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**Introduction**

A wide range of operations are encompassed by the process buzzword "production process" or "operations," with definitions varying widely depending on where you look. For the sake of answering the question at hand, however, we'll stick to a simple definition: production is the process by which an organisation converts its resources into finished goods.

First, the needs of the client base are based into account when deciding on product quality, then the design or engineering team converts those needs into product specifications, and finally the manufacturing team turns those specifications into attainable goals. Therefore, the quality of the product supplied to the client is dictated by the cost-quality trade-off, and a correct balance must be created so that the quality of the product is offered to the customer within the predetermined manufacturing cost.

**1. The operational industrial streamline procedural guide that will guide Green Tractor:**

**A. The recommendation should include more cost-efficient manufacturing processes**

**The Proper Quantity**

A decision must be made as to the level of production for the manufacturing organisation; if too much or too little is made, the former will lead to the capital being held in the form of stock, while the latter would produce a shortage of the latter. (Appropriate amount)

**Costs paid in manufacturing**

The manufacturing department is responsible for producing the goods at the estimated cost, and any deviation from this estimate should be maintained to a minimal.

**Manufacturing schedule**

There are various problems, such as the unavailability of materials on time, absenteeism, machine failure, and so on, which affect the timely completion of products, therefore it must be coordinated to ensure timely deliveries. The actions of the manufacturing department are coordinated so that the goods are manufactured on schedule.

To reach this goal, the Big Tractor factory's manufacturing and production department must make efficient use of a wide variety of inputs, including resources, materials, and machinery. To this end, the production department must improve other, lower-level resources, known as objectives Intermediate, which will lead to more efficient resource utilization.

**Costs Reducing**

Because of the Internet, it is no longer required to manually search for sources, request quotations, or wait for responses in a slow mail system. Instead, everyone, no matter where they are located in the world, may gain quick access to material that is already prepared. This includes information on the costs of the materials, which can be gathered from a variety of various sources and compared with one another. The transaction and process costs have been considerably lowered as a result of procuring materials and completing production processes wherever labor, production, and operational costs or costs are lowest. CRM Businesses are

able to keep track of the preferences of their consumers, collect relevant information about those customers, and build systems that not only ensure customer satisfaction but also make customers happy by using cutting-edge solutions. This enables an even greater degree of product customization; for instance, Dell is able to build and send to a customer within hours a piece of technology that satisfies any and all of the particular needs that the customer has specified.

**B. A plan to minimize the defects throughout the manufacturing process.**

Maintaining the desired standard of quality in the goods and services offered by the process is the primary goal of quality control. Efforts are made to prevent flaws and rectify them (if any are discovered during quality control) to keep the required quality at a reasonable cost.

Automation of processes, enabled by cutting-edge technology, is a key strategy for lowering mistake rates in manufacturing. This aids in the refinement and development of work efficiency to reduce the occurrence of mistakes, which in turn contributes the amount of time and energy that would otherwise be spent. It's worth stressing how critical it is to take advantage of technology's tools, notably document management systems. To that end, we'll go through some ways that businesses can use technology to cut down on paper usage, which will help cut down on manufacturing flaws.

Why is it crucial for manufacturing operations to make use of cutting-edge technology and electronic document management systems?

Improve the efficiency of manufacturing and the quality of the finished industry through the process of cutting-edge technological methods; Increasing productivity since it requires less of your time, energy, and resources. In a businesslike approach, you've organized and facilitated the workflow.

One of the most essential variables in a manufacturer's ability to control and monitor documents in a way that keeps employees engaged in and dedicated to their work is the widespread adoption and use of electronic documents and systems in the workplace.

Document Analysis: Giving process to Responsible Folks in Keeping an Eye on manufacturing. In addition, this facilitates highly efficient workflow monitoring,

Work documentation: digital and contemporary technologies help with the processing and maintenance of all documents and records, which in turn contributes reduce manufacturing error. One of the primary strategies that must be followed in the workplace to reduce the rate

of manufacturing error is the use of contemporary technology and digital means and the reduction of paper consumption in everyday work.

In optical interference, a beam of light is split in two, with one half shining on the target surface and the other on a mirror equipped with a reference standard. According to Saleh, the shape of the surface can be determined by analyzing the interference fringe produced when two rays of light are combined.

The idea of an interferometer has been known for over a century, and it is commonly used to detect displacement, optical refractive index, and surface abnormalities. It can measure both very short distances and very thin layers.

However, what Saleh developed is "the ability to detect complicated surfaces down to a nanoscale within the industrial environment, despite the presence of vibrations and other influences," as he put it. This development eliminates a significant problem for surface gauges encountered during manufacturing: the unfavorable process of environmental variables.

### **C. The usage of the 21st century tools to make a greener process.**

**Management of Production and Operations** The business of technology in the technology of operations management has led to a rise in productivity at many businesses over the past several years.

New tools and technologies have been included into the design and operation of service and production systems, and the process of technology has shifted from product development to the management and technology of the underlying operating system and processes.

Big Tractor's use of technology to manage operations is just one example of how this is done. Other examples include the optimization of the delivery process, the standardization and improvement of quality, the focus on personalization, and the creation of value for customers. Technology has a wide range of impacts on production and operations management.

#### **Supply Chain Management**

The manager is able to better understand customer response, their demands, stock in stock, how much to produce, and when to deliver, all at a lower cost thanks to a well-managed supply chain connecting suppliers, manufacturers, distributors, and customers. This is made possible by having a fast and effective information system at their disposal. In this context, the Internet, which is the most cost-effective intermediary information technology, plays an

important role by supporting the alignment of related activities to play a cooperative rather than a competitive role among supply chain management partners.

The Internet, with its vast processing capacity, ability to store information, and limitless possibilities for access to knowledge, is at the heart of the fourth industrial revolution, which in turn is a direct result of the significant successes of the third industrial revolution. The recent developments in technologies like AI, robotics, the IoT, autonomous cars, 3D printing, nanotechnology, biotechnology, materials science, quantum computing, blockchain, and others have opened up a world of possibilities that was previously unimaginable.

In the 1830s, the term "industrial revolution" began to be used to describe the rapid idea in industry that had occurred at the turn of the 19th century. Many economists and historians believe that primary industrialization in places like Europe, the Middle East, Mughal India, and China laid the groundwork for the conditions that eventually gave rise to the Industrial Revolution.

### **The revolution of the industrial age**

It is generally accepted that the widespread adoption of mechanization and the consequent reduction in the use of manual labor marked the beginning of the modern industrial revolution. During the 18th century, Western Europe experienced a scientific renaissance. New chemical manufacturing and iron production processes, increased use of steam and water energy, the development of Machine tools, and the emergence of the mechanical factory system were all direct results of the research and experimentation that spanned multiple scientific disciplines during the nineteenth century's industrial revolution. It's no secret that the Industrial Revolution had far-reaching effects on the European and global economies, social structures, and governments.

When comparing the number of people employed, the value of production, and the amount of money invested, the textile industry clearly came out on top during the Industrial Revolution. The textile industry was the pioneer in the adoption of contemporary production practices. The Industrial Revolution was a watershed moment in history because it had far-reaching consequences for virtually every facet of life, particularly the rise of the middle class and the overall population. Historians can't seem to agree on when the Industrial Revolution began and ended; some date it to the 1880s in Britain, while others claim it didn't really start until the 1830s and '1840s. TS Ashton, on the other hand, places it between 1760 and 1830.

British machine spinning launched the era of rapid industrialization in the 1880s, following a period of rapid expansion in steam power and iron production that began around 1800.

At the beginning of the 19th century, significant centers for the production of textiles, iron, and coal emerged in Belgium and the United States. Subsequently, the production of textiles emerged in France. This resulted in the spread of mechanized textile production from Great Britain to the rest of the European continent and to the United States.

Slowdown happened between the 1830s and 1840s because fewer people were using new discoveries from the early stages of the industrial revolution, like mechanical spinning and weaving. The 1840s and 1850s saw the widespread introduction of new technologies like the electric telegraph as well as the development of locomotives, steam boats, steamers, hot iron smelting, and other breakthroughs.

### **This second revolution**

After the turn of the nineteenth century, specifically between 1870 and 1914, before World War One, the economy expanded rapidly. Steel, oil, and electricity were just a few of the new businesses that sprung up during this time. The production of machine tools increased, as did the usage of sophisticated machinery in steam-powered facilities, and new systems for making manufacturing were implemented, as were assembly lines and electrical network infrastructure. Inventions including the telephone, the light bulb, the phonograph, and the internal combustion engine all saw widespread use during this time. Approximately how long has it been since the third industrial revolution?

### **The digital revolution**

The technology from analogue electronic and mechanical devices to modern digital technology is often referred to as the "digital revolution" or "third industrial revolution." This time period kicked off in the 1980s of the twentieth century and has yet to end. Examples of innovations that have come about as a result of the third industrial revolution include things like personal computers, the internet, information and communication technology, and renewable energy sources.

### **Robots of the 4th Industrial Revolution**

The digital revolution is the foundation of the Fourth Industrial Revolution, which is the based integration of technology into everyday life at all levels of society, including the individual. Robotics, AI, nanotechnology, quantum computing, technology, the IoT, 3D



printing, and autonomous vehicles are just some of the developing technologies that define the Fourth Industrial Revolution.

In his book titled "The Fourth Industrial Revolution," founder and technological Chief Executive Officer of the World Economic Forum Klaus Schwab describes how the current revolution is fundamentally distinct from the three that came before it, all of which were primarily characterized by advancements in technology. There is a great deal of optimism that advancements in these technologies will lead to a further expansion of the reach of the internet, fundamental improvements in the efficiency of businesses and organisations, and a revitalization of natural environments as a result of more effective management of the assets that make up those environments.

## **2. The socially responsible operational guide for Big Green:**

### **A. Industrial standards on disposal of chemical waste.**

The term "clean technology" (cleantech) refers to any process, good, or service that lessens its negative resources on the product by making substantial gains in energy efficiency, resource conservation, or other forms of environmental safeguarding. Recycling, renewable energy, information technology, environmentally green transportation, electric motors, environmentally green chemistry, environmentally friendly lighting, and even grey water are all technologies of clean technology. New clean technology projects that go "above and beyond" the scope of "business as usual" can qualify for environmental financing by creating carbon credits. The Carbon Project is another name for a programme that aims to lessen global warming's devastating effects.

Big Tractor is trying to find better ways to reduce down on trash and pollution. "Clean technologies are competitive with, if not superior to, their traditional counterparts," says Big Tractor. The opportunity to improve the lives of people in both developed and underdeveloped countries is just one of the many extra benefits offered by many. Since being brought to widespread attention around the year 2000, investments in environmentally friendly technology have exploded. Climate Investing in renewable energy reached a record high of \$148 billion in 2007, according to the United Nations Environment Programme, because to rising oil prices and new government policies that supported the sector. A whopping \$50 billion of that was invested in wind power. From 2006 to 2007, sustainable energy and energy efficiency investment rose by 60 percent. Photovoltaics was predicted to be one of the three major clean technology areas to succeed in 2009. Companies are also starting to talk a lot about clean technology. Pollutants and unclean fuels can be reduced for all businesses, no matter their industry, and this technology has made it advantageous to reduce environmentally friendly methods. They promote sustainability through the use of clean technology and other means by establishing corporate social responsibility (CSR) objectives.

In order to mitigate the effects of future greenhouse gas emissions from industry, which cause climatic fluctuation and change, the shift toward green industrial development is crucial. Roughly 14 gigatons of CO<sub>2</sub> are the result of the industrial sector's carbon footprint (including electricity use). Unsustainable patterns of industrial development can have a negative effect on the environment, but strategies to adapt to climate change may have a good effect on industrial development.

## **B. Green alternatives to traditional manufacturing process:**

### **Putting Big Tractor Factory's industry into context**

#### **The Role of green Industry in big Tractor:**

One aspect of the green industry is "that industry that works to meet human needs and social and economic development without harming the environment and natural resources," which is defined as "that industry that works to meet human needs and social and economic development without harming the environment and natural resources, through the optimal investment of renewable resources, reducing waste, reusing and recycling to reduce the

negative impact on health and the environment," and "improving energy efficiency," which leads to preserving on natural resources as well as reducing greenhouse gas emissions based on the use

- Utilization of all available energy, water, and other resources.
- Eliminating garbage, both trash and liquid, is a priority.
- Recycled materials from manufacturing operations.
- Using less dangerous alternatives to the currently used toxic substances in industry.
- That production and technology are compatible with global environmental standards.
- Spreading out green investment opportunities.
- Setting up shops that use less energy and resources in their production, are more sensitive to environmental considerations, and offer rewarding careers.
- Keeping the environment safe and livable for people of all ages.
- Taking steps to reduce carbon emissions throughout the manufacturing process can help slow the rate at which the planet contributes.

#### Big Tractor Factory's Path to Sustainable Industrialization

"Greening" current industries by boosting productivity and economic effectiveness through more effective use of available resources.

Environmental services, such as consulting in the field of energy conservation and improving chemical handling systems, are just a few examples of the new "green" industries that are being developed to increase the widespread use of environmental technologies. Other examples include manufacturing factories that produce units that benefit from solar energy, wind energy, and biomass. These are just a few of the new "green" industries that are being developed. Through the consistent application of a preventative strategy across the board (manufacturing, marketing, and services) cleaner production safeguards the environment from industrial pollutants before they even enter the system. This has the dual benefit of increasing efficiency while decreasing risks to human health and the environment.

Clean or green energy is renewable energy, sometimes known as infinite energy. Solar, wind, and tidal energy are the three primary forms of renewable energy that can be used immediately; they have virtually infinite reserves and are therefore the best place to start. Sustainable energy targets Get energy at the lowest costs possible, and get rid of energy sources that destroy the environment, like coal and oil, if you want a clean and green future.

Solar energy was utilized to light fires and cook in some situations, while wind energy propelled ships over the oceans and powered windmills to process grain. When weighing the pros and cons of solar power, it's important to consider both the positive environmental impact and the hefty initial investment needed to get started. As a form of kinetic energy, tidal energy is harnessed when the moon and sun pull water up from the gravity at high tide, while at low tide, the water pulls against the force of its own gravity and the force of the earth's rotation, yielding the following common applications of this form of renewable force. Taking into account the environmental benefits, renewable energy is also known as clean energy or efficient energy, and its most common applications include the following in the manufacturing sector: Many manufacturing processes, from paper making to running HVAC systems, rely on the heat produced by solar radiation. Plants used in the production of edible minerals. Energy from the sun is harnessed by solar panels and utilised to power buildings like homes and factories. It's important to remember that solar power has come a long development in the previous ten years, especially when it comes to producing electricity. Since ancient times, humans have used the wind's kinetic energy to power technological advancements. Spices, paints, cocoa, tobacco, and dyes have all benefited from being processed using wind energy. Renewable energy, in a nutshell, is infinite energy, and it comes in many forms, such as wind, solar, and tidal power. Being aware that it does produce some environment, it is nevertheless considered environmentally friendly because it is safer than most other energy sources. Because it allows us to exert more environment over our surroundings and more easily adjust to change, energy utilization is crucial to the development of human society. Effective energy management of Big Tractor is essential for any civilized culture. Energy technology development is essential in the industrialized world for a variety of resources, including agriculture, transportation, waste collection, IT, and communication. However, the increased energy use since the Industrial Revolution has resulted in a variety of major issues, some of which pose catastrophic hazards to the planet, such as global warming.

Because of how simple it is to harness the energy contained in fuels, petroleum products, and electricity, the purpose "energy" is sometimes used interchangeably with "energy resources" in certain resources. Even when the total process of energy is conserved after a process, the energy is typically converted into forms that cannot be used, therefore the energy's plurality is not conserved (such as excess or unnecessary heat). Since then, humans have learned to harness the earth's many natural energy resources, leading to the development of numerous resources that enhance our quality of life through the strategic application of these previously

unknown assets. Thus, while Neandertals undoubtedly understood the use of fire for cooking, the advent of gas stoves and microwave ovens greatly boosted the demand for energy for this purpose and fed many more people. That this pattern holds true across all spheres of human endeavor, including but not limited to the building of social infrastructure, the manufacture of covering cloths, promotion, printing, decorating, e.g. textiles, air conditioning, contact for information, and transportation of both people and goods (vehicles)

Numerous barriers, such as market structures, a lack of knowledge about emerging renewable technologies, a lack of access to financing, high financing costs, a lack of regulatory frameworks, a lack of rewards for substituting exogenous fossil fuels (such as carbon emissions and domestic air pollutants), a small market size, and inconsistent policies, have stymied the rapid adoption of renewable energy. Thankfully, many of these barriers are crumbling thanks to the persistent efforts of industry, governments, financial institutions, and regulators.

## **Conclusion**

Industry in the Big Tractor plant was the focus of my report. I offered a number of suggestions that would cut costs and reduce productivity at the manufacturing facility. I also discussed the importance of implementing 21st-century tools and tools into the industry in order to achieve maximum efficiency. The research highlighted an industry-wide green movement toward less waste, lower carbon footprints, and better environmental protection. Industry facilities like Big Tractor Factory should embrace technological advancements for all the benefits they bring to the technology.

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