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NAME: LUWI MOSES JALE

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**1 What is value chain analysis and what its main elements?**

With ever-increasing competition for unbeatable prices, exceptional products and customer loyalty, businesses must continually evaluate the value they create. One of the most valuable tools, the value chain analysis, provides businesses an advantage over their competition,

Value chain analysis can help organizations to gain better understanding of key capabilities and identify areas for improvement. It can help them to understand how competitors create value; and help organizations to decide whether to extend or outsource particular activities."

A business begins by identifying each part of its production process, noting steps that can be eliminated and other possible improvements. In doing so, businesses can determine where the best value lies with customers, and expand or improve said value, resulting in either cost savings or enhanced production. At the end of the process, customers can enjoy high-quality products at lower costs.

A value chain is the full range of activities – including design, production, marketing and distribution – businesses conduct to bring a product or service from conception to delivery. For companies that produce goods, the value chain starts with the raw materials used to make their products, and consists of everything added before the product is sold to consumers.

Value chain management is the process of organizing these activities in order to properly analyze them. The goal is to establish communication between the leaders of each stage to ensure the product is placed in the customers' hands as seamlessly as possible.

Competitive advantage cannot be understood by looking at a firm as a whole," Porter wrote. "It stems from the many discrete activities a firm performs in designing, producing, marketing, delivering and supporting its product. Each of these activities can contribute to a firm's relative cost position and create a basis for differentiation."

In his book, Porter splits a business's activities into two categories: primary and support.

Primary activities include the following:

* **Inbound logistics** are the receiving, storing and distributing of raw materials used in the production process.
* **Operations** are the stage at which the raw materials are turned into the final product.
* **Outbound logistics**are the distribution of the final product to consumers.
* **Marketing and sales** involve advertising, promotions, sales-force organization, distribution channels, pricing and managing the final product to ensure it is targeted to the appropriate consumer groups.
* **Service** refers to the activities needed to maintain the product's performance after it has been produced, including installation, training, maintenance, repair, warranty and after-sale services.

The support activities help the primary functions and comprise the following:

* **Procurement** is how the raw materials for the product are obtained.
* **Technology development** can be used in the research and development stage, in how new products are developed and designed, and in process automation.
* **Human resource management** includes the activities involved in hiring and retaining the proper employees to help design, build and market the product.
* **Firm infrastructure** refers to an organization's structure and its management, planning, accounting, finance and quality-control mechanisms.

**Conducting the analysis**

According to Strategic Management Insight, there are two approaches to the value chain analysis: cost and differentiation advantage.

**Cost advantage:** After identifying the primary and support activities, businesses should identify the cost drivers for each activity. For a more labor-intensive activity, cost drivers could include how fast work is completed, work hours, wage rates, etc. Businesses should then identify links between activities, knowing that if costs are reduced in one area, they can be reduced in another. Businesses can then identify opportunities to reduce costs.

**Differentiation advantage:** Identifying the activities that create the most value to customers is the priority. These can include using relative marketing strategies, knowing about products and systems, answering phones faster, and meeting customer expectations. The next step is evaluating these strategies to improve the value. Focusing on customer service, increasing options to customize products or services, offering incentives, and adding product features are some of the ways to improve activity value. Lastly, businesses should identify differentiation that can be maintained and adds the most value.

[Free templates](https://www.edrawsoft.com/valuechaintemplateword.php) are available online to help businesses determine and analyze their value chains.

**Goals and outcomes**

According to [Investopedia](https://www.investopedia.com/ask/answers/061115/what-are-some-advantages-and-disadvantages-value-chain-analysis.asp), the primary goal of using the value chain analysis is creating or strengthening your business's competitive advantage.

"If a company can create an advantage ... through a value chain analysis, it captures a competitive advantage and increases its overall profit," the article explains. "To capture a competitive advantage, a company maps out its specific activities within the five generic value chain activities and looks for ways to create efficiencies."

Ideally, value chain analysis will help you identify areas that can be optimized for maximum efficiency and profitability. It is important, along with the mechanics of it all, to keep customers feeling confident and secure enough to remain loyal to your business. By analyzing and evaluating product quality and effectiveness of services, along with cost, your business can find and implement strategies to improve.

*Additional reporting by Katherine Arline.*

**2) What are seven variables which production personnel’s should zero in?**

**Introduction:**

The factors of production are resources that are the building blocks of the economy; they are what people use to produce goods and services. Economists divide the factors of production into four categories: land, labor, capital, and entrepreneurship.   
  
The first factor of production is land, but this includes any natural resource used to produce goods and services. This includes not just land, but anything that comes from the land. Some common land or natural resources are water, oil, copper, natural gas, coal, and forests. Land resources are the raw materials in the production process. These resources can be renewable, such as forests, or nonrenewable such as oil or natural gas. The income that resource owners earn in return for land resources is called rent.   
  
The second factor of production is labor. Labor is the effort that people contribute to the production of goods and services. Labor resources include the work done by the waiter who brings your food at a local restaurant as well as the engineer who designed the bus that transports you to school. It includes an artist's creation of a painting as well as the work of the pilot flying the airplane overhead. If you have ever been paid for a job, you have contributed labor resources to the production of goods or services. The income earned by labor resources is called wages and is the largest source of income for most people.   
  
The third factor of production is capital. Think of capital as the machinery, tools and buildings humans use to produce goods and services. Some common examples of capital include hammers, forklifts, conveyer belts, computers, and delivery vans. Capital differs based on the worker and the type of work being done. For example, a doctor may use a stethoscope and an examination room to provide medical services. Your teacher may use textbooks, desks, and a whiteboard to produce education services. The income earned by owners of capital resources is interest.   
  
The fourth factor of production is entrepreneurship. An entrepreneur is a person who combines the other factors of production - land, labor, and capital - to earn a profit. The most successful entrepreneurs are innovators who find new ways produce goods and services or who develop new goods and services to bring to market. Without the entrepreneur combining land, labor, and capital in new ways, many of the innovations we see around us would not exist. Think of the entrepreneurship of Henry Ford or Bill Gates. Entrepreneurs are a vital engine of economic growth helping to build some of the largest firms in the world as well as some of the small businesses in your neighborhood. Entrepreneurs thrive in economies where they have the freedom to start businesses and buy resources freely. The payment to entrepreneurship is profit.

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**3) What is Just in Time Management System? Is JIT utopia? Can it be made to work? What is its philosophic approach in terms of batch size?**

Just in Time (JIT) is a Japanese management philosophy which has been applied in practice since the early 1970s in many Japanese manufacturing organizations. It was first developed and perfected within the Toyota manufacturing plants by Taiichi Ohno as a means of meeting consumer demands with minimum delays. Taiichi Ohno is frequently referred to as the father of JIT. Toyota was able to meet the increasing challenges for survival through an approach that focused on people, plants and systems. Toyota realized that JIT would only be successful if every individual within the organization was involved and committed to it, if the plant and processes were arranged for maximum output and efficiency, and if quality and production programs were scheduled to meet demands exactly.

[Just in Time (JIT) technique](https://www.mbaknol.com/operations-management/article-on-just-in-time-jit-management/) tries to ensure that there are no zero inventories, and goods are produced or ordered only when they are needed. Hence the name, Just-in-Time. In actual practice zero inventories may not be possible but the term Just-in-Time states the direction in which lot size should be headed.Just in Time (JIT) is an inventory strategy implemented to improve the return on investment by reducing in-process inventory and its associated costs.

The Just in Time inventory system is all about having “the right material, at the right time, at the right place, and in the exact amount.”

In the Just-in-Time inventory philosophy there are views with respect to how inventory is looked upon. Inventory is seen as incurring costs instead of adding value, contrary to traditional thinking. Under the philosophy, businesses are encouraged to eliminate inventory that doesn’t add value to the product. This system sees inventory as a sign of sub par management as it is simply there to hide problems within the production system. These problems include backups at work centers, lack of flexibility for employees and equipment, and inadequate capacity among other things.

The process is driven by a series of signals, or [Kanban](https://www.mbaknol.com/operations-management/kanban-system/) that tell production processes to make the next part. [Kanban](https://www.mbaknol.com/operations-management/kanban-system/) are usually simple visual signals, such as the presence or absence of a part on a shelf. When implemented correctly, Just-in-Time can lead to dramatic improvements in a manufacturing organization’s return on investment, quality, and efficiency. New stock is ordered when stock reaches the re-order level. This saves warehouse space and costs.

Main drawback of the just-in-time system is that the re-order level is determined by historical demand. If demand rises above the historical average planning duration demand, the firm could deplete inventory and cause customer service issues. To meet a 95% service rate a firm must carry about 2 standard deviations of demand in safety stock.

The determination of batch sizes involves considering the complex relationships between the batch size and a number of other elements including manufacturing lead time, work in progress levels, and finished stock levels. Most approaches to batch size determination have used analytical approaches which become untenable when full scale practical manufacturing systems are considered. Furthermore most studies of the effects of batch size have concentrated on relatively small systems which fail to fully reflect the size and complexity of practical manufacturing systems.

**Reduce buffer inventory:** Buffer inventory exists partly because a manufacturing workstation may breakdown and partly due to uncertain supply from suppliers. When these events happen, production in following workstation is disrupted unless there is an inventory on which they can draw. The amount of [buffer inventory](https://www.mbaknol.com/financial-management/inventory-management/) can be reduced if steps are taken to minimize machine breakdown and [improve product quality](https://www.mbaknol.com/operations-management/six-sigma/). The purpose of just-in-time is to ensure that every workstation produces and delivers to the next workstation the right items in the right quantity at the right time; if this purpose is achieved there would be no need for buffer inventory.

**Decrease set-up costs:** With computer controlled machine tools, set up involves simply inserting a new computer program into a machine. Thus, after the computer program has been created, the cost of setting up for all succeeding lots becomes trivial.

**Decrease procurement costs:**Just-in-time also aims at decreasing procurement costs. Traditionally, procurement involved issuing requests for bids form many vendors, analyzing bids, placing an order with the best (usually the cheapest) vendor, and receiving and inspecting the incoming goods. As per the just-in-time philosophy companies now reduce the cost of each of these components by establishing relationships with one or two vendors for each item.

**Relation with customers:** Just-in-time also aims at establishing permanent relationships with customers for automatic ordering. Some manufacturers have systems in which their salespersons automatically place orders from retailers or other customers on the basis of preset formulas that determine reorder time and quantities; this reduces the customers’ ordering costs and also cements a relationship between the customers and the manufacturer.

Just-in-Time (JIT) as a Management Control System

Work-in-process inventory becomes so insignificant that it is disregarded. The only inventories are for raw materials and finished goods.

There is reduction in record keeping because, job-cost system is transformed into a process-cost system with only one cost center and elimination of the tedious task of calculating “equivalent production”, which is necessary to find  work-in-process inventory amounts when the inventory consists of partially completed products.

Just-in-time system focuses management attention on time in addition to the traditional focus on cost. A reduction in cycle time can lead to a reduction in cost.

Effects of Just-in-Time (JIT)

A huge amount of cash released as in-process inventory is built out and sold.

The response time of the factory falls, resulting in improved customer satisfaction.

Products may be built to order; completely eliminating the risk they will not be sold. This dramatically improves the company’s return on equity by eliminating a major source of risk.

Dramatic improvement in product quality.

In the commercial sector, it eliminates one or all of the warehouses in the link between a factory and a retail establishment.

Benefits of Just-in-Time (JIT)

**Set up times are significantly reduced in the warehouse.** Cutting down the set up time to be more productive will allow the company to improve their profits, to look more efficient and focus time spend on other areas that may need improvement.

**The flows of goods from warehouse to shelves are improved.** Having employees focused on specific areas of the system will allow them to process goods faster instead of having them vulnerable to fatigue from doing too many jobs at once and simplifies the tasks at hand.

**Employees who possess multi-skills are utilized more efficiently.** Having employees trained to work on different parts of the inventory cycle system will allow companies to use workers in situations where they are needed when there is a shortage of workers and a high demand for a particular product**.**

**Better consistency of scheduling and consistency of employee work hours**. If there is no demand for a product at the time, workers don’t have to be working. This can save the company money by not having to pay workers for a job not completed or could have them focus on other jobs around the warehouse that would not necessarily be done on a normal day.

**Increased emphasis on supplier relationships.** No company wants a break in their inventory system that would create a shortage of supplies while not having inventory sit on shelves. Having a trusting supplier relationship means that you can rely on goods being there when you need them in order to satisfy the company and keep the company name in good standing with the public.

**Supplies continue around the clock keeping workers productive and businesses focused on turnover**. Having management focused on meeting deadlines will make employees work hard to meet the company goals to see benefits in terms of job satisfaction, promotion or even higher pay.

Problems of Just-in-Time (JIT)

The major problem with Just-in-Time operation is that it leaves the supplier and downstream consumers open to supply shocks.

Just-in-time requires a business to resupply frequently instead of holding excess stocks. In practice JIT works well for many businesses, but it is not appropriate if ordering cost per order is not small.

Any delay in delivery means that additional ‘safety stocks’ need to be held if a stock out is to be rendered very unlikely.

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**4) How can computers aid in development, analysis and forecasting?**

**Introduction:**

Investment problems in developing countries are numerous and very different. The most important of them are identified. The necessary changes in management attitudes towards this problems are suggestions for their resolution are given.

This paper presents an attempt to investigate decentralized structuring and decision strategies for multi-sectoral planning and development programs. The overall planning program is essentially conceived as a two-level planning scheme. In this scheme, the planning task is disaggregated into a set of local planning subprograms carried out by the different economic sectors and an allocating program which has the job of providing the economic directives and the provisional distribution of the available resource.

The paper will describe the use of computers in modelling and simulating population growth and resource allocation. It will explain how dynamic models may be used to assist planning and decision making (e.g. education provision and population growth).

The construction of a national plan helps a community to make optimal use of existing resources in the production of various commodities. It can also be used to define areas of priority for expansion. The role of simulation in assessing plans for their effects will be examined.

This will entail a consideration of data collection, data generation, data reduction and data analysis, as these are all critical aspects of the successful simulation of complex situation and plans.

The computing simulation model can be constructed and applied during any phase of design or predesign conceptualization.

Model inputs can be systematically and easily changed to test any desired combination of system parameters and input variables. Model outputs are useful for answering specific questions about the system. That can be helpful in system design optimization and for providing a comprehensive picture of the system.

A forecast is developed using techniques designed to extract information and produce conclusions from data sets. Forecasting methods vary in the way they collect and analyze data and draw conclusions. The methods used for a technology forecast are typically determined by the availability of data and experts, the context in which the forecast will be used and the needs of the expected users. This chapter will provide a brief history of technology forecasting, discuss methods of assessing the value of forecasts, and give an overview of forecasting methodologies and their applications

**Reference:**

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**5) Describe the role supporting communized system in a book keeping, processing and delivering of orders from customer?**

**Introduction:**

The ongoing revolution in information technology (IT) has had a significant influence on accounting information system (AIS). Improvements in the IT have brought improvements in computers. Today, almost all organizations are using computers in their daily businesses. As computers become smaller, faster, easier to use, and less expensive, the computerization of accounting work will continue. Accounting activities that were previously performed manually can now be performed with the use of computers. That is, accountants are now able to perform their activities more effectively and efficiently than before. On the other hand, many companies are now applying JIT production system in order to be able to provide their customers with goods and services on time, and minimize all kinds of inventories in order to minimize the inventory-related costs. Use of computers by cost/management accountants will help them facilitate the use of JIT production system. The aim of this paper is to analyze the effects of improvements in IT on accounting information system. Also the use of computers by management accountants as an effective tool to apply JIT production system will be examined.

In the first section of this paper, information system will be explained. In the second, effect of advancement in IT accounting information system will be identified. In the third part, JIT production system will be explained. The last part, effect of computerized AIS on JIT production system will be examined.

Advancements in information technology (IT) have enabled companies to use computers to carry out their activities that were previously performed manually. Accounting systems that were previously performed manually can now be performed with the help of computers. Therefore, improvements in the information technology have facilitated the use of cost and management accounting procedures. On the other hand, most of the companies have started to apply just-in-time (JIT) production system as a tool to become competitive. Companies applying JIT production system aim at minimizing all inventory levels and delivering the goods and services to customers on time. In this sense, use of IT has also helped companies apply JIT production system more effectively. The aim of this paper is to identify how improvements in IT have influenced accounting systems. More importantly, this paper will also focus on examining the benefits of information technology for companies applying JIT production system.

Information Systems in General An information system is an organized means of collecting, entering, and processing data and storing, managing, controlling, and reporting information so that an organization can achieve its objectives and goals (Romney et al., 1997:18). This definition of information system shows that an information system has following components. Goals and objectives. Every information system is designed to accomplish one or more goals or objectives. For example, an information system may be designed to collect and process data about employees to help managers prepare payroll reports. Inputs. Data must be entered into the information system to be processed. Data are the facts that are collected and processed by the information system. Data are meaningless and useless, which, therefore, should be processed and transformed to meaningful, organized, and useful form that is called information. Output. Output is the meaningful and useful information produced by the information system. For example, weekly payroll report produced by the information system is an output. Data storage. In addition to the external data entered into the information system, there should be internally stored data used for processing. Processors. In order to produce useful and meaningful information, data must be processed. Most companies process data by using computers. Instructions and Procedures. An information system produces data by the following instructions and procedures. In computerized information systems, software includes procedures and instructions that direct computers to process the data. Users. Users are people who use the information produced by the system and who interacts with the system. For example, managers who use financial statements that are produced by an accounting information system are the users of the information system. 23 Control Measures. To make the system produce correct and error free information, necessary measures should be taken to protect and control the information system. Any system that includes the above components is known as an information system. The following section will show how accounting systems are established using these components. 3. Accounting information system (AIS) Accounting is the service function that seeks to provide the users with quantitative information. On the other hand, AIS is an information system that is designed to make the accomplishment of accounting function possible. AIS processes data and transactions to provide users with the information they need to plan, control, and operate their businesses (Romney et al., 1997:2). An accounting information system can be a manual system, or a computerized system using computers. Regardless of the type, AIS is designed to collect, enter, process, store, and report data and information. The following paragraphs explain AIS in detail. 3.1. Computerized Accounting Information Systems Along with the improvements in the technology, information systems have been computerized. Improvements in this technology have replaced manual bookkeeping systems with computerized ones. The revolution in the information systems, which started in the early 1950s when the first business computers became available, is still in progress (Nash, 1989: 5). Large mainframe computers have been replaced by small and fast personal computers at lower costs. As a result, accounting information systems that were previously performed manually are now performed by computers in most companies. Companies can now capture, process, store, and transmit data with the help of computers. Whereas data collections and processing were performed manually in historical systems, on-line collection and processing of data are performed by computerized systems (Grabski and Marsh, 1994: 63). In manual accounting information systems, processing of data is slow and subject to error. Fortunately, improvements in the technology have enabled companies to collect, process, and retrieve data quickly. In addition, there is less likelihood for error when data are processed with computers. In this case, functions of manual AIS that were explained in the preceding section, can be explained for computerized AIS as follows: Data input function: In manual AIS, the data are captured with the source documents and directly processed in journals and transferred to ledger accounts. On the other hand, in computerized AIS, after data are captured, they should be converted into machine-readable form. In most computerized AIS, source data automation devices that capture data at the time and place of their origins are used. For example, bar code scanners used in retail stores can record the sale transaction just as scanning devices read the codes located on the products.

Information output: After the data are entered into the computer and processed, information output is produced to meet the needs of the users. Information is presented in three forms: a document, a report, or a response to a query. Documents are records of transactions or company data such as invoices. These documents can be printed out using printers. In addition, they can be stored as electronic images in the computer databases. Reports are prepared for internal and external users. For example, to meet the needs of external users such as creditors, financial statements should be prepared. In addition, computers can be programmed to display financial information automatically in a required form such as spreadsheets. Today, electronic communication systems enable companies to transmit financial reports to the users electronically. This, of course, eliminates paper work and reduces costs. In addition to the reports produced for the needs of external users, reports can also be produced to meet the needs of the internal users such as managers. Sometimes, documents and periodic reports may not be enough to meet the needs of the users. If unexpected problems arise, managers can enter the system and query the information they need. A user enters a request into the computer to get the information, and the computer performs necessary tasks to solicit the required information. Once found, the information is retrieved and analyzed by the user. 26 In a manual AIS, transactions are first recorded in journals and then they are posted to ledger accounts. At the end of each accounting period, financial statements are prepared by using the ending balances of ledger accounts. On the other hand, in a computerized AIS, all the information is gathered in relational tables. In this case, financial statements can be prepared at any time by entering necessary commands into the computer. 3.2. Software Tools in the Accounting Process This section includes the most-frequently used software tools and their most appropriate use. Accountants must be familiar with the software tools because they help the users perform the accounting functions more effectively and efficiently. Accounting software. This software contains the basic accounting functions such as input, processing and output. There are two classifications of accounting software as low-end and high-end. Low-end is all-in-one software, which means all of the functions of accounting system are performed within one software. Therefore, lowend software is used for small companies. On the other hand, in high-end software, each accounting function comes in a separate module. Each module checks data for correctness, processes it, and updates all relevant accounts, and finally, produces outputs such as documents and reports. Personal computer (PC)-based accounting software allows companies to computerize their manual systems and to provide better and timely information. In addition, PCs have been connected to another PCs via networks. This allows companies to process indefinite number of transactions occurring at different locations simultaneously within several minutes. Income tax. Because tax laws are frequently changing, it is becoming exceedingly difficult to deal with them. Therefore, manual tax preparation is becoming more and more difficult and time consuming. Fortunately, tax preparation software is currently available for companies. Therefore, instead of processing tax manually, companies can use computer software to perform the same functions. As a result, even complex calculations can be performed via computers in a short period of time. Audit. Information technology has also computerized the auditing profession. If auditors perform auditing functions manually, it takes time. However, audit software packages are currently available for auditors. For example, trial balance software enables auditors to input the working trial balance, handle all types of adjusting entries, and automatically compute the adjusted trial balance. In addition, software package can access customer’s files, select a statistical sample of the accounts, and print a working paper sheet. Auditors have used personal computers to reduce their costs significantly. Word processing. Word processing is computer-assisted creation, editing, correcting, manipulation, storage, and printing of textual data (Romney et al., 1997: 246). Accountants use word processing software to prepare reports, billings, memos, and financial statements. Graphics software. Graphics can be prepared using graphics software. Graphics can be printed on paper or displayed on slides, transparencies, and photos. Many auditors and managerial accountants use the graphics software to graph the data in financial statements and reports. In addition, it is very costly to process and store documents. Fortunately, these costs can be eliminated with the help of document imaging systems. Image processing captures electronic image of data so that it can be stored and shared. With the help of document imaging, accountants can scan paper documents into the computer and process all of the files electronically. Companies that use document imaging are moving toward paperless offices. Electronic data interchange (EDI). Electronic data interchange enables companies to communicate with each other electronically. Therefore, EDI enables companies to exchange documents electronically with each other. For example, computerized network enables purchaser and the supplier to exchange purchase orders and invoices electronically in the form of images. Electronic funds transfer (EFT). Companies can now connect to banks through EFT. This system enables companies to make payment and collection electronically. In this case, when company wants to pay for accounts payable to a supplier, it can do it via EFT. Furthermore, whenever company makes sales, transactions are immediately charged to consumer’s bank account and simultaneously credited to company’s account. In addition, all relevant accounts such as accounts receivable and cash are updated immediately by the computerized system. The use of the computerized systems mentioned above has led to the automation of accounting information system. Accounting information systems equipped with these kinds of technologically advanced tools can now perform accounting functions more effectively and reduce costs. 4. Just-in-Time Production System In recent years, some manufacturing businesses have tried to eliminate the need to hold stocks by adopting JIT. This method was first used in the US defense industry during Word War II and, in more recent times, it has been widely used by Japanese businesses (Atrill and McLaney, 2002:242). The essence of JIT philosophy is to eliminate waste. Managers try to (1) reduce the time that products spend in the production process and (2) eliminate the time that products spend on activities that do not add value (Horngren et al., 2002:23). Just in time (JIT) refers to a system in which materials arrive at the right place (i.e., factory floor) exactly as they are needed. Demand drives the procurement of materials and production of the product. A key element of JIT is the production. JIT production is a system in which each component on a production line is produced immediately as needed by the next step in the production line (Horngren et.al. 2002:706). In other words, in a JIT setting, demand triggers each step of the production process, starting with customer demand for a finished product at the end of the process and working all the way back to the demand for direct material at the beginning of the process (Horngren et.al., 2000: 726). 4.1. Necessary Tools for JIT Implementation A JIT production system, as explained above, aims at minimizing work-in process and finished-goods inventories, reducing lead-time, and increasing product quality. In order to achieve these by implementing a JIT manufacturing system, the 28 following aspects should be put into consideration and then operation (Hilton, 2001: 207; Horngren et.al., 1999:735; Hilton, 2000:462, Horngren et al., 2002:706). a. Pull Method JIT production system is based on pull method. As final products are produced only when they are demanded, operators will not put materials and components into production unless they are required. Therefore, parts and components that are produced by any operator should not be produced until the next operator demands them. When customer demands the product, production centers begin to produce the parts required by the following divisions in sequence. Under the pull method, goods are produced in each manufacturing stage only as they are needed. When additional materials and parts are needed for final assembly, a message is sent to the preceding work center immediately to send the amount of materials that will be needed over the next few hours. Often, this message is in the form of withdrawal kanban, a card that describes a part number, a quantity of parts, where parts are from, where the parts are to be delivered. b. Establishing Reliable Relationships With Few Suppliers If any company wants to establish JIT production system, supplier must be able to provide raw materials on time because in JIT setting, there is no allowance for the stoppage resulting from the lack of raw materials (Atkinson et.al, 2001:242). If any stoppage occurs, company will not be able to offer the product to customers on time. In other words, lead-time will be longer. Furthermore, waste will increase because of shutdown of the production line. Therefore, successful JIT production depends largely on working with cooperative and reliable suppliers. c. Standard Work Concepts Standard work is one of the most comprehensive and powerful tools found in JIT (DeLuzio, 1993:15). Standardization is achieved when all the tasks necessary to perform the production process are made uniform. Once the procedure is standardized, there will be no variation in the process. Therefore, a work procedure must define every detail as clearly as possible. Otherwise, if the procedure is not made clear, each operator will perform the task in a way he likes. If the work procedure is made clear, the worker will make high-quality parts with less variation (DeLuzio, 1993:16). Then the workers are able to finish products in shorter time because work is done in a standard sequential way. Also, if the procedure is standardized, the worker does not face any confusion because there is a known and fixed way of performing the job. Thus, any worker can carry out the task. This helps managers substitute the absent operator with the existing one to perform the task in case of employee absence. Therefore, possibility of delay caused by the absence of the operators is eliminated and products can be produced in the planned way. d. Creating a Clean, Orderly Work Environment In a JIT work environment, production flow must be smooth. In other words, production should be done in standardized way without variation. Also, work-in-process 29 inventory should be moved smoothly in the production area because it is desired that production process be completed on time. In JIT environment, tools used in production should be put in order, and machinery and the work place should be clean (Hayes, 1981:59). In a JIT environment, materials move through the factory very quickly in response to signals from the pull control system. Therefore, the work environment should be organized in a way that allows the movement of materials without any difficulty. In addition, the workers should be able to reach the tools and other materials easily without spending too much time. If work place is clean and tidy, and everything is in order, there will be no chance for the occurrence of delay because tasks can be performed without any waste of time.

Reference:

<https://www.google.com/search?biw=1366&bih=657&q=benefits+of+computerized+accounting+information+systems+on+the+jit+production+systems&sa=X&ved=2ahUKEwj2hYyx697gAhWI2hQKHaD8CeoQ1QIoAHoECAYQAQ>

**6) What is flexible manufacturing system? Can use of computers facilitate it and why?**

**Introduction:**

Flexibility in manufacturing means the ability to deal with slightly or greatly mixed parts, to allow variation in parts assembly and variations in process sequence, change the production volume and change the design of certain product being manufactured. Flexible manufacturing systems are becoming more and more popular. As the name suggests, it revolves around the key principle of flexibility, allowing the system to react when changes are identified. To learn more about flexible manufacturing systems, as well as their advantages and disadvantages.

When speaking in the context of manufacturing, flexibility is a catch-all term that’s used to describe a manufacturing system’s ability to make adjustments to better handle nuances like mixed parts, variations in assembly, variations in process sequence, production volume changes, design changes, and other changes.

In essence, a FMS is a method used to manufacture and product goods that is able to adapt to changes. Whether these changes involve the addition of a new product types, the modification of existing product types, etc., a FMS can handle these and more. It provides manufacturing companies with a sharp competitive edge over their counterparts who do not use such flexible systems. Even so, however, there are both pros and cons associated with FMS.

**FMS: Two Categories of Flexibility**

The flexibility of a FMS typically falls into two categories: machine flexibility and routing flexibility. Machine flexibility refers to the system’s ability to produce new types of products, and its ability to change the order in which operations are executed.

The second type of flexibility in a FMS, routing flexibility, refers to the system’s ability to use two or more machines to perform the same task, and the system’s ability to handle large-scale changes like significant increase in volume and/or capability.

**Industrial FMS**

There are also industrial flexible manufacturing systems, which differ in the sense that they feature robots and computer-controlled machines. Many industrial companies and manufacturing companies are now using robots in their day-to-day operations. Robots automate many otherwise small and tedious tasks, while in turn increasing productivity and efficiency. This trend has resulted in a surge of popularity surrounding industrial FMS.

**Advantages of FMS**

Some of the advantages associated with FMS include reduced manufacturing cost, increased labor productivity, increased machine efficiency, improved product quality, increased system reliability, reduced parts inventory, shorter lead times, and increased production rate.

**Disadvantages of FMS**

On the other hand, some of the disadvantages associated with FMS include a high initial set up cost, increased difficult in pre-planning, requirements of skilled workers, and a more complicated system.

**References:**

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