



EUROPEAN
INTERNATIONAL
UNIVERSITY



COVER PAGE AND DECLARATION

	Master of Business Administration (M.B.A.)
Specialisation:	
Affiliated Center:	
Module Code & Module Title:	
Student's Full Name:	
Student ID:	
Word Count:	
Date of Submission:	

I confirm that this assignment is my own work, is not copied from any other person's work (published/unpublished), and has not been previously submitted for assessment elsewhere.

E-SIGNATURE: _____

DATE: _____

EIU Paris City Campus

Address: 59 Rue Lamarck, 75018 Paris, France | **Tel:** +33 144 857 317 | **Mobile/WhatsApp:** +33607591197 | **Email:** paris@eiu.ac

EIU Corporate Strategy & Operations Headquarter

Address: 12th Fl. Amarin Tower, 496-502 Ploenchit Rd., Bangkok 10330, Thailand | **Tel:** +66(2)256923 & +66(2)2569908 | **Mobile/WhatsApp:** +33607591197 | **Email:** info@eiu.ac

Operations Management
Operational Industrial guide

Big Green Tractors Company

Date Issued
December, 2021

Table of contents

- Introduction
- 1) Operational Industrial Streamline Procedural Guide for Big Green Tractor
 - 1.a) Cost-Efficient Manufacturing Process
 - 1.b) Plans to Minimize Defects throughout the Manufacturing Process
 - 1.c) Use of 21st Century Tools to Create Greener Process
- 2) Operational Guide for Big Green Tractor Social Responsibility
 - 2.a) Industrial Standards on Disposal of Chemical Waste
 - 2.b) Green Alternatives to Traditional Manufacturing Process
- Conclusion
- References

Introduction

To maintain the success and sustainability of organization is a big challenge nowadays due to many factors such as the globalization, and many efforts should be exerted to keep your organization out of the crowd and to face the troubles and challenges that raise due to the market competition. Strategic managers should play their role effectively within organization.

This case scenario illustrates that the Big Green Tractor organization is an Indonesian company that operate in tractor manufacturing industry and it suffers from growth deterioration in the latest years. For that a clear operational guide is required which include recommendations for more cost efficient manufacturing process highlighting how to eliminate wastes and defects and the plans and measures associated to it to improve the profitability and enhance the overall cost of the operational process. For this purpose, we discussed the 21st century tools which would be applicable to be implemented to reach the targeted goal. Not only that, but also we will discuss the social responsibility of the company and how it will safely follow the international regulation to dispose their chemical wastes along with green alternatives to the traditional manufacturing process.

1) Operational Industrial Streamline Procedural Guide for Big Green Tractor

1.a) Recommendations for more cost efficient manufacturing process

Since Big Green Tractor Company is focusing on streamlining of their operation, so we will consider the below practices to ensure the production process is more efficient and effective by employing faster and simpler working methods through following the below steps.

1.a.1) Integrating Lean with ISO

This could be achieved through following the Section 8 of ISO 9001 to ensure that non value added processes will be eliminated and hence additional expenses can be reduced. Lean will provide the required enhancements for the which are required by the ISO 9001 quality management system.

1.a.1.1) Operational Planning and Control:

Creating this plan will outline the day to day program of work based on the study of the current situation and understanding the goal of the organization taking into consideration internal and external environment also reviewing the vision, the mission and the values of the organization.

1.a.1.2) Determination of product and service requirements.

Based on the analysis of the current situation we noticed that there is lack in gathering the sufficient information related to the product from stakeholders so profound communication with the client to get the information and requirements related to the product should be done by the organization to ensure that all requirements and applicable legal requirements were clearly defined. In addition they should confirm the ability and the qualifications to meet the defined requirements and provide the required product and service.

1.a.1.3) Products and services design and development

Design, development inputs and changes should be determined and conflicting requirements should be resolved to ensure the outputs meet the inputs requirements and ensure the products suit the required purpose.

1.a.1.4) Control of outsourced products and services

The organization should make sure the purchase documents specify clearly the requirements for the purchased product and service and should control any outsourced products.

1. a.1.5) Production and Service Provision

Operations should be scheduled considering customer delivery requirements, production capacity, storage, material and personnel availability. In addition, monitoring activities and measurement at certain predefine stages should be implemented to verify that the requirements have been met. Verification, validation and periodic revalidation should be considered to ensure ability of achieving planned results.

1.a.1.6) Products and services release

Planned arrangements for verification and conformity should be implemented to verify the product requirements have been met before product release. Also, documented information as a proof of compliance with acceptance criteria should be retained with the organization.

1.a.1.7) Control of Nonconforming Process Outputs, Products, and Service

The organization should identify and control the nonconforming products to avoid use or delivery and also identify the process of dealing with such products. Documented information should be retained that express the noncompliance and actions taken.

1.a.2) Cost reduction via optimized utilization for available resources

After applying the previous steps to adjust the production process and eliminating the non-value added activities, we will focus more on how to save more cost and get cost efficient process through optimizing the utilization of the obtainable resources which are Machines, Methods, Materials, Manpower, Management, Market and Messages. After the analysis has been done using Pareto Analysis Method we found that the below resources are the more which should be enhanced in order to mitigate problem.

1.a.2.1) Machines and Automation: The overall equipment efficiency “OEE” should be done periodically to evaluate the status of each machine used in the manufacturing process. Advanced software based machines would be used for manufacturing, assembly lines and painting which will enhance and speed up the manufacturing process and improving the efficiency. In addition, utilizing this type of machines will reduce the human errors and wages.

1.a.2.2) Materials: Reduction in material cost is key point in achieving cost efficient process. Through the analysis has been done we found that the company deals with few suppliers so we recommend to open the door for more suppliers to supply the required materials which will help the entity to get lower prices. Thorough evaluation for each service and product provider should be done using many factors besides the product quality such as the financial capability, technical capability, reputation, flexibility to handle changes, and support.

1.a.2.3) Market: The marketing department should put more efforts in the market study and use the segmentation methods also gather more information about the market requirements and how to use the competitive advantage or their product.

1.a.2.4) Manpower: The production department should put more communication with the HR and Supply Chain department to convey the required skills, experiments and trainings in order to enhance the process lifecycle and reduce the time consuming hence increase the production.

1.a.3) Cost reduction via analyzing the wastes type inside the process

Wastes are cost consumption for non-value added so they should be spotted and dealt with in a way to eliminate them. Waste in any organization would be one or more of the following:

- Defects: produce a product doesn't fit for the intended use which will result in scrapping or reworking. So, redesigning the process and rely more on the automation as described before would help to avoid defects and ensure almost defect free process and consistent manufacturing process.
- Overproduction: Over producing a product more likely lead to that the produced products are beyond the client's needs. So, using the pull system instead of the push system and utilizing a clear defined process that ensures the rate of manufacturing between stations are even and reduce setup times will lead to eliminate the overproduction waste.
- Waiting: the waited time to get a material, respond to email or files waiting for review, idle time should be eliminated or mitigated as applicable.
- Non-Utilized talents: The role of management shouldn't be separated from employees, the employees should be engaged to improve the process since they are the most capable of identifying problems and develop solutions because of the fact that they are the frontline workers.
- Transportation: Trying to reduce the non-necessary movements of people, tools, equipment and product which lead to product damage and defects. On the level of production area, a U shape production line would be developed as applicable, create flow between processes and avoid over producing work in process. On the level of office area employees who has the same task or share tasks together should be close together.
- Inventory: Having more inventory than necessary to maintain a stable work flow can lead to product defect, damage materials and inefficient capital allocation.

- Motion: By making the workspace well organized and putting equipment near to the production location.
- Extra Processing: Understanding the work requirements from the customer's point of view, reviewing the documented information and requirements before work starting and produce according to the expected level of quality that customer desire will lead to reduce the over processing work such as adding more components, using higher precision equipment, running analysis more than needed or generating detailed reports more than needed.

Based on the analysis has been done and the study of the Big Green Tractor's practice in the previous years we found that production department generate scrap in massive quantities, non-effective utilization of the inventory and the working area is not well organized. So, we will focus on the below wastes type suggesting ways to eliminate them, hence cost reduction will be achieved.

1.a.3.1) Defects: due to the large quantities of scrap found in the organization we will apply proper tools such as the check sheet and Pareto analysis to work on solving the most important defects which have the greatest impact in the product and the process. Also, the existing scrap should be sold to the relevant vendors in a reasonable price hence the overall cost of the manufacture could be reducing and the profitability would be enhanced.

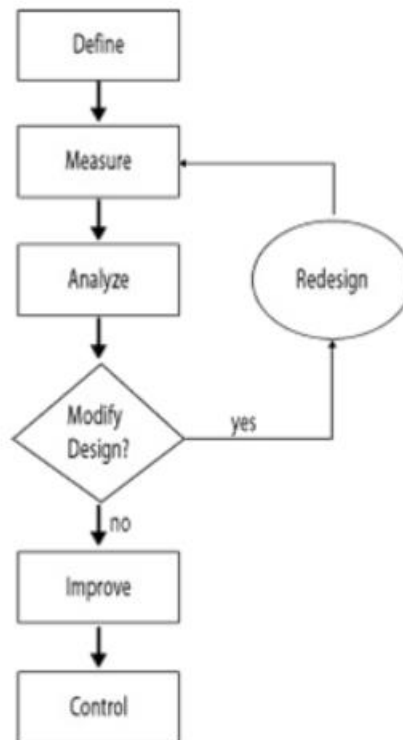
1.a.3.2) Waiting time: to avoid the non-organized working and staff area we can utilize the 5S tool to create well-ordered work space convenient for visual control through sort the items and group them to three categories which are Necessary items that should be at the point of use, Unnecessary items that should be at the workplace but faraway and finally Uncertain items that should be outside the workplace. Then, Set the items in order, Shine the work and office area, standardize the previous steps and finally sustain those steps.

1.a.3.3) Inventory: to avoid the excess inventory we could as applicable purchase the raw materials and spare parts when needed and in the demanded quantity, reducing buffers between production steps and a queue system should be developed to avoid overproduction. In addition, time frame for the finished product delivery should be defined to avoid higher storage costs. In addition, a dedicated team would be assigned to sort the existing materials in the warehouse and provide a list of these items to the production and procurement department to use these items when needed instead of purchasing them which would help in increasing the profitability.

Apart from the above we suggest that focusing on reducing the energy consumption would improve the operational cost hence increase the profitability. We can achieve that using the LED technology for the lighting inside the organization and using the variable frequency drivers “VFD” technology for the machines which will reduce the energy consumption and hence reduce the operational cost.

1.b) A through plan to minimize defects throughout the manufacturing process

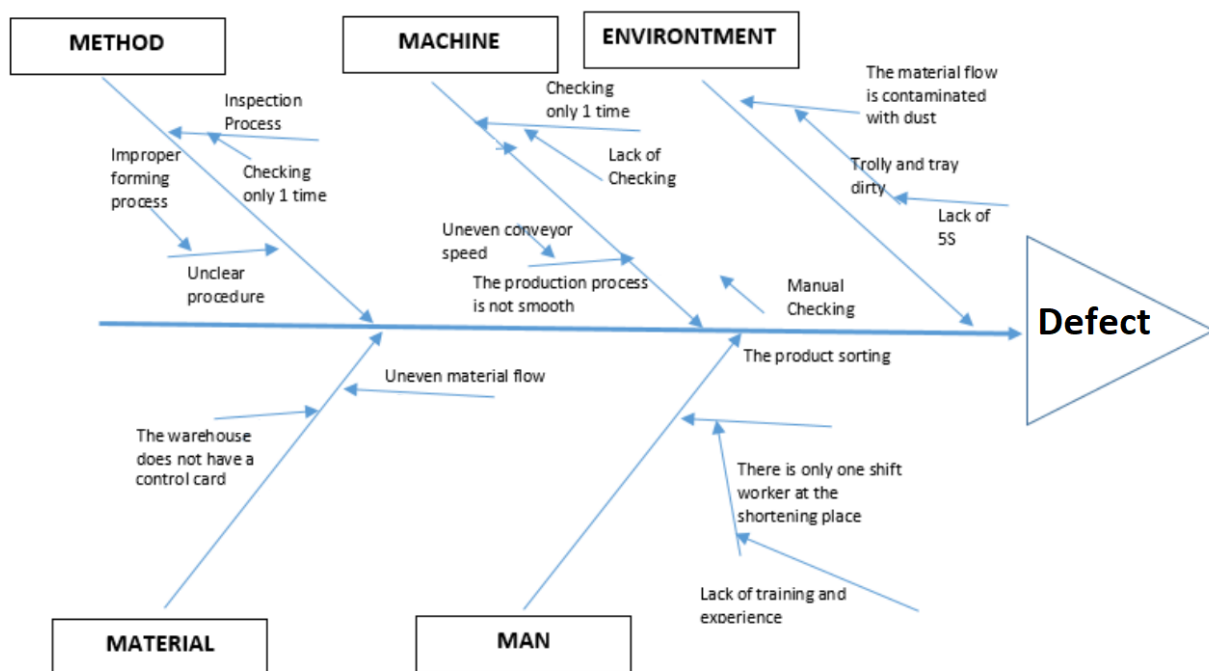
A quality improvement procedure should be used here to reduce the defects to a reasonable level where the highest value could be delivered to the customer with a reasonable cost. The Six Sigma is the most well-known and effective approach which with its tools we can define the current defects percentage and work on develop the process to reduce these defects to the accepted level. One of these tools is the DMAIC process which is a data driven quality strategy we can use it to improve processes. The letters in the acronym “DMAIC” represent the five phases that form up the process.



1.b.1) Define: in this stage the defects, stakeholders’ requirements, the project goals and improvement activity will be defined, also an attention should be paid to the voice of customer to comprehend the current and potential customers’ feedback to figure out the options that would satisfy them and keep them loyal. In addition, a value stream map will be helpful to show every step in the process using the flowchart tool to ensure that the available resources are used efficiently and analyze what is required to meet customer needs.

1.b.2) Measure: in this stage we will measure the process performance through recording the performed activities and assessing the process to meet specifications and requirements. Also, an audit of the outsourced materials from suppliers and vendors would take place to examine the quality. Many tools can be utilized here such as sampling method, check sheet however we will use the Pareto chart to analyze the frequency of problems and define their causes and stand on the most important causes to deal with aiming to improve the process.

1.b.3) Analyze: in this stage we will deeply study the process to determine the main cause of the defects, where some tools will be utilized to uncover the causes such as the Ishikawa Diagram which will show the probable root causes for a given effect where we will identify the problem, then identify the major causes contributing to it, hence identify the sub causes and finally analyze the diagram identifying causes which are not having a big impact and spotting the causes which need further investigation. In addition, we can use the failure mode and effect analysis as a supporting tool to take actions to eliminate or mitigate failures starting with the highest priorities ones where this analysis support in prioritizing the causes according to how their consequences are serious and how frequently their occurrence. For example, the problem of defects which discussed before we found one of its sub causes is the non-skilled workforce so a personalized training will be highly effective in minimizing defects and enhance the manufacturing process.



1.b.4) Improve: after highlighting the defects and their root causes, in this stage we will improve the process performance through addressing and eliminating these root causes. In this stage we can use the Kaizen event as a tool to efficiently implement the best valid solutions, through grouping stakeholders and experts to pick the right solution from the options found by the team.

1.b.5) Control: in this stage we will figure how to sustain and fix the improved process through many tools to ensure that keeping the improved process as its current accepted level. We use out of the available tools the following two:

- Poka-Yoka: which focus on the mistake proofing by making error impossible.
- 5S: to create neat and tidy work space to eliminate as applicable the wasted time in the non-necessary and the non-value added activities.

1.c) The Use of 21st Century Tools to Create Greener Process

The use of the last invented tools and emerge them in the Big Green Tractors' process will keep their products aligned with the market trend, up to date with the current technology and meet the client's requirements.

These tools would be:

- National standards bodies such as ISO which play a crucial role in facilitating world trade by providing common standard among different countries. These standards aim at ensuring that products and services are safe, reliable and of good quality.
- Principles and methodologies such as Agile operations, the implementation of Agile practices will lead to better team integration, fewer errors, reduced cost, increased productivity and clear priorities.
- Method such as Six Sigma that provide tools to boost the power of business process and decrease process variation which will lead to reduction in defects, profitability improvement, enhance employee morale and improve product and services quality.
- Integration of modern technology with production system to drive efficiency in the organization and increase productivity. Some of the available software systems are the Computer Aided Design "CAD", Computer Aided Manufacturing System "CAM" which ensure high level of accuracy and deliver higher productivity, Enterprise Resource Planning System "ERP", Supply Chain Management System "SCM", New Product Development System "NPD" and Customer Relationship Management System "CRM" which link all business functions through a common software platform which support in providing higher value to customer through faster delivery and order fulfillment.
- Applying Automation in production and operations to recue the manual intervention which will increase productivity and reduce the human error.

2) Social Responsible Operational Guide

2.a) Industrial Standards on Disposal of Chemical Waste

The chemical waste produced by the Big Green Tractor organization put it under legal obligations to dispose these wastes correctly. It must follow the guidelines enforced by the Environmental Protection Agency, the Health Administration and Occupational Safety.

The EHS staff should be involved in this process to ensure that the process will be done as per the applicable guidelines. It is better to be a collaboration with the specialized waste collection and disposal service providers since they will be authorized from the local and international organizations responsible about this part. They have the experience to ensure that the waste will be separated according to the relevant regulations and reused wherever possible, also they will provide specialist bins and secure containers to store the waste before disposal.

Based on the conducted studies not all chemical wastes are disposed but the majority would be recycled. This approach would allow reusing the chemical after applying the required standards and protocols associated with the recycling process.

Secured landfills would be feasible solution to dispose the chemical waste which couldn't be recycled. The government of Indonesia has developed landfill sites where such waste could be stored safely without any negative impact on the environment and without affecting the ecosystem.

Speaking about the chemical wastes which should be disposed the following should be considered.

Packaging:

Adding to the general packaging requirements we should:

- Never mix incompatible materials in a single container.
- Containers must be well suited the chemical stored.

Labeling:

Adding to the general labeling requirement we should:

- Chemical waste label should be attached to the waste container.
- All data requested on the label should be given.

Storage:

Adding to the general storage requirements we should:

- According to compatibility groups such as acids or bases, waste should be segregated.
- Some chemicals are time sensitive so the dispose of aging containers promptly is a must.

In addition to the above and since it is critically important for the organization to eliminate hazards and minimize OH&S risks by taking effective preventive and protective measures, we can apply the ISO 45000 to ensure occupational safety and health management system that provides feasible solutions for worker safety

2.b) Green alternatives to traditional manufacturing process

From the prospect of preserving the natural and keep the balance of the eco system many organizations and trends are encouraging the use of green alternatives to the traditional manufacturing process which is calling the “Greening” in which renew happens for the traditional operational process and establish an environmentally friendly one. Using these alternatives lead to use fewer natural resources, reduce pollution and waste, recycle and reuse materials.

- **Electrification**

It is a process of replacing technologies that use fossil fuels with technologies that use electricity which will lead to reduce carbon emission.

In Big Green Tractors it would be better if we replace the machines, vehicle and production line which operate by fossil fuels by electrically operated machines as applicable. For example, the locomotive vehicle which are used for internal access would be replaced by battery operated one which will help in reducing the emitted gasses.

- **Solar Energy**

It is a clean energy sources and their potential is enormous, as in the 21st century it becomes increasingly attractive renewable energy source because of its nonpolluting character.

- **Biodegradable Material**

Due to the various environmental problems which have witnessed by the world, there is a strong direction to use the biodegradable materials to reduce the negative consequences since plastic materials take centuries to breakdown naturally in the environment. The using of biodegradable materials has several benefits such as:

1. Biodegradable materials are easy to recycle trough an organic process, also they are nontoxic which will help in lessen landfills problems.
2. Biodegradable materials energy consumption is very less during their manufacture, they are consuming 65% less energy.
3. Reduction wastes’ breaking down period since these materials are breaking down only in a period of few months and be easily absorbed by the soil.
4. Compostability where the composting of these materials can make the soil fertile.

Conclusion

In conclusion, due to the declining growth that the Big Green tractor organization suffers from and to streamline its operation to be more efficient, we suggested an operational guide to help them to reach their goal and increase their profitability and boost their production. This guide includes recommendations for more cost efficient manufacturing process, analyzing the wastes type inside the organization and provide recommendations to eliminate them in order to enhance the overall cost of the production process. In addition, a through plan was provided for the good utilization of the available resources to eliminate the non-value added activities to ensure a cost efficient operation process. Spot light was highlighted on the defects and how to minimize them during the operational process supporting that with the tools could be used to achieve the best result.

To keep the organization's technology up to date and involving the new technology available in the world which would keep their products aligned with the market needs we highlighted the 21st century tools that would be integrated in the process to make it greener.

The social responsibility of the organization was also highlighted in this paper putting more focus on the possible, recommended and safe ways of disposing the chemical waste produced by the organization in addition how to replace the traditional processes with green alternatives to preserve the nature and help in balancing the eco system.

Resources

- Operations Management, Seventh edition 2013 - Nigel Slack, Alistair Brandon-Jones, Robert Johnston.
- Operations Management: Sustainability and Supply Chain Management, Third Canadian Edition, 2019 – Jay Heizer, Barry Render, Chuck Munson and Paul Griffin.
- Operations Management, Fifth edition 2012 – Nada R. Sanders & R. Dan Reid.
- Operations Management for dummies, first edition 2013 – Marry Ann Anderson, Edward J. Anderson and Geoffrey Parker.
- Isoconsultantkuwait.com/2019/05/11/iso-90012015-clause-8-operation, 2019 – Pretesh Biswas.
- Sciencing.com/benefits-biodegradable-plastic-22789, 2018 – Milton Kazmeyer.
- Managementstudyguide.com/managing-technology-in-operations-management – Prachi Juneja.
- Goodwin.edu/enews/what-is-green-manufacturing, 2016 – GOODWIN University.