

Benefits and impacts of production technology



Therefore, it is that part of an organization, which is concerned with the transformation of a range of inputs into the required (products/services) having the requisite quality level. Alternately, according to Oxford Dictionary (2012), production can be defined as the act of converting or transforming a component or raw material to a meaningful product, thus it can be stated that production is a process of transformation of an input to an output. For an example, the raw steel processed to be a knife or steel plates. Figure 1 – Process of Transformation.

1. Definition of Technology. The most general definition of technology is the application of science or knowledge to commerce and industry. Many fields of science have benefited from technology, as well as commerce and industry over the many centuries of human history. Perhaps the earliest known use of technology was in the Stone Age when the first knife or shovel was made from a piece of stone or obsidian. Technology has obviously come a long way since then. Basically, technology is the process of applying the findings of science and other forms of enquiry to applied situations.

Rose, R. , & Watt Osama, s, 2012]. 3 1. 3 Definition of Production

Technology. Production technology therefore involves applying the work of experts to develop new products and processes. There are a range of new technologies that are being applied to improve production methods and outputs [Wabash, 2012]. For example the widespread application of Information and Communications Technology to a wide range of production methods, such as: The use of computer databases for online booking in the airline industry.

The development of broadband services, benefiting small businesses to communicate using the Internet across the country. The use of company intranet systems to inform, and train, employees in companies like Dell creating a more skilled and highly efficient workforce. Robotics provides a good example of modern production technology. Robots involve automatic control. In other cases the robot can learn to copy movements carried out by a human operator. As robots become more 'intelligent' they increasingly have some system for checking progress for example Automatic Optical Inspection machine (III).

Other examples of production technology are computer aided manufacturing, and computer aided design (Autocrat). 1. 4 How Technology was discovered? The axe makers, whose discoveries and innovations, over thousands of years, have gifted power in innumerable ways. Each time the axe makers offered a new way to make mankind rich or safe or invincible or knowledgeable, they accepted the gift and seed it to change the world and when mankind changed the world, they changed their minds, for each gift redefined the way mankind thought and the values.

The precise sequential process that shaped axes would eventually generate language and logic and rules which would formalize and discipline thinking itself. Manufacturing process is a huge process which involves different types of tasks. Hence technology makes it easy to manage all the different types of tasks involved in manufacturing. [Wood, D. , & Hoffmann, 2011]. 4 2. 0 Literature Review. Production Technology has affected us in various ways, from social life to working life. Every single mankind would directly or indirect somehow been moved by the subject matters.

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The application of production technology has been widely used in many sectors for example agriculture, education, transportation, communication and many more. In this report, the benefits and impacts of production technology are focused on manufacturing and medical sector. The influences of production technology can be observed distinctly in the manufacturing and medical sectors. The manufacturing sector is one of the main industry in developing like Malaysia and most of developed countries such US and Japan.

Now that technology and science allows for much more production in manufacturing sector per worker far fewer people are needed in Jobs like these. Rather Jobs involving technology and scientific advancement are steadily growing. Advances in medical care, people with disabilities or health problems are now more and more able to live closer to normal lives. This is because science contributes to developing medications to help health as well as technology such as mobile chairs and even electronics that monitor current body levels.

Simultaneously, the production technology also has consequences, be it positive or negative to both f the sector in which, for example the loss of Jobs in numbers as production technology reduces the manpower needed for a particular Jobs in manufacturing sectors for example, traditionally, a production line may require 30 to 40 operators for an assembly line but with this technology introduced it may require 20 to 25 operators, thus there are almost 40% reduction in manpower.

With new technologies been discovered, the new method has to be trained to other medical practitioner as well, which means continuous training of skill and knowledge to new staffs and directly or indirect this involves cost and resources. All the reference and notes are taken from online articles, Journal and e-book. The citation can be observed in reference page. 5 3. 0 Benefits of Production Technology. 3. 1 Benefits of Production Technology in Manufacturing. Manufacturing technology provides the tools that enable production of all manufactured goods.

These master tools of industry magnify the effort of individual workers and give an industrial nation the power to turn raw materials into the affordable, quality goods essential to today's society. In short, they make modern life possible. Manufacturing technology provides the productive tools that power a rowing, stable economy and a rising standard of living. These tools create the means to provide an effective national defense. They make possible modern communications, affordable agricultural products, efficient transportation, innovative medical procedures, space exploration and the everyday conveniences taken for granted.

Production tools include machine tools and other related equipment and their accessories and tooling. Machine tools are non-portable, power-driven manufacturing machinery and systems used to perform specific operations on man-made materials to produce durable goods or components. Related technologies include Computer Aided Design (CAD) and Computer Aided Manufacturing (CAM) as well as assembly and test systems to create a final product or subassembly. [Kohl, IS. , 2005]. 3. 1. 1 Products and Productivity.

Advances in technology have spurred new products and manufacturing processes.

In turn, this has led to improved productivity in manufacturing including:

Better product design
Improvements in supporting activities
Improved product economics – opening up new markets by products being affordable
Reductions in labor requirements
New market opportunities – market growth opportunities in sessions that supply low-cost labor, making for better economics in both production and distribution. Contract manufacturing – a new class of companies that provide third-party manufacturing capability.

Today most of the products manufacturer uses the various types of technologies in the process of manufacturing. The usage of high tech machinery increases the accuracy and speed of manufacture. This also lowers the cost of production. There are different types of technologies used to manufacture a product. Some of the techniques are here under: Radio Frequency Identification. RIFF) RIFF is an excellent business tool that helps manage supply chains, increase margins and profits, and decrease costs. RIFF system consists of a radio enabled device that communicates with a tag or label, which contains an embedded single chip processor and antenna.

In manufacturing and distribution environments, the adoption of RIFF technology helps in smoother running business environments, increased input and productivity and reduced costs, leading to more competitive pricing. Computer integrated manufacturing (CAM): Here, computers control the whole production line. Best example is in production of cars where robots undertake much of the work, reducing the need for labor to perform boring, routine tasks. Artificial Intelligence (AY): AY enables information integration

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for decision making from conceptual design, engineering, planning, scheduling, fabrication, testing, shipping, and customer service.

Expert Systems, Artificial Vision, Natural Voice Recognition, and Voice Recognition also comes under Artificial Intelligence. Computer Integrated Manufacturing (CAM): Computer Integrated Manufacturing is an overall process that stresses the goals of computer use for factory automation. CAM increases efficiency of manufacturing through work simplification and automation, improves utilization of production facilities, reduces investment in production inventories using JIT practices and improves customer service.

7 3. 1. Collaboration. Collaboration allows a group of companies to share the risks involved and facilitate the rapid adoption of a new technology.

Collaboration, or partnering with a purpose, must consider: Risk – of time and cost as well as risk in sharing resources and IP with a competitor or a supplier, and also the risk of failing to maintain a market lead or presence if you do to proceed. Resources – cost-sharing helps reduce the resources needed to technological objectives Resistance – within the company to getting involved at all.

The ability to communicate fluidly and collaboratively over distances loosens geographical linkages, alters organizational structure, and changes control structures amongst ancillary activities. 3. 1. 3 Lean Mass Production. Lean production and flexible specialization have been introduced to update mass manufacturing to better align with today's market models. Manufacturing models focus either on making a complete product or component based. In a component based value chain, much of the value is in the intellectual property of the components.

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Cross-national production networks disintegrate the value chain into constituent functions that can be contracted out to independent producers wherever those companies are located in the global economy. This strategic and organizational innovation, known as value supply chain management, means that production of even complex products can become a commodity service that can be purchased on the market. 3. 1. 4 Energy Sustainability. Manufacturing processes are amongst the most energy-intensive industrial systems.

By developing and adopting more energy-efficient technologies, the manufacturing industry can boost its productivity and competitiveness while improving national energy sustainability and reducing environmental linked to global climate change. Even small efficiency enhancements to technologies widely used in industrial sectors can have a large impact if adopted across entire industries. [Carnivals, T. , 2009]. 8 This is particularly so in heat, power, and process heating systems. Improvements in combustion can also improve energy efficiency, reduce emissions, and enhance fuel flexibility.

Applying best practices to the basics behind many manufacturing processes such as motors, steam, and compressed air systems can save up to 30 percent or more of energy used in a plant in a few years. 3. 1. 5 Competitive in the Global Marketplace. Advancing technology has helped the economy compete with the rest of the world and provide a lot of opportunities.

Modern-day machinery is 20% to 25% more productive than that in use five years ago. [Ginger, K. , 2006]. To compete with nations using costiveness

labor, the manufacturing industry has resorted to using enhanced machines and tools.

By utilizing automation and CNN machines, genuineness are able to reduce the number of manual tasks during production. Technology has made businesses more profitable and has reduced costs pertaining to work in process. Modern methods move raw materials off the floor faster and get jobs done more smoothly and swiftly than in the past. Even imports of equipment are beneficial to the economy as they help keep production costs as low as possible. 3. 1. 6 Technology Creates New Jobs. Innovation always creates new Jobs.

With the reduction in manual labor, a need for new types of workers has emerged, particularly in more strategic manager-level positions. Because traditional manual tasks are now automated, today's manufacturing employee can focus on workflow analysis, control engineering, and software. Technological advancement also helps create Jobs in other areas, such as tooling, chip conveying, and fixture. Technologies that may impact the future of manufacturing include molecular and Anna manufacturing, micro-electromechanical systems, bimetallism and preprocessing, and forearm fabrication. Ginger, K. , 2006]. Niche areas such as the medical devices industry offer higher wages. They recruit skilled workers who can handle sophisticated equipment to maintain trending quality control standards. Interestingly, today's medical device companies are using traditional metal working techniques and skills as alternatives to additive manufacturing technologies that rely on rapid prototyping and extraterritoriality to make

highly customized products. The future of manufacturing depends on the creation of high-value niche areas. 9 3. 1. 7 Increase Sales Opportunities.

Business can improve its sales by placing ads in the websites which usually operate 24/7 through online sales. Companies can create a virtual storefront that is always open and available to consumers. 3. 1. Advertising Strategies.

Businesses are using websites as their new advertising strategies. Social networking websites have proved to be an effective method to reach the younger customers. Companies can also display their ads on third parties websites. [Kilts, K. , 2009]. 3. 2 Biotechnology in pharmaceutical

manufacturing. With the use of biotechnology many products like human insulin, growth hormone, human blood clotting factors etc. Are produced by using bacteria. Today many pharmaceutical companies are producing variety drugs based on biotechnology. 3. 2. 1 Benefits of Different Technologies

Used in Medicine. Personal computer, Internet and wireless communications has brought lot of changes in the field of medicine. With the help of these technologies doctors are now able to treat more number of patients easily and effectively than ever before. A researcher from Stevens Institute of Technology in New Jersey has created a breakthrough which is creation of a new medical technology based on sound waves.

The use of sound for healing is considered a branch of vibrations medicine. It is called as the 'time reversal acoustics' and it allows doctors to see inside of the patients' bodies, conduct noninvasive surgeries, and pinpoint the destruction of tiny tumors or kidney stones, all without a single cut from a scalpel. [Carnivals, T. , 2009]. Another type of technology used in medicine is

Anna technology, this technology is used to employ Anna particles to deliver drugs, heat, light or other substances to specific types of cells.

This technique reduces damage to healthy cells in the body and allows for earlier detection of disease. Backslash, a type of Anna particles are used to trap free radicals generated during an allergic reaction and it blocks the inflammation that results from an allergic reaction. Biotechnology is also used in the medical field to develop various types of low cost drugs that cures many diseases. 10 3. 2. 2 Information Technology. Technology plays an important role in the functioning of every business as it provides the basic tools for running a company.

With the introduction of new communication technologies and with the use of computers and Internet every business can perform its functions more easily. It will take lot of time, efforts and it consumes huge amount of resources for doing basic functions of the business without using the technology. [Lit-I, W. T. & Shah, B. M. , 2006]. Computers are the excellent means for storage of patient related data. Computers can keep track of prescriptions and billing information. Medical Journals, research and diagnosis papers, important medical documents and reference books can best be stored in an electronic format.

Many of the modern day medical equipment have small, programmed computers. Computer software is used for diagnosis of diseases. Many of the modern methods of scanning and imaging are largely based on the computer technology. Internet is also very helpful in the field of medicine as the deiced professionals can communicate with each other though they are from the

different countries. Medical field is the only field which can use the technology in both ways I. E. , in a positive and in a negative way. By using a technology it can create wonders for human welfare at the same time it can destroy the humans.

It is very easy to misuse the medical technology. Information technology helps the business to develop a computer program that is tailored according to the needs of the business and helps to meet the current business operations. 3. 2. 3 Mobility Wireless information technology and personal digital products have allowed impasses to improve the mobility of its managers and employees in the business environment. 3. 2. 4 Track Information. Every business uses a business or accounting software package to track the information.

The information can be exchanged within the organization with the help of intranets and data can be exchanged electronically which in turn helps the managers to review the information. Electronic transfer of information using business software allows the companies to enhance their decision making process and also helps to make important changes which can improve its financial position. 1 4. 0 Impacts of Production Technology. 4. 1 Decline in skilled worker. Although there are number of benefits a business has by using the technology, there are some downsides too.

According to the United Nations University, adapting technology has led to increased dependency. In addition, according to the Small Business Bible, the advent of technology has led to a decline in the skill level of the end users. 4. 2 Reduction in Labor force. New technology has often been seen as

both a remedy for and a threat to the manufacturing sector. Though automation has delivered improvements in radioactivity and quality, it has generated concerns about its impact on the availability and location of manufacturing jobs as well as the skills required to perform them.

Sophisticated equipment and modern-day processes have definitely increased productivity, but the belief that they have eliminated jobs in the manufacturing sector is a myth. Today's automated systems do away with a lot of traditional manual operations, which require skills that are now more difficult to find in the workforce. Companies searched for an alternative to this once very important workforce and hit upon technological innovations or automation. The workforce is regressing in the fields of software and programming, and the nation is building a base for a more competitive infrastructure.

This promises to keep domestic manufacturing booming. Thus, it would be short-sighted to state that modern automation is stealing manufacturing jobs. [Kilts, K. , 2009]. 4. 3 Risk Management Risk management is a decisive factor in all manufacturing sectors. Decisions must be made on:

Manufacturing location - domestically or overseas Adoption of innovations or evolutionary improvements Increase local labor or contract outsourcing Most nations do not provide a least-risk environment to start or expand a manufacturing enterprise, in spite of manufacturing being an important element in most economies. 2 Manufacturers need an environment that fosters: Individual freedom and political stability Safety and security Easy access to large and liquid capital markets A skilled workforce with a work ethic Easy access to a large consumer market Better education A supporting

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infrastructure Each of these elements presents a complex risk profile for manufacturers, and each decision made by manufacturers must consider each element. This demands a solid decision making infrastructure that not only supports sound economic decisions, but also reduces the risks at all levels. . 4 Require High skill workers. Though the IT and new technologies has provide much greater impacts on the overall operations of business in any field of work but to operate such high tech machines or computers it requires the operators to be highly trained and skillful. This require the organization to specifically train and invest in the human capital which leads to higher cost in term of the salary and retaining the workers in the organizations. 4. 5 Health implications.