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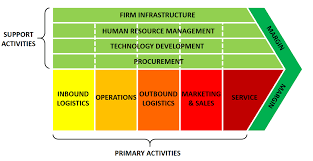
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1. **What is Value chain analysis and what its main elements?**

Value chain is a tool used to evaluate the internal activities that engages in to produces good or service in all the stages which begins from the customer’s request and ends with product. Value chain analysis help to understand how the activities add value to products and aim to provide the competitive advantages by fulfilling customer requirements.

Porter has divided these activities to two groups primary activities and support activities as the diagram below :-



The primary group are usually the source of the cost and through them it easily to identify the cost,

the activities are:-

* **Inbound logistic**

The process of receiving the raw materials , storing materials in warehouse and distribute the materials

* Operations

All the activities that change the raw materials to the final product , the activities are assembling and packaging.

* **Outbound logistic**

All the activities that deliver the final product to the customer the activities are warehousing , distribution the good

* Marketing & Sales

All the activities that use to convince the customer to purchase from our product instead of our competitors, the activities are advertisement , relations , promotions , discount

* Services

All the activities that make the customer aware about the service that offer after the sale ,it include after sale service , maintenance

The support group are Those activities which assist primary activities in accomplishment, are support activities. These are:

* **Procurement**:

All the activities that supply all the necessary inputs like material, machinery or other consumable items, that required by the organization to operate, it include finding suppliers , negotiating to get best price

* **Human Resource Management**:

All the activities that excel all primary activities of the organization. It include overseeing the recruiting , promotion, transfer, appraisal and dismissal of staff.

* **Technology Development**:

All the activities that relates to managing and processing information it includes product improvement and process improvement

* **Infrastructure**:

All the activities that allow to manage the daily operation in the whole organization and includes strategic planning, finance, information management, quality control, legal etc.

1. **What are the seven variables which production personnel should zero in?**

Zero Defects, Zero Set-up Time, Zero Handling, Zero Batch Size, Zero Breakdown, Zero Lead Time and Zero Surging

* **Zero Defects**

The philosophy of this is the defects not acceptable and the employee should do the right activities and be aware about their tasks. This technic aim to eliminate the cost of waste and rework and increase the revenue and satisfy of customer

* **Zero Set-up**

The philosophy of this is Equipment and processes must be designed, have access to all the Equipment, to produce whatever is needed whenever it is needed

* **Zero Handling**

The philosophy of this is to make flow of information between the teams continuous flow of material and information results in finishing the work as quickly as possible, avoiding spoilage of work, as well as getting feedback from customer sooner

* **Zero Batch Size**

Keep the inventory at the minimum level consider a goal to eliminate the cost of storing and increase the profitability through the theory of JIT

* **Zero Breakdown**

The philosophy of this is to take care of the assets and provide the teams with all the safety materials and improving them with activities that enhance their experience to reduce stopping in the equipment and fail to meet the requirements of customers

* **Zero Leadtime**

The philosophy of this is to use the pull system in the productions , reduce work in process and provide the materials to the assembly lines when they need it .

* **Zero Surging**

The philosophy of this is to achieve the theory of JIT perfectly and reduce the waste in productions, time, efforts 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?**

The just-in-time (JIT) a system of supplying raw materials/goods as close as possible to when they needed, that is mean minimize inventory and increase efficiency. The concept of JIT is to meet consumer demands and eliminates the costly and wasteful elements within a production process that neither add value to the final product and the success of the JIT production process relies on the constant and precise monitoring of demand with the use of “KANBAN”, sign between various points of production which can be alerted when the next product is needed and the coordination between stages of production

The just-in-time (JIT) process is up to the organization to determine the degree of appropriateness and the final application of JIT. And it is very important to be able to forecast the demands, plan and understanding of the objectives before setting up a JITmanufacturing system. The successful implement of just-in-time (JIT) process well able the organization to Minimum inventory at all stages of supply chain, minimizing warehouse needs and spend less money on raw materials  because they buy just enough resources to make the ordered products and no more. There are also some disadvantages of just-in-time inventory, which are the mis understanding of the sensitive of just-in-time (JIT) process and the important of follow up the materials through the process of productions. for instance, the underestimation will lead to breakdown in the production and the manufacturer will not be able to deliver goods as promised, also the organization may not be able to meet the requirements of unexpected order, since it has few or no stocks of finished goods and lead to increase transport flows due to the need for smaller but more frequent deliveries of goods to the customer.

With the continuous improving in the computer technology which enhance the monitoring and evaluation the process of productions and enable to shift from the batch production which involves in the movement of large lots of goods, to the JIT production system and Lean production which involves in the reducing waste and improving product quality .Each department in the Batch production is composed of group of employee who perform similar activities while the JIT system focuses on the use of multifunctional groups, the JIT system relies on the pull system through the stages of production this mean prohibits any movement of goods or work on subsequent units until the next station signals that it is ready to receive them, while Batch system relies on the pushing approach through the multi stages as the product complete immediately pass to the next stage even they don’t ready to receive them which cause a excess work-in-process, long lead times and scheduling problems. As with all , JIT has some negative points as well as the more positive ones listed above. It can, for example, lead to increased transport flows due to the need for smaller but more frequent deliveries of goods to the customer.

**4. How can computers aid in development, analysis and Forecasting?**

Computers are using extensively in the operation process which enhance the accurate in the analytical and numerical techniques by developing and manipulating mathematical and computer models of organizational systems insure high product quality, minimize production cost and increase the efficiency of manufacture . the computer goes through analysis the complex investment decisions and simulate the expected rate and risk and determine which of the assumption are the sensitive, through giving prospect for all the assumptions working with to the computer, and the success of this depend on the quality, accurate of the information. The use of computers enabled senior management to standardize the analysis of the new project at the company level. The analysis process works as follows: The Corporate Planning Department evaluates, twice a year, the current costs of capital, and based on these figures, it works to redefine the appropriate hurdle rate for new projects.

Accurate forecasting is consider the core to make the decision in the organization, for selling, it is necessary to make forecast the size of the market and the rate of demand For the productions it is necessary to provide with all the estimate cost of Product demand and product mix, production scheduling, inventory holding, labor scheduling, equipment purchase, plant capacity planning, maintenance, etc., are all based on such forecasts. After specifying all the processes and identify the fit equations, The system of equations can highlight important economic variables in the future.

To keep in mind what computer scientist Joseph Weizenbaum wrote 19 years ago in his book Computer Power and Human Reason: “**We must learn the limitations of our tools as well their power. Even in its most advanced state, the computer is not, and never can be, a panacea for human problems or a substitute for our own, uniquely formed human judgement**.”

5. **Describe the role of supporting computerized system in book keeping, processing and delivering of orders from customers**?

The benefits of automated purchase system to allow all parties involved in the purchasing process to get more available data in order to make long-term purchasing, more efficient, cost control and reduction, better visibility into cash flow, simplified purchasing processes, accuracy of many routine tasks, more transparency, standardization and more controlling. The Computers play a critical role in this effort through the procedures of purchasing.

* **Requisition: -**

Through this activity the automated requisition which has numeric sequence well be made by the authorized requester and send automatically to the manager for approval, in this stage depend on the previous database the computer well indicates the remain quantity in the stock, the estimated cost, the line budget, the suppliers. The accurate information in the Requisition well help the management to make the decision of purchasing, decrease the human errors and control the daily activities of purchasing

* **Send approval: -**

The requisition well transfers to the purchasing departments as get the approval from manger otherwise it well not transfers, and the requisition will be hold.

* **Request for quotations: -**

As the requisition transfers to the purchasing department, they well emailing the request for quotation (numeric sequence) to the approved suppliers of the organization, as the receipts the quotations, the employee well make automated quotations analysis to the receipt quotations and the result well identify the appropriate vendor. Than the result well transfers to the manger/committee of purchasing to get the approval to start the process of purchasing. In this stage the system well not allow to deal with unapproved suppliers, the decision of approval applies on the accurate documents about the quoted items, integrated between the numeric sequence of Requisition and Request for quotations.

* **Purchase order: -**

Once get the approval from the manger/committee of purchasing the system automatically release P.O (numeric sequence) to reward vendor with all term of conditions include the agreed items to purchase with the price list. In this stage the system will monitor the period of supply materials from receiving the P.O till release the good receive note, review all the P.Os in the systems and give feedback, give confidence and satisfactions.

* **Receiving order: -**

Once the materials arrived to the warehouse and the storekeeper receive the documents of process. He well inserts the numeric sequence of P.O to interface of GRN in the Sys., all the details will appear and the storekeeper will checks incoming shipments depend on the details of P.O and makes comparison with the invoice of suppliers , as all the details match the documents immediately release the GRN and transfer to the Accountant to complete the payment process. In this stage the system confirms that the received shipment matches the requisition, the P.O and the standards of quality, all the items of the shipments register in the list of the inventory and refresh the database of the Sys.

* **Payments: -**

The computerized systems help the accountant to review the of open purchase orders, the purchase which are received but still doesn’t transfer from the warehouse. Once the GRN release and transfer to the account departments about what received the counter will check the material quantity and condition, the purchase order number, the invoice number or reference number, the name of the supplier and the approvals of the manger. If all the details are correct the system will send the request of payments and transfer to the manager to get the approval of payments. In this stage the system completes the cycle of the purchase process and enhance the internal audit of the accuracy of purchasing and receiving, enable the management to trace the flow of materials, the expenses and the cash flow.

The flow of information, the accuracy of process the eliminate the errors, integration between the departments, the participate in decision-make, the internal control and the transparency in the organization. All these benefits enhanced by the computerized systems .

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

Flexible manufacturing Sys. Is a highly automated technology machine cell and consist of more than work station and machines interconnected with computerized numerical controlled operations, automatic material handling systems manned by robots. FMS is a flexible system due to the reason that the capability of processing and the quantities of productions can be adjusted to suit the demand . FMS consist of four component Workstations which include machining station, load & upload station, assembly station and cleaning inspection station. Material handling and storage is the second component which provide movement of workpiece to between workstation and provide access to load & upload system, material handling and storage include expendable system, Robotic system Automatic guided vehicle and conveyer system. Human resource is the third component which provide plan and manage the maintenance for Flexible manufacturing Sys, specifying the tasks that cannot done by machine and required complex decision for example Quality inspection. And computer control system is the fourth component which coordinate the activities of the processing and the material handling system and consider as interface between human and other component, coordinate the latest input by human supervisor, computer control system considered as diagnostic to the system and provide reports.

FMS is most suited for mid variety, mid value production range and have five types :

* **Liner/progressive type: -**

type or progressive type is the simplest form of FMS layout configuration the machine and handling system are arranged in a straight line where putt progress from one workstation to the network station in a well-defined sequence what piece always moving in one direction and knowable flow in the system

* **Loop type: -**

is loop lay out where the workstation organized around on the a system or a pot handling system in a loop form but usually flow in one direction around the loop with capability to stop and be transferred to any station within the loop.

* **Ladder type: -**

the SMS the up configuration is letter type layout where the workstation located around a look with cross section between the straight section of the loop the cross section increased the possible path for the piece to move between the workstations and also reduce the travel distance of the workpiece the system proved to be more flexible than looked at a linear time

* **Open filed type: -**

upon filling upon filling out is the most complex FMS layup configuration it was these multiple loops and let us organize to achieve processing requirements this configuration usually used for processing large family paths routing of peace is in multi direction and complex sequence what piece usually move between the workstations by using automated guided vehicle

* **Robot centered type: -**

Robot centered cell where it used one or more robot as material handler to load and unload the workpiece into the processing machines endlessly out the machine usually arranged in circular layout around the robot, so it is easy for the robot to load and unload their workpiece to and from the machine

FMS will maximize the machine utilization as it is a fully automated system so the machine can run 24 hours even without the human attention, can reduce the factory workspace as last floor area is required in the system compared to the traditional batch production that the system has greater responsiveness to predictable and unpredictable, reduce inventory requirement through a more efficient management of stock level, reduce lead time as this system minimize the waiting time for the part to be processed at the machine and since the material handling is automated it transferred faster from the warehouse to the processing machine as the advantage of the FMS there are factors should be considers , the high investment of system and the highly required for skilled labors.

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