COVER PAGE AND DECLARATION

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Student's Full Name:	Mostafa Zeinelabdein Mohamed Abouelseoud
Student ID:	EIU2022656
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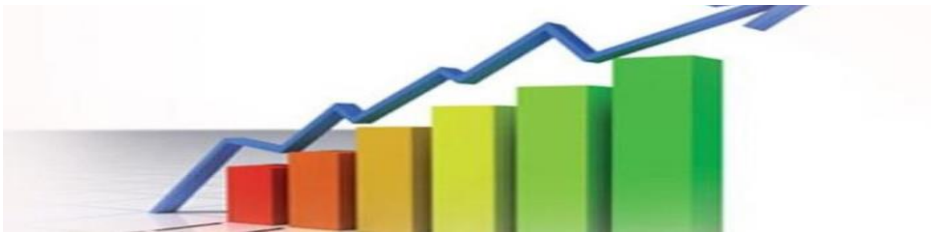
Introduction:

Our company, "The Big Green Tractor," is one of the leading companies in Indonesia in the field of tractor manufacturing, and we take pride in being a pioneer in providing high-quality products. Due to intense competition in the local industry and international market, we have started developing our tractor industry and addressing defects to face the strong competition. We have also set precise sales forecasts for the first year, with continuous monitoring using modern technology to ensure smooth operationsWe have addressed the damage caused by the factory waste through modern methods, and we have also used 21st-century technology to treat the pollution generated by the factory and recycle some of it



SITUATION ANALYSIS AND TARGET MARKET

Pestel analysis

Politics

The tractor industry is a key industry in practical life, as it serves as an essential tool for humans in many areas, including agriculture, construction, industry, roads, and more.

Economics

After the study, we found that the local government of Indonesia has encouraged industry and reduced taxes to 22%, which will lead to the success of our company and a reduction in costs.

Social

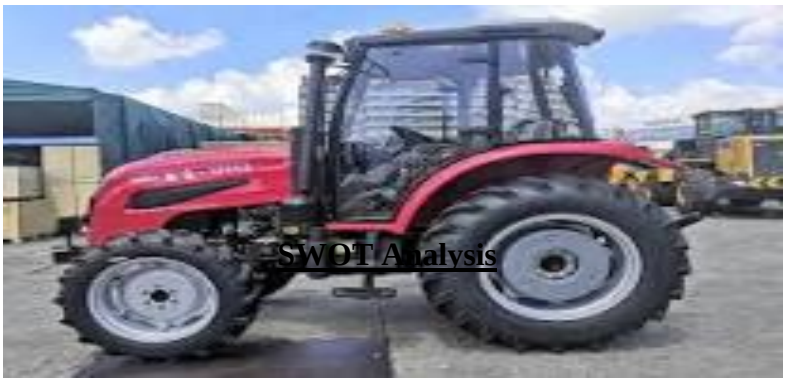
The population of Indonesia is about 280 million people, and it consists of many islands, around 17,000 islands, making it one of the countries rich in both population and land area.

Environmental

Indonesia's climate is mostly tropical and warm throughout the year, with a temperature of 28°C. The weather in Indonesia is divided into two seasons: the rainy season and the dry season

Legal

Indonesia is known for being one of the attractive countries for investment, and its judiciary system is of a high standard.



SWOT Analysis

SWOT ANALYSIS

1. Strengths:

- **Experience in Tractor Manufacturing:** The company has a long history in tractor production and a strong reputation in the local market.
- **Famous Brand:** "The Big Green Tractor" is a well-known brand in Indonesia.
- **Production Strength:** The company can produce high-quality tractors.
- **Technology Expertise:** The company uses advanced technology in designing and manufacturing tractors..

2. Weaknesses:

- **Declining Growth:** The company experienced a sharp decline in sales
- **Complex Operations:** The production processes may be complicated or outdated, which affects efficiency.
- **High Dependence on the Local Market:** The company relies a lot on the local market, which makes it vulnerable to local economic risks.
- **Lack of Environmental Focus:** There is a lot of waste that is harmful to the environment

3. Opportunities:

- **Shift to Eco-Friendly Solutions:** The company is working to develop the industry for tractors with an alternative energy source that is environmentally friendly
- **Expansion into New Markets:** The company can expand into new international markets or diversify into new products, like electric tractors or advanced agricultural machinery.
- **Innovation in Design and Production:** Using modern technologies like 3D helps save time and reduce costs.
- **4. Threats:**
- **Intense Competition:** There is strong competition between companies with global brands, which means we must ensure accuracy in execution.
- **Economic Fluctuations**: Economic changes in Indonesia may impact local demand for tractors.
- **Strict Environmental Regulations**: Increasing environmental laws could impact traditional production processes.

- **Changing Market Preferences:** The high demand for environmentally friendly and beneficial products means that we must take measures for restructuring.

Recommendations to Simplify Operations and Increase Efficiency:

1. **Update Production Processes:** Relying on modern technology in production to reduce costs.
2. **Simplify Supply Chains:** Relying on a smaller number of suppliers in order to reduce costs.
3. **Improve Product Lifecycle:** Developing a plan to advance the tractor industry and manufacturing by keeping up with modern technology and energy

Eco-Friendly Recommendations to Reduce Pollution:

1. **Switch to Renewable Energy:** Using alternative energy sources like solar energy.
2. **Green Manufacturing Technologies:** We must use materials that are non-polluting, with high technology and quality
3. **Develop Electric Tractors:** Design and produce tractors that run on electricity or hydrogen to reduce harmful emissions.
4. **Recycling Programs:** Improve recycling programs for used materials, like metals and plastics, in production

Company current Mission

Excellence in tractor manufacturing with unique quality and lower cost.

Company New Vision

Increasing the number of new customers, gaining their trust, expanding in local markets, and focusing on exports

Company New Mission

Leveraging our expertise in producing high-quality global tractors at competitive prices to meet our customers' needs, while striving to strengthen our brand rights through an innovative marketing strategy, creating a new and unique product, and fulfilling consumer demands

Company objectives

- Enter the international market and achieve a market share of at least 15%.
- Build the company's reputation through the brand name (Big Green Tractor).
- Expand in the local market and acquire new customers.

In put & out put

Resources

1. **Human Resources:**
    - **Engineers and Technicians:** Manufacturing tractors requires specialized engineers in fields like design, mechanical, and electrical engineering, along with technicians skilled in production and maintenance.
    - **Labor on Production Lines:** Factories need skilled workers to operate machines and assemble various tractor parts.
2. **Material Resources:**
    - **Metals:** Such as iron, aluminum, rubber, steel, and other materials that contribute to the manufacturing of engines and tractor tires.
    - **Electronic Components:** Like control systems, touchscreens, and smart sensors used in modern tractors.
    - **Glass and Rubber:** Used in windows, tires, and other moving parts.
    - **Fuel and Oils:** Oils and lubricants are used to reduce friction in the engine and other tractor components.
3. **Technical Resources:**
    - **Software and Smart Systems:** Engine management systems, semi-autonomous or autonomous driving technologies, and remote diagnostic software.
    - **Advanced Manufacturing Tools:** CNC machines, 3D printing, and advanced welding equipment.
4. **Financial Resources:**
    - **Investment in Research and Development:** Budgeting for innovation and improving designs and technologies.
    - **Financing and Supplies:** Funding for heavy equipment and purchasing raw materials from suppliers.
5. **Logistical Resources:**
    - **Supply Network:** Includes local and international suppliers who provide raw materials and spare parts.
    - **Transport and Shipping:** Completed tractors or parts are transported to various markets through road, sea, and air transportation.

Using these materials helps reduce costs and enhances competitiveness

Input

Research and Development (R&D):

During the manufacturing process, a team is assigned to research and development operations to improve performance, efficiency, and safety. Continuous monitoring is carried out to achieve the desired efficiency

Raw Materials:

Metals: like as steel, aluminum, and iron used for making frames engines, and wheels.

Electronic Components: Like sensors smart systems and electrical components necessary for the tractor's operation.

Plastics and Rubber: Used in parts such as windows tires and protective components.

Oils and Lubricants: For lubricating the engines and other tractor components.

Engineering Design:

Tractors are designed using advanced software

This includes planning for mechanical engineering and the electronic systems that ensure smooth operation.

Manufacturing:

Shaping and Processing: The manufacturing process begins with forming key parts like the frame, engine, and electrical system. This includes welding and other processes for producing tractor parts of all types, followed by the assembly process, which involves assembling the engine parts, tires, and others. Then comes the final assembly process, which includes painting, polishing, and applying the brand logo

Quality Testing:

Tractors are tested to ensure they operate efficiently, are free of defects, and function without causing environmental pollution

Packaging and Shipping:

In the end, after the manufacturing process and quality tests, the shipping process takes place as the final step, using safe and fast shipping methods

Achieving Efficient Manufacturing and Reducing Defects:

Modern Technologies:

Using Artificial Intelligence (AI) Systems: To monitor quality during the manufacturing process and detect defects early.

Digital Analysis: Real-time data analysis during manufacturing stages to identify problems before they occur.

Continuous Improvement:

Good supervision and monitoring of the manufacturing process, along with resolving any issues during the process is essential. Workers and supervisors are trained to quickly solve problems and handle issues effectively

Smart Manufacturing:

Relying on modern technology such as robots, advanced machinery, computers, and self-monitoring through the use of sensors to detect errors and problems, all for continuous improvement

Quality Management:

The process of regular inspections to reduce manufacturing defects and conduct periodic quality checks.

Innovative Materials:

Use of Lightweight but Strong Materials: Like aluminum or high-strength polymers to enhance efficiency and reduce defects in the tractor structure.

Process

Design and Engineering:

Design is the first step in the design process, which involves building the market's needs in terms of quantities, types, and other factors.: After the concept is approved, detailed technical designs are created, including blueprints and CAD (Computer-Aided Design) models for each part of the tractor.

The evaluation is done by releasing the first prototype of the tractors with the new design, which allows for making any necessary adjustments

Material Selection and Sourcing:

Raw Material Procurement: The selected materials such as steel, aluminum, rubber, and electronic components are sourced from suppliers. Periodic quality inspections are conducted to ensure that the materials meet the required objectives

Manufacturing and Component Production:

First, the main parts such as the chassis, engine, tires, and automatic gearbox are manufactured using automated processes like cutting, casting, and welding. Then, electronic components, including wires and others, are produced

Assembly:

This process is carried out through two stages: the sub-assembly, which includes the assembly of parts without entering the final process, and the final and main assembly. In this process, the final assembly of tires, the engine, windows, and front and rear bumpers takes place. Afterward, a final test is conducted after the operation..

Quality Control and Testing:

Initial Inspections: Each part is inspected for defects before being assembled. This ensures that all components meet the required standards.

The operational test: After the final process, the tractor undergoes an operational test to assess its durability, heat resistance, engine power, brakes, tension, and towing capacity

Painting and Finishing:

After the operational test, the final painting process is carried out, which includes selecting the desired color, shine, brand logo, and an attractive artistic touch for the customers.

Final Inspection:

A final and thorough inspection is carried out to ensure the tractor meets industry and safety standards, and that it operates with high precision and quality

Packaging and Shipping:

Once all the tractor tests are completed preparations for the shipping process to the customer begin. This includes applying the special shipping paint and handling logistics taxes and customs to ensure smooth delivery and prompt handover to the customer

Post-Production Support:

Customer Support and Warranty: After the tractor reaches the customer, the company provides after-sales support, including warranties servicing and maintenance services. This ensures customer satisfaction and the long-term performance of the product

Output

- **Final Products:**

  - These are the primary outputs produced after the manufacturing process is completed. They include the fully assembled tractors sold to customers whether used in agriculture construction, or other industrial applications. tractor contains all the essential parts such as the engine chassis wheels hydraulic systems.

- **By-products:**

  - They may include excess materials or discarded metal parts, or any unfinished product that can be recycled or used in future production. For example, scrap parts or other leftover materials may be reused to produce new components.

- **Sub-components:**

These parts are manufactured using different methods, separate from the main manufacturing process, such as the gearbox, engine, and windows. They are then assembled during the final stages

- **Energy and Wasted Resources:**

  - These include energy outputs, such as electricity or fuel, used during manufacturing, along with waste or consumed materials like water or other resources that may be wasted or discarded during the process. Environmental outputs like gas emissions, such as carbon dioxide from production processes, are also considered, and they need to be controlled.

- **Technical Data and Quality Reports:**

  - After conducting quality tests on each tractor, technical reports are issued outlining the tractor's performance in various tests, such as engine performance, brake testing, and quality checks. These reports help ensure the final product meets local and international standards.

- **Waste and Scrap Materials:**

These materials cannot be reused and must be disposed of quickly. They are considered waste or excess and damaged materials, and their disposal must be done in an environmentally friendly manner

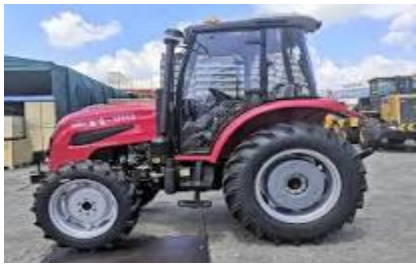
- **Innovations and New Technologies:**

This process includes operational innovations and developments during manufacturing and operation, such as improving the vehicle to achieve the highest quality and developing engines. It also encompasses new manufacturing processes, monitoring, and control systems that ensure the tractors have high efficiency.

- **After-Sales Support and Services:**

This is the after-sales process, which includes maintenance services, repairs, fixing any defects if found, strengthening customer relationships, ensuring quick maintenance performance, and providing spare parts

Development and improvement



Developing and Improving the Manufacturing Process in Tractor Production:

To reduce defects and lower costs, modern management methods can be relied upon, such as redistributing the workforce and utilizing advanced technologies and modern techniques Below are some suggestions for developing and improving the manufacturing process:

1. Redistributing Workers' Tasks:

- **Specialization and Training:** Workers should be trained for specific tasks, making each worker an expert in a certain part of the manufacturing process. The work on assembly lines can be divided based on the different skills of each worker. Specialization helps increase productivity and reduce mistakes.
- **Multifunctional Work Teams:** Forming teams that can perform a variety of tasks, rather than having each worker responsible for just one task. These teams can adapt more quickly to changes in production, reducing downtime and delays.
- **Performance Monitoring:** This allows us to assess the performance of workers and evaluate efficiency, accuracy, and speed. Automated and quick reports can be relied upon for this purpose.

2. Using Modern Tools and Technologies (21st Century Tools):

- **Robots and Automation:** Using robots for tasks such as welding, cutting, and loading helps reduce human error and improves speed and precision. It contributes to reducing costs in the long term.
- **Computer Numerical Control (CNC) Manufacturing:** These modern machines can be used for many processes, including cutting, welding, and other operations. These machines are automatically controlled in manufacturing, which helps ensure precision in production
- **3D Printing:** 3D printing can be used, which helps us achieve speed and precision in prototypes at lower costs, as well as conduct initial testing.

3. Improving Quality Control and Reducing Defects:

- **Artificial Intelligence Analysis:** AI technologies can analyze data collected from production lines to identify trends indicating manufacturing issues. This data can be used to predict defects before they occur and take corrective actions.

- **Real-time Quality Monitoring:** Automated inspection systems can be used to detect defects at each stage of the manufacturing process for example advanced cameras and specialized sensor devices can be used to detect defects quickly and accurately
- **Advanced Measuring and Testing Systems:** Radiation and measuring tools can be used to detect fine defects
- **4. Cost Reduction:**

- **Improved Material Management:** Inventory management should be improved using modern techniques, such as software to track inventory, reduce waste, and ensure efficient use of raw materials
- **Cost Analysis Using Big Data:** Big data analysis can help identify areas for improvement in production. Data can be analyzed to identify long downtime periods or parts with high maintenance costs, thereby reducing these costs.
- **Optimal Product Design:** Cost-effective designs for raw materials should be adopted to reduce overall costs

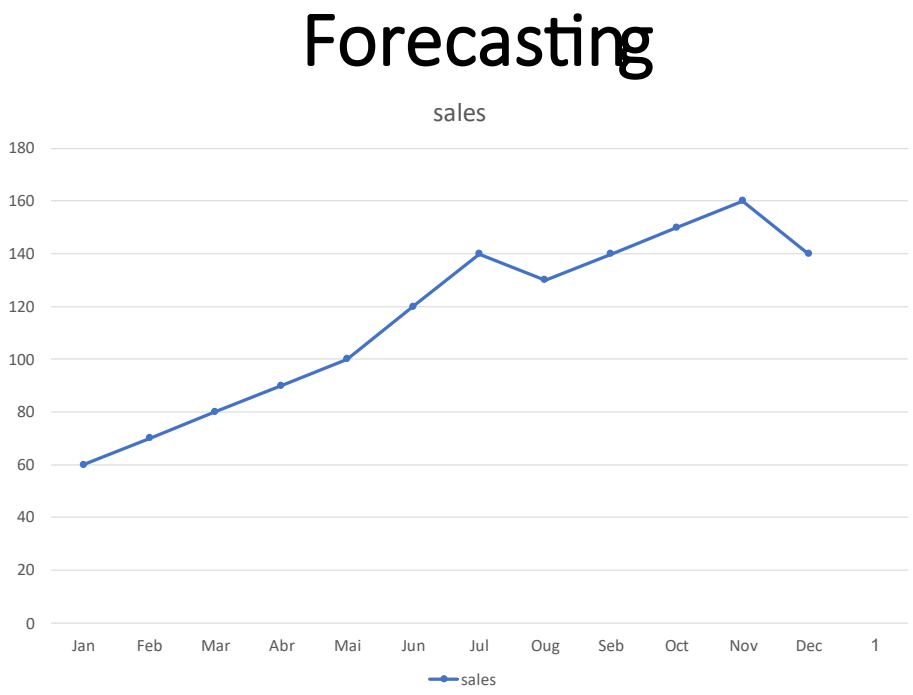
5. Environmental Sustainability:

- **Using Renewable Energy Sources:** To help reduce energy costs it is better to rely on solar energy or wind energy to lower expenses. This reduces long-term costs and contributes to reducing the environmental impact.
- **Recycling:** Improving recycling processes for waste and consumed materials to reduce waste and minimize the need for new materials We can also use recycled materials from waste.
- **6. Improving Logistics and Distribution:**

- **Using Smart Tracking Technologies:** GPS tracking and other tracking technologies can be used to ensure tractors are delivered on time and avoid delays in the distribution process. These technologies can help ensure efficiency in the delivery system.
- **Supply Chain Optimization:** Building strong relationships with local and international suppliers can reduce lead times for material procurement. Digital supply chain management systems can help predict demand and improve shipping timing

Forecasting

After conducting a study, establishing export contracts with several countries, and assessing the local market while targeting companies in all sectors, sales projections have been made for the year 2025. This is after correcting defects, reducing costs, redistributing workers' tasks in a new way, and utilizing 2025 technologies After conducting market and sales analysis regarding the climate, agricultural seasons, and industrial cycles, this statement has been prepared



CONROL:

- Conducting regular maintenance at specific weekly intervals.
- Relying on robots and modern technology to detect malfunctions.
- Monitoring inventory.
- Supervising the supervision department and requiring them to submit daily reports

Industrial Standards for Disposal of Chemical Waste and Green Alternatives for Manufacturing Processes at "The Big Green Tractor":

In the era of sustainability and environmental protection, it has become essential for "The Big Green Tractor" to adhere to strict standards for the disposal of chemical waste and adopt green alternatives in its manufacturing processes. These standards aim to reduce the environmental impact of industries and preserve natural resources. Here are some of the standards and techniques that can be implemented:

1. Industrial Standards for Disposal of Chemical Waste:

- **Waste Minimization:**
  This is considered the foundation of manufacturing, as it reduces waste through precision and focus on accuracy, and helps reduce chemicals that cause pollution. This is achieved by optimizing production processes and reducing material wastage.
- **Chemical Waste Recycling:**
  This is done through procedures that must be followed, such as burying waste in a specific area or recycling it, and ensuring that it will be used again and beneficial.
- **Environmental Waste Management Systems:**
  " Our company, Big Green Tractor, must implement strict waste management regulations to dispose of it in a healthy, cost-effective, and well-planned manner. This includes separating chemical waste from other types and converting it into useful materials
- **Safe Storage and Disposal of Chemical Waste:**
  We must designate specific areas to dispose of toxic materials harmful to the environment to prevent damage, using methods that are legally authorized

2. Green Alternatives for Manufacturing Processes:

- **Use of Sustainable Raw Materials:**
  Relying on renewable and sustainable raw materials in manufacturing helps reduce environmental impact. For example, using biodegradable materials like bioplastics or plant-based materials instead of toxic chemicals.
- **Green Manufacturing Processes:**
  Green manufacturing processes involve using more efficient and less polluting technologies. Energy

can be relied upon through solar power or similar sources to operate machinery, run the factory, improve efficiency and performance, and reduce pollution

- **Switching to Environmentally Friendly Materials:**
  We can use some natural materials, such as oils, to protect the environment from pollution.
- **Energy Efficiency Improvements:**
  Relying on organization, precision, and efficiency in energy usage during operations helps reduce pollution and preserve the environment.
- **Nanotechnology:**
  To achieve good manufacturing processes and reduce toxic and harmful materials to the environment, nanotechnology can be used as it helps in preserving the environment.
- **Renewable Energy:**
  "The Big Green Tractor company" can shift to renewable energy sources like solar or wind power to run its equipment and machinery in the production lines, thus reducing carbon emissions and helping to decrease reliance on fossil fuels.

3. Environmental Performance Improvement Systems:

- **Adopting Environmental Certifications:**
  "The Big Green Tractor" can seek environmental certifications such as ISO 14001, which indicates that the company follows stringent environmental standards and implements effective waste and resource management practices.
- **Regular Environmental Audits:**
  The Big Green Tractor company Using precise monitoring processes for review and evaluation of the environment helps improve performance in operations and reduce pollution
- **4. Safe Treatment and Disposal Techniques:**

- **Chemical Waste Treatment:**
  Chemical waste can be treated using techniques such as electrolysis or chemical reactions that remove toxic substances or convert them into less harmful materials.
- **Biological Treatment of Waste:**
  We can use certain microorganisms to convert toxic and harmful materials into useful ones, which is known as chemical treatment methods.

Conclusion:

In conclusion, we can say that the tractor industry plays a vital role in many key sectors such as agriculture, industry, and construction. With the challenges faced by companies in this sector, such as slow growth and rising costs, it becomes essential to find effective solutions to improve production processes and achieve growth.

By carefully planning and reviewing production, and using modern technology, this can help improve manufacturing processes, reduce defects, lower costs, and efficiently distribute tasks, providing us with everything we need

Moreover, adopting strict environmental standards and shifting towards green manufacturing solutions can yield double benefits; they reduce negative environmental impacts while also contributing to higher production efficiency, thereby improving "The Big Green Tractor's" competitiveness in the market.

In the end, through the efforts made to reduce waste and with the industrial advancement of the factory, "Big Green Tractor" company can achieve sustainable growth and expansion, opening up a wide scope in both the local and international markets.

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