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

Value chain analysis (VCA) refers to the process of examining the steps involved in a company's value chain and the supporting company systems. Management expert Michael Porter outlined these elements in his 1985 book "Competitive Advantage." By analyzing your company's value chain, you can improve efficiencies and more effectively meet the needs of your customers.

The main elements (Activities) of value chain analysis (VCA) are:

*Logistics*

Logistics includes the coordination of the flow of information and goods into and out of your business. Analyzing your inbound logistics includes consideration of ways to reduce supplier costs and build stronger relationships with core suppliers. Outbound logistics, involving movement of goods and information to your buyers, is a critical distribution and service factor. Delivery of goods in the most efficient but low-cost way is important to optimized distribution costs and timely service for buyers.

*Operations*

The operations step in the value chain includes the various processes, equipment and employees used to manufacture, buy and sell inventory to customers. Manufacturers often focus on developing the best-quality goods at the lowest costs by optimizing labor and equipment costs and taking wasted steps out of production processes. Resellers analyze their operations to discover ways to more efficiently manage inventory and merchandise it effectively to buyers.

*Front-End Activities*

Porter emphasizes marketing, sales and support as important front-end value chain activities. Essentially, businesses need to constantly review and enhance marketing research, promotional activities and support for customers. Research helps you learn more about potential or existing customers. Promotions, including advertising and sales, attract customers. Top companies consistently review current promotional techniques and look for opportunities for improvements. Retaining customers is key to long-term success, so it is important to constantly review existing support services and processes to find ways to offer better, more-efficient customer care.

Supporting Factors

Porter identified four supporting factors in a value chain: Infrastructure, human resources, technology development and procurement. Infrastructure and technology development essentially relate to build-up and development of buildings, equipment, supplies and technology to support ongoing business activities. Analyzing your infrastructure and technology allows you to seek ways to boost your structure to support customers. Human resources is central to attracting, retaining and motivating top workers. Purchasing departments routinely review procurement steps to seek opportunities for lower costs from suppliers or more favorable terms.

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

*Zero Defects*

This is a management tool aimed at reduction of defects through prevention. It is directed at motivating people to prevent mistakes by developing a constant, conscious desire to do their job right the first time. Every production personnel are motivated to do right fist time as the cost of re-do would be too high to accommodate.

Zero Set-up Time

This goes hand in hand with lot size; manufacturing a variety of parts means we have to be able to configure workstation to produce the parts quickly. This is better known as single minute exchange of die ( SMED) Shige Shingo’s setup goal.

Zero Handling

Downstream workstation requires parts exactly when needed. If parts are being handled, we will have to raise our work in progress (WIP level in order to ensure downstream process doesn’t starve

Zero Batch Size

In order to be responsive to downstream demand, parts must be produce as quickly as possible. Making things in large batches hinders this responsiveness, this is more commonly stated as “a lot size of one”

Zero Breakdown

Preventive maintenance keeps the line running smoothly, which is required since a buffer of inventory is unavailable.

Zero Lead Time

Parts are available as soon as they are required and no delay is required at any stage of order to make it available to customers.

Zero Surging

The process can flow as long as the production plan is smooth. Keeping the demand level is key to reducing delays.

1. ***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), as the name suggests, is a management philosophy that calls for the production of what the customer wants, when they want it, in the quantities requested, where they want it, without it being delayed in inventory. So instead of building large stocks of what you think the customer might want, you only make exactly what the customer actually asks for when they ask for it. This allows you to concentrate your resources on only fulfilling what you are going to be paid for rather than building for stock. Within a Just in Time manufacturing system, each process will only produce what the next process in sequence is calling for.

Just-In-Time is the TPS solution to reduce inventory and waiting times. Its name was coined by Toyota managers to indicate a method aimed to ensure “the right products, in the right quantities, just in time, where they are needed”. Differently from Utopia which is a Thai massage center where every room is readily arrange and furnished to wait for customers.

For Just In Time to work efficiently, the following requirements must be adhered to:

* Reliable equipment and machines; if your machinery is always breaking down or giving you quality problem it will frequently manifest in big issues with any JIT flow.
* Well-designed work cells; poor layout, unclear flow, and a host of other issues can all be clear up by implementation of 5S within your production.
* Quality improvements; an empowered workforce that is tasked with tackling their own quality problem with all the support that they need is another vital part of any lean and JIT implementation
* Standardized operation; only if you know how each operation is going to be performed can you be sure what reliable outcome will be. Defining standard ways of working for all operation will help to ensure that your processes are reliable and predicable.
* Pull production; Just in time does not push raw materials at the front end to create inventory (push production), it seeks to push production through the process according to customer’s demand.
* Single piece flow; the ideal situation is one in which you will produce a single product as ordered by the customer.
* Flow at the beat of the customers; the demand of your customer is often referred to as your takt time. You need to ensure that your cells and processes are organized, balanced and planned to achieved the pull of the customers.

In term of Batch size, JIT approach will replenish a stock only after its depletion. Among its pillars there are:

* one-piece flow;
* mixed-model production;
* demand-pull production;
* takt time;

Indeed, generally speaking, processing a 10 product-batch requires one tenth of the time needed for a 100 product-batch. Thus, reducing the batch value (up to “one piece”) would generate benefits in reducing either time-to-market or inventory level. This rule must come along with mixed-model production, which is the ability to manufacture different products alternating very small batches on shared resources. Demand-pull production indicates that the system is activated only after an order received; thus, no semi-finished product is processed if no downstream workstation asks for it. On top of this, in order to smooth out the material flow, the process operations should be organized to let each workstation complete different jobs in similar cycle times. The base reference is, thus, the *takt* time, a term derived from the German word *taktzeit* (cycle time), which is computed as a rapport between the net operating time, available for production, and the demand in terms of units required.

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

Computers are now-a-days often used in mak­ing complicated investment decisions. As we add more branches to the decision tree, we reduce our ability to analyze problems quickly. However, the rapid development of sophisticated computer equipment has increased the usefulness of computer-based development, analysis and forecasting of complex investment decisions.

*Computers Streamline Operations:*

In today’s highly competitive business world, firms strive to increase productivity and slash costs. In fact, a growing number of companies are institut­ing austerity programs to cut layers of corporate management, especially on the international side. Computers play a critical role in this effort. By au­tomating finance, companies can reduce labor costs and dramatically improve the speed and accuracy of many routine tasks. For example, the controller of a leading Ameri­can automobile manufacturer believes that comput­ers are essential for producing a cost-competitive car. By using computers, it is possible to reduce labor costs considerably and produce less expensive cars.

*Computers help Companies Manage Globalized Businesses*:

As part of their drive to be competitive many companies now turn each of their component busi­nesses as world-wide organizations’, and plan their manufacturing and sourcing strategies on a global basis. To manage their far-flung operations effec­tively, firms increasingly turn to computers. As one financial executive of a large multinational noted**, “We receive data from over 50 markets. Without computers we couldn’t possibly coordinate that vol­ume of data quickly and efficiently.”**

***Capital budgeting process***

The capital budgeting process encompasses a variety of planning activities with a time horizon of more than one year, which is an increasingly dif­ficult and critical exercise in today’s environment. Extremely volatile currency and interest rates, po­litical upheavals, and the sudden imposition of ex­change controls all pose threats to what once were to secure overseas investments. Now numerous fast- growing companies are turning to automation to cope with these uncertainties. As one financial plan­ning manager explained**, “The biggest risks about projects now-a-days are the assumptions. By using computers, you can determine which of the assump­tions are the most sensitive. This produces more and better data to use and rely on.”**

*Project analysis*

The use of PCs has enabled senior management to standardize new project analysis corporate-wide. The analysis process works as follows: Twice a year, the corporate planning department evaluates current costs of capital and, based on those figures, deter­mines an appropriate hurdle rate for new projects.

*Respond to ad hoc queries from local project analysts.*

The use of computers has made it easier for corporate economists to get involved in the analysis for new project proposals. For exam­ple, if a review is under way to evaluate commit­ting funds for a major plant expansion in a certain country or region, an economist may be required to estimate long-term project demand, inflation rates, or currency fluctuations.

*Marketing*

In the area of marketing, for in­stance, forecasts of market size and market charac­teristics must be reliable. A company producing and selling refrigerators, T.Vs., etc., must make accurate forecasts of both regional market demand and types of customers. Based on this forecast, decisions re­garding advertising and other sales promotion ef­forts are taken. This can be done fast and better with the aid of a computer

*Production management*

In the area of production management also there is need for forecasting. Product demand and prod­uct mix, production scheduling, inventory holding, labor scheduling, equipment purchase, plant ca­pacity planning, maintenance, etc., are all based on such forecasts aided by computer

*Finance*

In finance and accounting, forecasting is of strategic importance in the area of cash flows, debt collection, capital expenditure rates, working capital management etc. Even the personnel department is required to make manpower planning which is nothing other than forecast for different types of hu­man resources required in business now and in the future.

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

For many business, a transaction refers to an exchange of goods and services for money. The earliest transaction processing systems were manual systems. Clerk would record transactions in journal or on numbered, multi part forms. These transactions would later be transferred, manually, to a central system of hand written records or files folders responding to individual customers or suppliers. These records would be setup to trigger statement of customer or checks to suppliers. Many small businesses still operate with manual transaction processing system; however, inexpensive and easy to use computer technology is finding its way into more small business (Alaxander, 1992

Most of the businesses, manual system presents numerous problems that are solvable by computerized system

*Error level*

With manual systems, an uncomfortable level of error often exists. Frequently, look up to the long prices, and prices incorrectly on invoices, or produce garbled journal entries or source documents. Sickness, worry, moodiness, and other inherently human variables can also contribute to high error rates in manual systems. With computerized system, once correct data is entered, it generates accurate information as the system computed to the tasks.

*Temporary or permanent loss of data*

Source documents and file folders are easily lost are misplaced. This often results in lost customer payments and delayed purchase or payments which is not in the case of computerized system; files are easily trace once parts of the information is keyed to allocate it within the system.

*Labor intensity*Manual systems are labor intensive and, therefore, costly. Data from a single transaction often have to be transcribed several times, and many types of low volatility data have to be rerecorded by clerks every time a new transaction takes place (Tromthy and Krasnewch, 1994). With the introduction of computerized system, labor intensity is greatly reduced as information is easily copied from one source and paste in the others; information can also be shared faster through the networking.

*Poor level of service*The level of service support in manual systems is often inferior. Customers like to know immediately if goods are not in stock , when goods not in stock will be arriving , when they can expect an order to arrive , what their current status is regarding payments and so on. This level of information support is difficult to achieve with a manual system but has been simplify by the use of computerized system. (Wilkinson, 1986).

*Poor response*Virtually everything takes longer to do with a manual system. When orders are taken, the order entry department might have to contact receivable department for credit check before it can be validated. Today many computerized order-entry operations are connected to a centralized database and when a customer telephones, credit status can be verified immediately (Mehler, 1992).

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

The term flexible manufacturing system, or FMS, refers to a highly automated Great Technology (GT) machine cell, consisting of a group of computer numerical control (CNC) machine tools and supporting workstations, interconnected by an automated material handling and storage system, and all controlled by a distributed computer system. The reason, the FMS is called flexible, is that it is capable of processing a variety of different part styles simultaneously with the quick tooling and instruction changeovers. Also, quantities of productions can be adjusted easily to changing demand patterns.

This system better facilitates by the use of computer due to its below characteristics:

*Machine Flexibility.*

It is the capability to adapt a given machine in the system to a wide range of production operations and part styles. The greater the range of operations and part styles the greater will be the machine flexibility. The various factors on which machine flexibility depends are, Setup or changeover time, Ease with which part-programs can be downloaded to machines, Tool storage capacity of machines. All these work best when it is computerized.

*Production Flexibility*.

It is the range of part styles that can be produced on the systems. The range of part styles that can be produced by a manufacturing system at moderate cost and time is determined by the process envelope. It depends on Machine flexibility of individual stations and Range of machine flexibilities of all stations in the system and all are operated by computer

*Mix Flexibility.*

It is defined as the ability to change the product mix while maintaining the same total production quantity that is, producing the same parts only in different proportions. It is also known as process flexibility. Mix flexibility provides protection against market variability by accommodating changes in product mix due to the use of shared resources. This is not possible if the production is conventional

*Product Flexibility*.

It refers to ability to change over to a new set of products economically and quickly in response to the changing market requirements. The change over time includes the time for designing, planning, tooling, and fixing of new products introduced in the manufacturing line-up which are all computer aided

*Routing Flexibility.*

It can be defined as capacity to produce parts on alternative workstation in case of equipment breakdowns, tool failure, and other interruptions at any particular station. It helps in increasing throughput, in the presence of external changes such as product mix, engineering changes, or new product introductions. All these are not possible without the use of a computer.

*Volume Flexibility.*

It is the ability of the system to vary the production volumes of different products to accommodate changes in demand while remaining profitable. It can also be termed as capacity flexibility.

*Expansion Flexibility.*

It is defined as the ease with which the system can be expanded to foster total production volume. Expansion flexibility depends on following factors: Cost incurred in adding new workstations and trained workers, easiness in expansion of layout and type of part handling system used

Since flexibility is inversely proportional to the sensitivity to change, a measure of flexibility must quantify the term “penalty of change (POC)”, which is defined as follows:

POC = penalty x probability

Here, penalty is equal to the amount up to which the system is penalized for changes made against the system constraints, with the given probability. The lower the value of POC obtained, the higher will be the flexibility of the system.

***Reference***

1. Wikipedia (2013). Value Chain. Available at: <http://en.wikipedia.org/wiki/Value_chain>
2. NetMBA (2010). Value Chain. Available at: <http://www.netmba.com/strategy/value-chain/>
3. Just-In-Time Production Leveling; By Francesco Giordano and Massimiliano M. Schiraldi Submitted: October 1st 2012Reviewed: November 9th 2012Published: March 13th 2013
4. [Journal of Intelligent and Robotic Systems](https://link.springer.com/journal/10846), March 1988, Volume 1, [Issue 1](https://link.springer.com/journal/10846/1/1/page/1), pp 73–88| [Cite as](https://link.springer.com/article/10.1007/BF00437321#citeas) An application in flexible manufacturing
5. Engr. Faizullah Mahar , 2003. Role of Information Technology in Transaction Processing System. *Information Technology Journal, 2: 128-134.* **:** <https://scialert.net/abstract/?doi=itj.2003.128.134>
6. Management Technology Policy, Institude of management; [IfM Home](https://www.ifm.eng.cam.ac.uk/) > [Research](https://www.ifm.eng.cam.ac.uk/research/) > [Decision Support Tools](https://www.ifm.eng.cam.ac.uk/research/dstools/) > [JIT Just-in-Time manufacturing](https://www.ifm.eng.cam.ac.uk/research/dstools/jit-just-in-time-manufacturing/)