COVER PAGE AND DECLARATION

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Student's Full Name	Ibrahim Abdelsadik Elsayed Afifi
Student ID:	EIU711559
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E -SIGNATURE: IBRAHIM ABDELSADIK ELSAYED

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Introduction

The creation and delivery of services and goods by organizations is the focus of operations management. You will use Operations Managers to coordinate its creation and application to support you with anything you use in the sports industry to wear, consume, sit on, use, read, or touch. Every library you use, every hospital treatment you receive, every retail service you count on, and every college course are all supported by operations.

Operations management can be defined as those organized processes through which all industrial processes in the organization are organized and planned that result in the production of goods that the organization seeks to provide to the consumer. This includes all design, implementation, production, and control processes on all sectors and sections related to the production process, as well as all design, implementation, production, and control processes on all subsystems within those sectors and sections. Operations management is defined as all initiatives taken by the workforce and management cadres to allocate energies and material and human resources in a flexible manner in order for the organization to achieve its goals and ensure that the goods and services it produces are in line with the specifications, standards, and required quality.

Operations management is a branch of management that focuses on planning, organizing, and redesigning the production process for the creation of commodities and services.

involves the obligation to make sure that the business's operations are efficient in terms of requiring the least amount of resources possible while yet meeting consumer needs. Planning, arranging, and overseeing in the contexts of production, manufacturing, or service supply are the main concerns of operations management.

The administration of a full production system, including the process that converts inputs (such as raw materials, labor, and energy) into outputs (such as goods and/or services), or offers a product or services, falls within the purview of operations management. Operations create service, control quality, and produce goods. Work with suppliers and customers, enterprises, banking systems, hospitals, and other industries are all included in operations management.

One of the key roles in a corporation, along with supply chains, marketing, finance, and human resources, is operations. The administration of both the strategic and ongoing production of goods and services is a requirement of the operations mission.

Operations strategy, product design, process design, quality and capacity management, facility planning, production planning, inventory control—these are only a few of the decisions that are taken in operations management for manufacturing or services. Each calls for the capacity to assess the current circumstance and identify improved options in order to raise the effectiveness and efficiency of production or service activities.

The importance of operations management is highlighted in finding a state of equilibrium and interdependence between the various productive elements that are available in the organization so that all efforts and resources are united in order to convert them into highly efficient goods and services that contribute to increasing the organization's profit and outperforming its rivals in the market. The organization's management is responsible for balancing The costs and benefits of the various productive elements that are available in the organization.

The Procedural Guide to Industrial Operational Simplification, which will support the Indonesian-based Ever Green Tractor Company from beginning to end in their production operations, will be the first topic covered in this study. It will also include suggestions for an eco-friendly strategy to cut back on the use of pollutants in the company's manufacturing process. He will talk about how to create a greener process using tools from the twenty-first century. Second, this study will create a Ever Green Tractor operations manual that is socially responsible and addresses its pollutants. Additionally, it communicates industry requirements for the disposal of chemical waste and eco-friendly alternatives to conventional manufacturing methods.

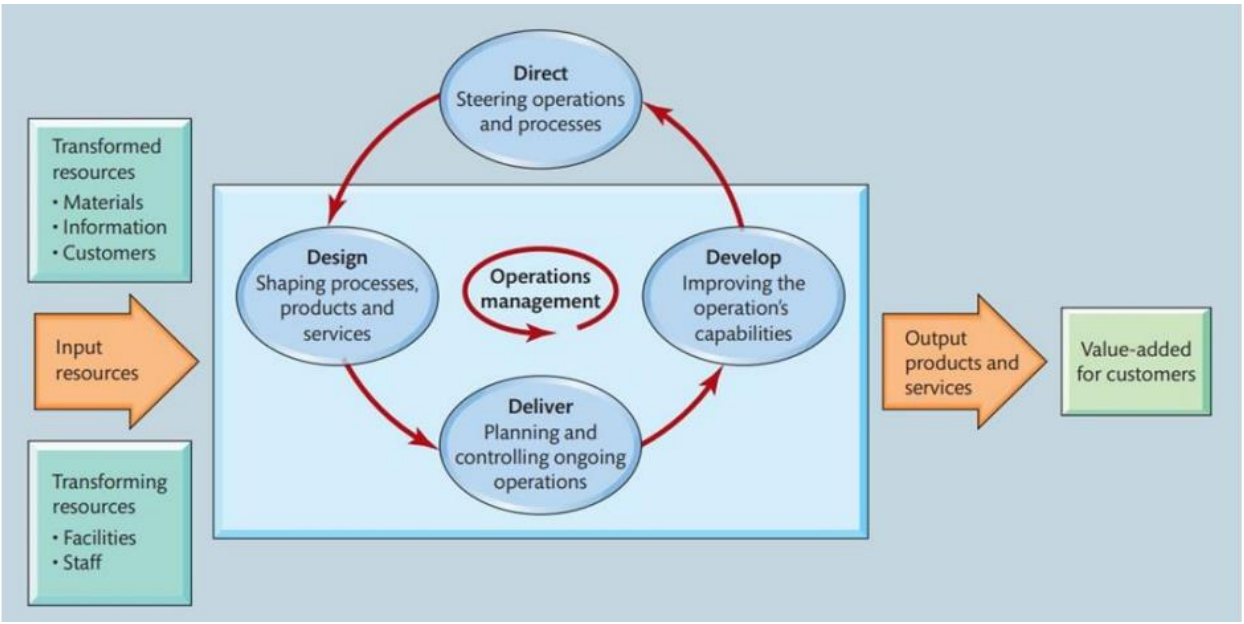

Figure01: (Slack & Brandon-Jones, 2013)

Company Profile:

Ever Green is a production company located in Palembang, Indonesia. The organization has experienced backward advancement in recent years as a result of low productivity and environmental productivity. To make the industry more competitive, the corporation must restructure its operations.

Ever Green Tractor Company Recommendation Procedure Guide for Operational Industrial Simplification for Cost Effective Manufacturing Operations

Many manufacturers are currently searching for methods of cutting costs. This might be anything from removing employees to turning away from cutting-edge technologies. These tactics can also stifle originality and destroy ethics, allowing rivals to advance (branding, n.d.).

Production Plan: To increase productivity, every firm requires a solid production plan.

Effective onboarding, however, is a dynamic process that involves several different tasks in order to integrate people, tools, and resources wherever and whenever they are required.

A roadmap is what production planning is: it tells you where you're going and how long it will take to get there.

Here are some advantages of an efficient planning and manufacturing strategy.

- Reduce labor costs by streamlining the process and cutting back on time.
- Reduce the costs associated with inventory by lowering inventory protection requirements and eliminating surplus stock.
- Machine capacity is increased and usage is made simpler.
- Improving product and service delivery on time.

Understanding the fundamental duties that business owners and managers must do during the planning process is essential for effective planning. These instances are listed below:

Standard time and steps:

In general, a successful approach to evaluating production steps involves mapping the processes and incorporating average time estimates for completion. It is important to note that not all steps follow a sequential order, and some may occur simultaneously. By completing the process map, you can gain an understanding of the overall time required to complete the entire process. When work needs to be repeated or matched, it is necessary to standardize the tasks and associated time. Documenting and adopting similar practices serve as a foundation for identifying potential pathways and estimating time requirements for future use, thereby expediting the preparation process. Waste elimination can be addressed during the process mapping phase by applying operational efficiency and lean production concepts, which aim to reduce waste, streamline processes, and enhance delivery and cost efficiency.

Standardization plays a crucial role in facilitating the efficient utilization and reusability of materials, resulting in volume and interoperability savings. In the realm of mechanical systems, industrial voltage standards have been established, and advancements in electronic network systems have also emerged. Similar to the standardization of gauges, tires, and belts, as well as energy discharges, the normalization of electronics and controls, such as networks and buses, contributes to advancements in agriculture. However, there is a growing demand for the rapid transfer and integration of electronic functions in this field. The industry is currently facing a shortage of individuals with the necessary expertise to meet this demand (Reed, Schuyler, & Norris, 2003).

Design issues for manufacturing

Costs of production for agricultural equipment can be decreased with certain design choices. In this situation, effective engineering and management will lower the cost of production. A number of things can influence the cost of production. It has been shown how crucial standardization and reusable components have been throughout history. Cost growth in the sector is still an issue. One strategy to address rising expenses is modularization. Modularization, which achieves product diversity by combining requirements and requirements, lowers costs. Performance and manufacturing costs may significantly improve as a result of technological developments in electronic equipment and the development of computers into mechatronic systems. If not anticipated, other considerations like regulatory issues could result in high manufacturing costs (John Franklin Reed, John Schuyler, and William Robert Norris, 2003).

Just in time in the manufacturing process

The business should approach production in a timely manner so that it may boost productivity and cut waste by procuring products just when needed by manufacturing processes. Lower inventory costs will eventually result from this. The JIT method prevents waste brought on by overproduction, waiting for supplies, and holding excess goods. With this strategy, manufacturers will be able to lower their overall costs and guarantee access to the components needed to produce their products (Chiu, Yang, & Lin, 2017)

Automation in manufacturing processes

For more efficient manufacturing procedures, Ever Green Tractor must automate their processes.

Automation is the process of carrying out and organizing the industrial processes using particular technologies and instruments without the need for human participation. It is a technology that emphasizes using computer, electronic, and machine-centric systems to run and manage production (Vogel, Walter, & & Elkmann, 2017). The following are some advantages of automation in manufacturing processes:

higher standard By lowering the rarity of flaws, it ensures the excellent caliber of the goods.

Automation helps a business replace labor-intensive operations and cut labor costs, reducing labor costs and reliance on labor scarcity.

Reduces the amount of time between the customer's order and the product's delivery.

Plan to reduce defects in the entire manufacturing process

It is common knowledge that efficient production results in a finished product with few product defects.

Costs and turnaround time increase when a product's flaws increase (Ford & Despeisse, 2016).

Inspection: Companies should routinely analyze their production processes to find the source of errors. Today, it is possible to remove manufacturing faults using easily available technologies including ultrasonic, particle, vibration, and resistive monitoring.

The Six Sigma Method: The Six Sigma approach was first developed by Motorola in 1986 as a set of tools and strategies for enhancing production operations. The phrase was first coined by Jack Welch in GE's corporate strategy in 1995 and is now utilized by other companies. Six Sigma reduces variability in market and production processes and identifies and eliminates defective components to improve manufacturing performance efficiency. (simplilearn, 2023) According to this method, the business has gone through a specific number of phases to determine the project's

goal value. In order to increase levels of profitability and customer satisfaction, a corporation can use Six Sigma in manufacturing to decrease emissions, shorten one or more process cycle durations, and lower production costs (Brack, et al., 2019)

Use of technology: Technology can aid a business in identifying manufacturing process flaws. In order to deal with it rapidly, technology must be used in the early stages of the manufacturing process, including the usage of IT services, computer modeling, etc. (Abrahams et al, 2015).

Take precautionary measures: This approach will be used in the final stages of manufacturing. In order to prevent any defects, the corporation must make sure that every machine is operating correctly.

Kaizen approach: It is a method that enables a product to advance consistently. It's a style of company plan that offers suggestions for process-development brainstorming sessions. The strategy's primary goal is to improve currently used standard operating procedures and programs, minimize waste, and so increase efficiency in industrial operations. Six steps make up this strategy: Analyze the room for improvement. assessing current techniques; coming up with innovative concepts; Create a plan for implementation. offers a strategy and evaluates novel approaches. Kaizen is a practical method for reducing flaws through heightened consumer expectations, product innovation, and supply chain productivity.

Using 21st century tools to create a greener process

Environmental waste can be affected in many different ways by lean tools. The Environmental Protection Agency's lean tool-based research in organizations from many industries has provided comprehensive knowledge about 5S, TPM, cellular manufacturing, JIT, Kanban, and Jidoka, as well as the advantages of waste minimization. The list of lean tools for developing a greener process is summarized in this section (Sabadka, 2014).

Jimba: Gemba, a phrase from Japanese, refers to "the real place" where labor is done, such as the factory floor's shop floor. Lean relates to the location, whether it be physical or digital. Going to the gemba is a method to go to the heart of the value being created. It is also an opportunity to leaders to leave their desks and spend some time at the plants getting to know their workplaces deeply and carefully. The people on the front lines, who have the finest knowledge of how systems can change and problems can be solved, are frequently ignored when making judgments about value sources.

When issues develop, it's critical to take stock of the situation and come to informed conclusions that truly reflect the problem. One of the three key Lean tools, the gemba, can help leaders become more analytical by assisting them in approaching their issues with more humility.

Heijunka: This instrument, which flattens manufacturing production over a consistent time, is the best tool of the twenty-first century for helping firms reconcile unpredictable client demand patterns and lessen industry waste. reduces inventory as well as lead time (Santos, 2020).

Kanban is a visual tool used in lean and intermittent manufacturing to manage production. Based on signal cards that surface when more stuff is required, it uses programmed replacement. This tool's benefit is that it eliminates excess production and waste from stock (Sabaghi, Rostamzadeh, & Mascle, 2015).

Poka Yoke: Another cutting-edge tool for lean production that reduces waste and helps businesses go green. By putting a stop to or altering errors made by others, it removes flaws. This technique quickly identifies problems because it is challenging to find all faults and defects through examination (Abrahams, Fan, Wang, Zhang, & Jiao, 2014).

Just in Time (JIT): Lean production relies on just-in-time production. It is the idea of producing in the quantity required by the customer, when and where he wants, without holding production up or wasting materials. It aims to specifically eliminate inventory from your business operations.

Socially Responsible Pollutant Plan

Industrial standards for chemical waste disposal

Industry standards for disposing of chemical waste outline proper procedures and directives for handling manufacturing waste. The majority of businesses generate hazardous chemical waste throughout the whole manufacturing process. The Environmental Protection Agency offers guidelines for handling a company's chemical waste disposal. The Environmental Protection Agency provides industry standards that safeguard both the environment and human health.

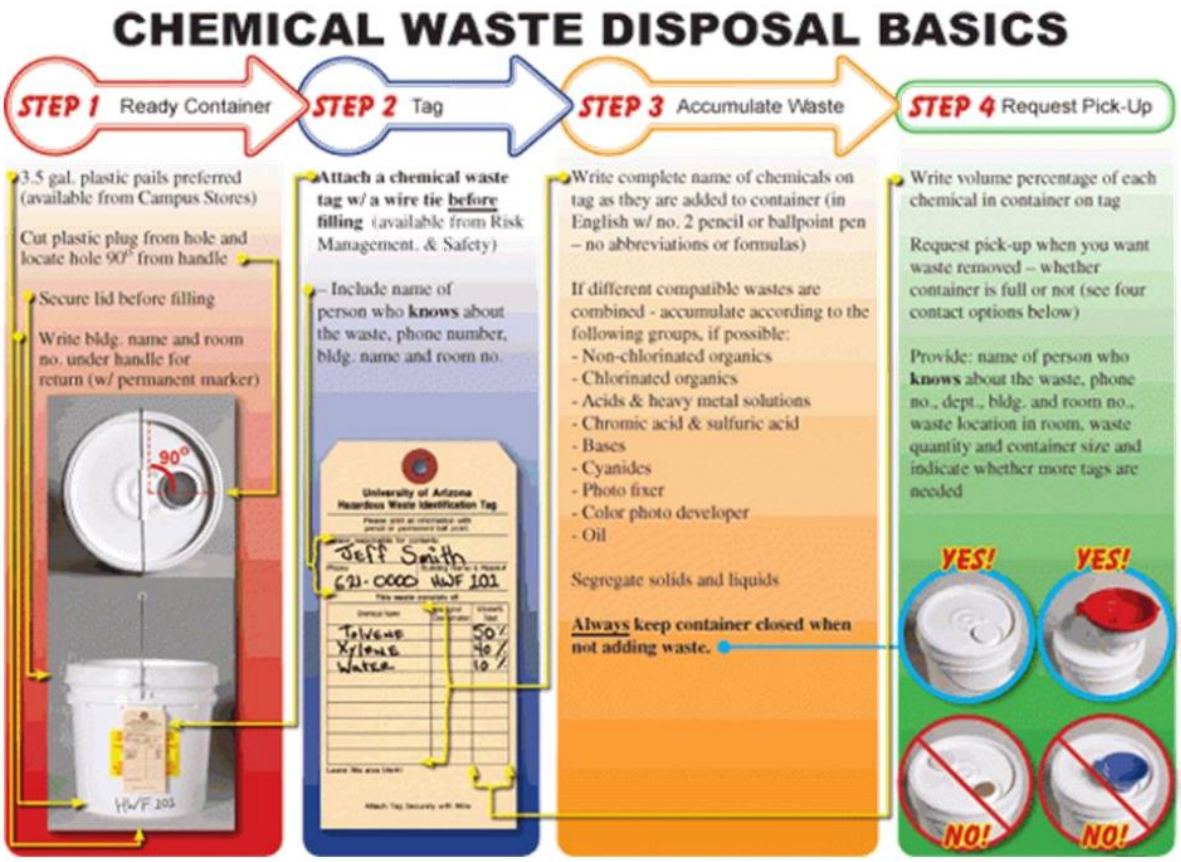

Figure02: (Arizona, n.d.)

Stage 1 - Preparing the packages

The appropriate container selection is essential for waste management. In a large green tractor enterprise or environment, an incorrect container cannot be released. The most popular jar is a

3.5-gallon HDPE plastic container. Bulldozers were to be provided by the Ever Green Tractor Company for two months. The major green tractor firm also owns waste packages in addition to the company's RMS empty containers.

Stage 2 - Waste Identification Card

The proper container is just as crucial as accurate waste identification. Everyone wins when the garbage container's quality is known. Federal and state rules require that the contents of the container be recorded as soon as the first drop of waste is put to the container. The tag tries to compile a list of the Ever Green Tractor Company's waste materials. It is a good idea to attach the tag on the bucket handle until the bucket is utilized.

Information needed for cards includes The full chemical name of the waste, the contact information, the building and laboratory names, the name of the person with the most familiarity with the waste, and the percentage of the entire amount.

Stage 3 - the accumulation of waste

The following compatibility classes should be distinguished from effluents:

- halogenated organic matter.
- Inorganic acids and solutions of heavy metals.
- Cyanide.
- Non-halogenated organic matter (including organic acids).
- Photo Stabilizer.
- inorganic bases.

Where waste is added to the bottle, the whole chemical name needs to be mentioned on the label.

Accept basic formulas and abbreviations, such as H2SO4, NaOH, and EtBr.

Liquids and solids need to be distinguished from one another. Solids in waste containers prevent consolidation and harm the waste disposal facility's pumping mechanism.

Containers must stay closed even after waste is introduced.

Stage 4 - Requisition to receive

After the RMS receives a receipt order, the waste will be collected.

Green alternatives to the traditional manufacturing process

Green production entails waste reduction and diminished environmental effects. Only through adopting techniques that have an impact on the process design, business standards, and product plan can this be accomplished. Every organization must give priority to actions like lowering discharge, using less energy, producing less waste, and using less water in order to have a green and ecologically friendly production process. The new green change processes that can be created during the production process are described below.

green product design

Green product design, also known as environmental design (DFE) or eco-efficiency design, is a strategic business approach that concentrates on environmental challenges at an early stage of product development processes to avoid negative environmental consequences throughout the product life cycle.

Create a sustainable product from the ground up. Green product design may contain standards for the product's final disposal (recycling, reuse, or disposal), resource use, manufacture, and material selection.

It is not a stand-alone technology; rather, it needs to be incorporated into an organization's present product design methodologies in order to harmonize environmental requirements with traditional product qualities like effectiveness, competitiveness, and functionality. Green products may be more easily upgraded, disassembled, recycled, and used than their conventional counterparts, using fewer materials and modular, replaceable parts (ecomall, n.d.).

laser-assisted manufacturing processes

It is a less harmful replacement for conventional manufacturing methods that uses less hazardous materials and generates fewer pollutants. By lowering wastes produced during industrial operations, this technique contributes to protecting the environment. Additionally, because it is offline, it helps the tool last longer (Manvatkar, De & DebRoy, 2015).

direct digital fabrication

It is an additional environmentally friendly option that uses FDM technology, which lowers waste and boosts output. It is a small industrial application that uses commercial additive technology to produce physical components directly from 3D CAD files. This technology is environmentally friendly since it uses less dangerous ingredients, produces products quickly, and produces less material waste. The product is produced with less waste using FDM technology. Plastic was utilized in conventional manufacturing techniques to create the object. In contrast, only a little amount of plastic is used to create FDM industrial parts, which produces insignificant amounts of waste structure material (Holmström et al., 2016).

Renewable and alternative energy sources

Unconventional energy sources, like natural gas, have seen an increase in price in recent years, and this trend is projected to continue. In general, a price increase raises the cost of production for a variety of operations, including stoves. The price of natural gas and electricity has an impact on the price of compressed air and steam. In order to combat rising energy costs and make sure that food producers become an organization of morally upright people, the warriors are taking unprecedented steps to include renewable and alternative energies into their operations. This provides them some control over their expenditure as well as some credibility with environmental movements, which is important for the food industry's fierce competition (Weil, 2008)

Implementation of new technology

The industrial industry has always been in need of technology. Big data analytics and sophisticated robotics decrease human interaction, boost plant productivity, and gain a

competitive edge in new technology breakthroughs. The future of manufacturing is being shaped by cutting-edge technologies like artificial intelligence, the Internet, and 3D printing because they lower production costs, boost uptime, and cut errors. Every producer needs to make a significant investment in these technologies since productivity is crucial to the success of a plant. These four technological advancements have a good effect on the manufacturing sector (www.reliableplant.com, n.d.).

Conclusion

Sustainability is the most important factor in the company's development process, according to the organizational guide mentioned above as well as the pollutant strategy and guiding principles. It must be kept in mind that the major guiding principles for more effective process manufacturing are modular designs and process standardization. Additionally, it has been determined that the Kaizen technique and the Six Sigma method may both be used to reduce defects in manufacturing operations. Additionally, the operational plan demonstrated the utilization of tools from the twenty-first century for an environmentally friendly operation, including Kanban, Hijunka, Gemba, Hoshin Kanri, and Nir Buka. Additionally, it can be inferred that there are several industry standards for various chemical byproducts of production operations.

Finally, it is determined that direct digital manufacturing, laser-assisted manufacturing, environmentally friendly material sourcing, renewable energy, and biofuels are the green alternatives to conventional manufacturing processes.

In order to regulate production and commercial operations as efficiently as possible, operations management is concerned. In order to maximize net operating profit, OM experts try to balance operational costs and revenue.

Operations managers are responsible for organizing, creating new procedures, and reassessing existing systems. Being an operations manager needs organization and productivity, and the job also calls for adaptability and innovation.

A worldwide perspective on market trends and knowledge of any financial restrictions and political unpredictabilities that may impact a firm can both be gained with an MBA in operations management. It also provides the knowledge and skills necessary to adapt well to change, as well as a firm understanding of the inherent complexity.

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