ASSIGNMENTS

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

Value chain is a process where a firm identifies its primary and support activities that add value to its final product and then analyze these activities to reduce costs or increase differentiation. Value chain represents the internal activities a firm engages in when transforming inputs into outputs.

“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.” (Chartered Global Management Accountant (CGMA)).

**Key elements of value chain**

**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.

(Kayla Harrison, Contributing Writer September 18, 2018)

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 are 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. (Neil Kokemuller 2007; NetMBA: The Value Chain; QuickMBA: The Value Chain)

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

Production variables are inputs that can be adjusted in the short run to increase or decrease outputs in a manufacturing or production entity.

Borrowed from an article published by Amos Web variable of production is defined as**: An input whose quantity can be changed in the time period under consideration**. **A variable factor of production provides the extra inputs that a firm needs to expand short-run production...** http://www.AmosWEB.com, AmosWEB LLC, 2000-2019.

The following are some of the production variables that staffs should factor in during production processes.

**Direct Materials Cost:** Direct materials are all raw materials required to assemble or manufacture a product. Direct materials cost therefore refers to the cost of items used to create a particular product. All the materials used must be easily identified with the end product. They should also be measurable and countable. Examples of direct materials include steel used in the construction of a house.

**Supplies and Packaging Materials:** Materials used to supply and package goods are considered variable costs because they change with the production and sales volume. A company may choose to reduce the number of packaging materials when its production volume decreases. It can also reduce the number of packaging materials if the sales volume drops. For example a company that spends $300 to pack 1,500 cupcakes may spend double to pack 3,000 cupcakes. In this case, 3,000 cupcakes will lead to more revenues than 1,500 cupcakes.

Piece Rate Labor: Piece rate labor is the amount of money paid to a given employee for every unit of work completed. This method of payment varies with the input of the employee. The cost increases as the employee’s production rate rises and reduces as the production decreases. It is prudent to use this type of payment in scenarios where the cost and viability of monitoring production volume must conform to the quality of work done.

**Commissions:** A commission is an additional compensation a company gives to its employees. Employees may receive commissions for exceeding their expectations and meeting the company’s requirements. Most companies give sales commissions at a rate predetermined in a contract agreement. Commissions are variable in the sense that they tend to change with the company’s profitability and the employee’s output rate. A company that does not profit as expected may not give commissions. The same applies if the employees do not meet their set targets.

**Shipping Costs:** Shipping costs refer to the expenses incurred when a company moves its products and raw materials from one point to another. This can be through water channels, roads, air or railways. Shipping costs are variable in the sense that they tend to change with the production and sales volume. A business will incur more shipping costs if it increases its production and sales volumes. On the other hand, the cost will reduce when the sales and production volumes reduce. The same applies to the transportation of raw materials. A decrease in sales volume leads to reduced demand for raw materials. This will translate to reduced shipping costs. A cost that varies with production and sales volumes has a significant impact on the profitability of a business. It is important for businesses to reduce their variable costs in order to increase their profitability.

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?

Monden Y. (1993) defines JIT as**: producing the necessary items, in the necessary quantity at the necessary time.**

The just-in-time (JIT) inventory system is a management strategy that aligns raw material orders from suppliers directly with production schedules. Companies may use this inventory strategy to increase efficiency and decrease waste by receiving goods only as they need them for the production process, thus reducing inventory costs.

**JIT is not utopia** reason being that, this method requires producers to forecast demand accurately. For example, if a raw materials supplier has a breakdown and cannot deliver the goods on time, that supplier can shut down the entire production process. A sudden unexpected order for goods may delay the delivery of finished products to clients.

**Can it be made to work?** The strategy can work and especially in automotive industries for example Toyota is famous for its implementation of a JIT inventory system. Toyota orders parts only when it receives new orders from customers.

**What is its philosophic approach in terms of Batch size?**

From the research done on JIT batch size philosophy, it is much evidence that there is no particular batch size that can be categorized as the correct quantity for operations to take place. It entirely depends on customer orders.

Just in time does not push raw materials in at the front end to create inventory (push production), it seeks to pull production through the process according to customer demand. It achieves this by setting up “supermarkets” between different processes from which products are taken or by the use of Kanbans which are signals (flags) to tell the previous process what needs to be made.

From the argument justified by Malcolm Prowle he views Just in time philosophy as; ***based on the premise that all inventory is a bad thing as it conceals all sorts of inefficiencies in production. JIT advocates that the costs of inventory are therefore much higher than commonly realized and that inventory should be minimized and ideally eliminated. Rather than producing large batch sizes for inventory to achieve economies of scale, production should only take place when triggered by receipt of a specific customer order.*** (Management Accounting in the Contemporary Business World; By Malcolm Prowle, Michael Lucas).

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

**Computers Streamline Operations:** In an ever-changing dynamic business world, companies strive to increase productivity and slash/reduce costs. 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, AMS company where I work believes that computers are essential for producing a cost-competitive vehicle maintenance and repair. By using computers it is possible to reduce labor costs considerably and produce less maintenance costs.

**Economic Forecasting:** Computers are used in the forecasting models. As in finance, computer simulations and models can be used to predict how markets will change. Current policies and forecasting models can also be quickly adapted to changing situations with new predictions available almost instantly and ready for assessment.

**Decision trees:** Decision trees originally evolved as graphical devices to help illustrate the structural relationships between alternative choices. These trees were originally presented as a series of yes/no (dichotomous) choices. As our understanding of feedback loops improved, decision trees became more complex. Their structure became the foundation of computer flow charts. Computer technology has made it possible to create very complex decision trees consisting of many subsystems and feedback loops. Decisions are no longer limited to dichotomies; they now involve assigning probabilities to the likelihood of any particular path. Decision theory is based on the concept that an expected value of a discrete variable can be calculated as the average value for that variable. The expected value is especially useful for decision makers because it represents the most likely value based on the probabilities of the distribution function. (Millett, S. & Honton, E. 1991. A Manager's Guide to Technology Forecasting and Strategy Analysis Methods. New York: Battelle Press.)

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

**Time:** Computerized accounting has the advantage of increased efficiency and time management when compared with manual accounting. Computers may more rapidly perform accounting functions or assessments than manual accounting systems, once data has been entered into the system.

**Accuracy:** Computerized accounting has the advantage of higher accuracy when compared with manual accounting, according to the College Accounting Coach. The potential for human error is greater when employees are manually completing accounting procedures. This may be particularly true when dealing with multiple currencies, since computerized programs can instantly convert exchange rates, according to "Guide to Computerizing Your Accounting System" from The Manager's Electronic Resource Center.

**Reliability:** The advantages of manual or computerized accounting systems may be equal when it comes to reliability. Manual accounting can function independently of machines so that work continues when "the system" isn't working. But with modern backup systems and increased functionality, the disadvantage of reliability in computerized accounting may be lessened.

**Creativity in Analysis:** Although computerized accounting systems are adept at rapidly computing complex analyses of accounting transactions and reports, the subtlety and focus of an analysis’ conjecture or hypothesis depends on the person operating the system. In this view, manual accounting may have an advantage over computerized accounting systems. Without the nuance and experience of an actual person, computerized accounting systems lose their potential for sophisticated analysis. Additionally, analysis may be hampered or obstructed by software design.

**Reporting:** The advantages of computerized accounting include fast, complex reporting. Computerized systems can produce invoices, purchase orders and other documents more quickly. Many reports are automatically updated and instantly available.

**Staffing:** Neither manual nor computerized accounting systems take the advantage when it comes to staffing. It can be costly to staff qualified accountants to complete manual accounting processes, but it can also be costly to staff accountants familiar with specific computerized accounting software and programming.

**Cost:** When it comes to cost comparison, the advantages of manual accounting systems are clear. Computerized systems can cost millions of dollars to purchase, implement and maintain. It may be necessary to purchase updated software with some regularity. (Morgan Rush; University of California, San Diego).

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

FMS is a method of producing goods that is readily adaptable to changes in the product being processed both in type and quantity.

Flexible manufacturing systems as borrowed from [monroeengineering.com](https://monroeengineering.com/blog/what-is-a-flexible-manufacturing-system) **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.**

Use of computers immensely facilitates FMS due to the following factors;

**Error Reduction:** computer integrated manufacturing (CIM) systems require higher degrees of data accuracy to run properly. Once part, bill of material, inventory and operational information achieve a very high level of accuracy, CIM can perform functions with minimal human intervention and then report on the results automatically. Humans are still required to monitor systems, but elimination of human error in many assignments and reporting functions on factory floor operations drastically reduces the error rate.

**Speed:** Assignment and reporting in a CIM environment are performed automatically and immediately without any delay involved with people-based transactions. Depending on the environment, this additional speed allows operations to be performed as soon as previous work occurs without any lag time. CIM environments therefore reduce the time it takes to perform manufacturing fabrication and assembly, allowing quicker flow of product to customers and increased capacity.

**Flexibility:** Once operations are assigned and reported in a CIM system, changes to various operations can also be performed more easily. CIM systems are designed to be entirely paperless, eliminating the barriers to changing operations. This flexibility, combined with the speed it can be performed, allows companies to quickly react to market conditions and then return to previous settings when market conditions change.

**Integration:** Factory floor operations are not integrated in non-CIM situations; manufacturing operations and material usage must be reported by humans who perform transactions. CIM offers a degree of integration that enables the flexibility, speed and error reduction required to compete and lead markets. Integrating factory floor operations with enterprise software enables employees to do higher value functions for their companies.

(APICS: The Association for Operations Management; 2019)

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Bob Turek started writing in 1994 for "The Performance Advantage" magazine. His book "Value Selling Business Solutions" advantages of using technology (computers in Flexible manufacturing systems).