production Company, LLC, it is based on the location of our business and other factors as it relates to small and medium scale face mask production startups in Nigeria;

First Fiscal Year (FY1): ₦60,000,000

Second Fiscal Year (FY2): ₦46,000,000

Third Fiscal Year (FY3): ₦36,000,000

1. **TECHNICAL FEASIBILITY**
2. Product

The surgical face mask is worn by all peoples when the epidemic period and the health care professionals wearing during surgery. That for avoiding to contact bacterial infection from liquid droplets and aerosol.

The era 2020 is an example that to came covid-19 virus. Then the face mask shortage are the big problems to the health department all over the world.

Surgical face mask use as a protective barrier to prevent cross contact from patient and doctors. Also use the protection from air or natural pollution for health.

The materials for surgical face mask as using non-woven fabric and cotton cloths. And those are making two layer and three-layer forms.

1. Manufacturing Process

Two type of production process are mainly using the Production method of Surgical face mask manufacturing business. There are manual production and machinery production.

1. Manual production (simple production)

Stitching machine is used to manual production of pollution protection face mask. Those who know to stitch well using stitching machine. He or she can able to make masks of two layer and three layers in a good system.

Cotton material is used to make masks using stitching machine. Masks can also be produced by cutting cotton material and setting the cloths in layers.

You must use the measurement of 7 inches width and 14 inches length and use two elastic rubbers to lock the mask. The measurement to cut the elastic rubber is 7 inches. After that stitch it in the both side of the masks.

1. Semi-automatic machine

While we considering the machine production, there are two different types of machine productions. They are semi-automatic machine and fully automatic machine.

In the case of semi-automatic machine, the major production is surgical mask.

After setting layers and loop you can able to produce almost 1000 and 2000 pieces automatically within one hour.

But an important demerit of this machine is, due to semi-automatic system, you must stitch the elastic rubbers separately. But the production capacity is very high and you can able to take a huge production in a single day itself.

When you use semi-automatic machine, the number of workers is very large. Because the extra works other than stitching like stitching elastic rubbers must be taken by the workers. Due to this, the daily expense will be a little more

1. Fully automatic machine

Surgical face mask manufacturing business plane have in the case of fully-automatic machine, the production is very simple. If your role the material and set it on the machine. You will get the products in the form of fully packed. Also, you will get a good and clear production that suitable to distribute to the market.

By using this machine, you can able to decrease the number of workers substantially and also the daily expense. But when compare this machine to the semi-automatic machine, the fully-automatic machine is an expensive one.

There is a big difference in the production capacity of both machines in an hour itself. By using fully-automatic machine, production is usually 10000 pieces per hour.

When we consider the production capacity of this machine in a minute, you will get a production of almost 50-60 pieces in minimum quantity on the bases of machinery.

What are the materials for surgical face mask?

Materials for surgical face mask manufacturing business are Non-woven fabrics and Cotton cloths. The production method of surgical mask and pollution mask is different.

1. Machinery

The investment of machinery is on the basis of production capacity. The price of machinery will be changed according to production capacity and its technology.

The machinery to be used would be semi-automatic machines, it is available 2.5millon naira.

1. Plant Location and Layout

While making a building, the base of the building would be constructed 10 meters away from the boundary of other land owners. The construction must be in minimum 500 square feet area.

The height of the building would be 5 meters at sides and 7 meters at Centre.

1. Utilities

Electrical connection cost is on the bases of area because of allocation of the connection. May be ₦ 1,500 / meter. (included post, line, and job)

1. **FINANCIAL STARTEGY**
2. Our Pricing Strategy

We are aware of the pricing trend in the Surgical Apparel Manufacturing industry which is why we have decided to produce various types of face masks.

In view of that, our prices will conform to what is obtainable in the industry but will ensure that within the first 6 to 12 months our products are sold a little bit below the average prices in Nigeria. We have put in place business strategies that will help us run on low profits for a period of 6 months; it is a way of encouraging people to buy into our face mask brands.

Payment Options

The payment policy adopted by Segun Adedipe Face Mask Production Company, LLC is all inclusive because we are quite aware that different customers prefer different payment options as it suits them but at the same time, we will ensure that we abide by the financial rules and regulation of Nigeria.

Here are the payment options that Segun Adedipe Face Mask Production Company, LLC will make available to her clients;

Payment via bank transfer

Payment with cash

Payment via debit cards/Point of Sale Machines (POS Machines)

Payment via online bank transfer

Payment via check

Payment via mobile money transfer

Payment via bank draft

In view of the above, we have chosen banking platforms that will enable our clients make payment for the purchase of face mask without any stress on their part. Our bank account numbers will be made available on our website and promotional materials.

1. Initial Capital Requirements

These are the key areas where we will spend our startup capital;

The Total Fee for Registering the Business in Nigeria – ₦23,500.

Legal expenses for obtaining licenses and permits as well as the accounting services (software, P.O.S machines and other software) – ₦15,000.

Marketing promotion expenses for the grand opening of Segun Adedipe Face Mask Production Company, LLC in the amount of ₦400000 and as well as flyer printing for the total amount of – ₦600000.

The cost for hiring Business Consultant – ₦1,000,000.

The cost for payment of rent for 12 months at in the total amount of ₦1,000,000.

The cost for construction of a standard face mask production factory (purchase and installation of industrial sewing machines and cutting machines et al) – ₦2,500,000.

Other start-up expenses including stationery (₦50,000) and phone and utility deposits (₦100,000).

Operational cost for the first 3 months (salaries of employees, payments of bills et al) – ₦15,000,000

The cost for Start-up inventory (raw materials such as textiles, threads, elastic and packaging materials) – ₦350,000

The cost for store equipment (cash register, security, ventilation, signage) – ₦400,000

The cost of purchase of distribution vans – ₦12,000,000

The cost for the purchase of furniture and gadgets (Computers, Printers, Telephone, Fax Machines, tables and chairs et al) – ₦800,000.

The cost of launching a website – ₦50,000

The cost for our opening party – ₦50,000

Miscellaneous – ₦100,000

We would need an estimate of thirty-six million naira (₦36,000,000) to successfully set up our face mask production plant in Ekiti State.

1. Source of Financing

Segun Adedipe Face Mask Production Company, LLC is owned and financed by Afe Babalola. They do not intend to welcome any other business partner which is why he has decided to restrict the sourcing of the startup capital to 3 major sources.

1. Generate part of the startup capital from personal savings and sell of stocks
2. Source for soft loans from family members and friends
3. Apply for loan from the Bank
4. Sustainability and Expansion Strategy

The future of any business lies in the number of loyal customers that they have, the capacity and competence of their employees, their investment strategy and the business structure. If all of these factors are missing from a business (company), then it won’t be too long before the business close shop.

One of our major goals of starting Segun Adedipe Face Mask Production Company, LLC is to build a business that will survive off its own cash flow without injecting finance from external sources once the business is officially running.

We know that one of the ways of gaining approval and winning customers over is to retail our face masks a little bit cheaper than what is obtainable in the market and we are prepared to survive on lower profit margin for a while.

Segun Adedipe Face Mask Production Company, LLC will make sure that the right foundation, structures and processes are put in place to ensure that our staff welfare are well taken of. Our company’s corporate culture is designed to drive our business to greater heights and training and retraining of our workforce is at the top burner.

As a matter of fact, profit-sharing arrangement will be made available to all our management staff and it will be based on their performance for a period of three years or more. We know that if that is put in place, we will be able to successfully hire and retain the best hands we can get in the industry; they will be more committed to help us build the business of our dreams.