Diploma in procurement and supply chain management

Logistics and supply chain management

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Assignment 4

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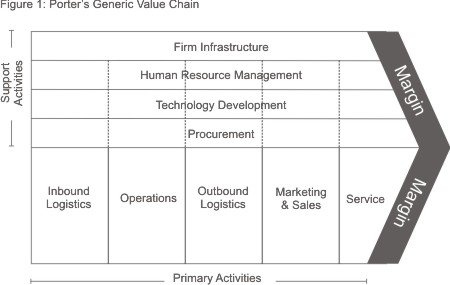
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1. What is Value chain analysis and what its main elements?

A value chain which is also known as Porter’s Value Chain Analysis is a business management concept that was developed by Michael Porter. Michael Porter explains Value Chain Analysis; that a value chain is a collection of activities that are performed by a company to create value for its customers**.  Value Creation** creates added value which leads to competitive advantage. added value also creates a higher profitability for an organization.

**Elements in Porter's Value Chain analysis**

The strength of the Porter’s Value Chain Analysis is its approach. The Porter’s Value Chain Analysis focuses on the systems and activities with customers as the central principle rather than on departments and accounting expense categories. This system links systems and activities to each other and demonstrates what effect this has on costs and profit. Consequently, it (Value Chain Analysis) makes clear where the sources of value and loss amounts can be found in the organization.



**The Value Chain activities**

Porter’s Value Chain Analysis consists of a number of activities, namely primary activities and support activities. Primary activities have an immediate effect on the production, maintenance, sales and support of the products or services to be supplied. These activities consist of the following elements:

**Inbound Logistics**

These are all processes that are involved in the receiving, storing, and internal distribution of the raw materials or basic ingredients of a product or service. The relationship with the suppliers is essential to the creation of value in this matter.

**Production**

These are all the activities (for example production floor or production line) that convert inputs of products or services into semi-finished or finished products. Operational systems are the guiding principle for the creation of value.

**Outbound logistics**

These are all activities that are related to delivering the products and services to the customer. These include, for instance, storage, distribution (systems) and transport.

**Marketing and Sales**

These are all processes related to putting the products and services in the markets including managing and generating customer relationships. The guiding principles are setting oneself apart from the competition and creating advantages for the customer.

**Service**

This includes all activities that maintain the value of the products or service to customers as soon as a relationship has developed based on the procurement of services and products.

**Support activities of the Value Chain Analysis**

Support activities within the Porter’s Value Chain Analysis assist the primary activities and they form the basis of any organization. In the figure dotted lines represent linkages between a support activity and a primary activity. A support activity such as human resource management for example is of importance within the primary activity operation but also supports other activities such as service and outbound logistics.

**Firm infrastructure**

This concerns the support activities within the organization that enable the organization to maintain its daily operations. Line management, administrative handling, financial management are examples of activities that create value for the organization.

**Human resource management**

This includes the support activities in which the development of the workforce within an organization is the key element. Examples of activities are recruiting staff, training and coaching of staff and compensating and retaining staff.

**Technology development**

These activities relate to the development of the products and services of the organization, both internally and externally. Examples are IT, technological innovations and improvements and the development of new products based on new technologies. These activities create value using innovation and optimization.

**Procurement**

These are all the support activities related to procurement to service the customer from the organization. Examples of activities are entering into and managing relationships with suppliers, negotiating to arrive at the best prices, making product purchase agreements with suppliers and outsourcing agreements. Organizations use primary and support activities as building blocks to create valuable products, services and distinctiveness.

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

The theory of cost of production also depends upon the combinations of factors employed in business and the prices that are paid to them. From the point of view of the theory of costs of production, factors of production are divided as fixed factors and variable factors. Fixed factors are those whose costs do not change with the change in output, such as machinery, tube-well, etc. Variable factors are those whose quantities and costs change with the change in output.

Factors of Production have been re-classified into Seven groups, thus: Materials(M1), Money(M2), Machines(M3), Manpower(M4), Management(M5), Information(I) and Time(T). The seven factors of production can be represented by the acronym M5 I 1 T 1 . The contributory role of machines, information and time to productivity is too great consequentially to be left behind the main stage of the burner in a globalized economy, where the emphasis is to do it right the first time, that is just in time (JIT).

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) manufacturing is a Japanese management philosophy applied in manufacturing which involves having the right items of the right quality and quantity in the right place and the right time. It has been widely reported that the proper use of JIT manufacturing has resulted in increases in quality, productivity and efficiency, improved communication and decreases in costs and wastes. The potential of gaining these benefits has made many organizations question and consider this approach to manufacturing. For these reasons. JIT has become a very popular subject currently being investigated by many worldwide organizations. Just-In Time management involves the application of old management ideas; however, their adaptation to the modern manufacturing firm is a relatively new practice. Presently, many firms are studying and applying the JIT approach in response to an ever more competitive environment. North American organizations are aware of the pressure placed upon them by the success of their Japanese competitors at obtaining phenomenal levels of productivity. In order to remain competitive and experience economic success, these companies have focused on increasing productivity, improving the quality their products and raising the standards of efficiency within their products and raising the standards of efficiency within their firms. The ability to achieve higher standards of productivity without sacrificing quality is also an important goal of a manufacturing firm. Over the long run, application of JIT manufacturing may assist these companies in achieving these goals of manufacturing excellence. Today, JIT has evolved into a management philosophy containing a body of knowledge and encompassing a comprehensive set of manufacturing principles and techniques. JIT manufacturing has the capacity, when properly adapted to the organization, to strengthen the organization’s competitiveness in the marketplace substantially the organization’s competitiveness in the marketplace substantially by reducing wastes and improving product quality and efficiency of production.

A batch is a quantity either in production or scheduled to be produced. The concept of batch size is best defined in terms of two different concepts, the process batch and the transfer batch. A process batch is the quantity of a product processed at a work center before that work center is reset to produce a different product. A transfer batch is the quantity of units that move from one work center to the next. The transfer batch size need not, and in most cases, should not be equal to the process batch size; process batch can be equal or grater than transfer batch. The process batch size should be determined by the requirements of the system and should be allowed to be variable as needed over time.

Batch size is to minimize the total cost for meeting equal shipments of the finished products, at fixed intervals, to the buyers. The total cost is found to be a piece-wise convex cost function. An interval that contains the optimal solution is first determined followed by an optimization technique to identify the exact solution from this interval.

*QN4 How can computers aid in development, analysis and Forecasting?*

Information Communication Technology (ICT) refers to as any technology used to support information gathering, processing, distribution and use’. ICTs can be viewed as all form of technologies and product for a wide range of software, hardware, telecommunications and information management techniques, applications and devices, and are used to create, produce, analyse, process, package, distribute, retrieve, store and transmit or receive information electronically in a digital form such as computers, email, internet, websites, social networking and other wireless communications devices, networks, broadband, and as well as the various specialized devices and applications associated with them, such as satellite systems and videoconferencing.

The contributions of ICTs to business development have been pervasive to the extent that it is becoming increasingly difficult for companies to compete effectively in the world market without adequate ICT infrastructures. The reason is that ICTs are revolutionizing every activity in the global market, as the various components of ICTs have their significant roles in facilitating business promotion, efficiency and growth. The Internet, for example, has provided the platform for the development of electronic commerce (e-commerce) and offers potential for establishing low cost, open and ‘many to many’ trading systems. The Internet has become the global channel of unmatched scope for communication between people and between businesses, and at the moment, with over 80 million websites and over a billion internet users. Therefore, this provides an important medium for increased competition among businesses.

Again, business processes such as ordering, transaction, delivery, inventory control and accounting can be streamlined and connected regardless of location through the use of network of computers (UNCTAD, 2005). The same UNCTAD report argues further that the Internet has the potential of improving customer management relationship and enable firms to customize their services to meet the needs of their different clients. The customized service, according to the UNCTAD report will allow companies to respond to 11 their customers in real time and thereby improving customer confidence. It also helps in monitoring customers preferences and lead to developing targeted marketing strategies. Invariably, the computer-mediated networks will allow these activities to be carried out quickly and efficiently and contribute to efficiency in the operations of businesses. Further, computers supported by various types of business software can enhance information and knowledge management within a firm and result in an evolvement of better business processes and performance (OECD, 2004). The use of e-mail system and the Internet can support business communication within the context of business to customers (B2C) or business to business (B2B). Invariably transaction costs may be reduced.

*QN5 Describe the role of supporting computerized system in book keeping, processing and delivering of orders from customers?*

Computers are an essential part of modern information systems, and it is virtually impossible to study information system today without knowing some thing about them and how they operate.

A computer-based information system is an information system in which a computer plays an important role. Such a system consists of the following elements:

**Hardware.**

The term hardware is a machinery, this category includes computers itself, which is often refer to as the central processing unit (CPU), and all of its support equipments. Among these supporting equipments are input and output devices, storage device, and communication devices.

**Software**

The term software refers to computer programs and the manuals (if any) that supports them. computer programs are machine readable instructions that direct the circuitry within the hardware parts of the computer based information system to function in way that produce useful information from data. Programs are generally stored on some input output medium often a disk or tape for use by the computer.

**Data**

Data are facts that used by programs to produce useful information. Like programs, data are generally stored in machine readable form on disk or tape until the computer needs them.

**Procedures**

Procedures are the policies that govern the operation of a computer system “procedures are to people what software is to hardware” is a common analogy that is used to illustrate the role of procedures in a computer-based information system. Every computer based information system needs people if it is to be useful. Often the most overlooked element of the computer-based information system; peoples are probably the components that most influence the successor failure of information systems.

Transaction processing systems keep an organization running smoothly by automating the processing of the voluminous amounts of paper work that must be handled daily. These systems includes the accurate recording of transactions, as well as control procedures used in using such documents as pay checks, invoices, customer statements, payments reminders, tuition bills and students schedules.

Transaction processing systems in many organizations today are used in this way as competitive weapons. Additionally, the move from dumb terminals intelligent microprocessor based workstations is expected to alter transaction processing in other ways, such as by distributing certain traditionally mainframe-based centralized transactions processing functions closer to their functional area. Transaction processing system also supports the processing of an organization’s transactions. This includes accounting for the transactions on its records, as well as providing support activities such as sending out payment reminders. Recently gaining competitive advantage has become a transaction processing concern in some firms, especially those that are working to tie customers and suppliers together more closely with the organization’s transactions TPS via Electronic linkages.

Transaction processing subsystems Some of the major transaction processing subsystems found in most firms. In larger organization most of operations are computerized. Each sub system serves a variety of purposes.

Pay roll

The transaction processing subsystems used to produce paychecks for employees are called payroll-processing systems. These systems also must produce data for tax purposes. Additionally, payroll-processing system must keep track of such items as Social Security payments, union dues, and group insurance deductions.

Order entry

The order entry system is transaction processing subsystem that processes customer orders. Orders may come from variety of sources –perhaps by mail, phone, and fax-from customers who are ordering on demand basis. Pak. J. Inform. and Technol.

Inventory

The quantity of product that a merchandising has available to sell at any given time is called inventory. An inventory system monitors the quantity of each product available for sale and helps ensure that proper stock levels are maintained.

Invoicing

The invoicing in the transaction processing subsystem that creates invoices and some times, packing slips. A packing slip shows little more that what products are contained in shipment; prices are either hidden or missing.

Shipping

The shipping system is conceptually simple. Sealed, address packages of goods are received from inventory, often with shipping instructions. Technology has affected the shipping operation in several ways. Computer and communication systems make it much easier to succeed in the over night package delivery business.

Account receivable

In many firms, customers pay by credit card or have goods charged to their accounts. The account receivable system in the transaction processing system that manages customer purchase records, payments, and account balances.

Purchasing

Many companies use a central purchasing department to procure the goods they need. The advantages of centralized purchasing department are cost control, vender control, and taking advantage of discount realized by quantity buying. The major advantage is inconvenience to the other departments in the organization for whom the goods are being purchased.

Receiving

The function of a receiving system in a receiving department is to receive, inspect, and accept or reject goods that vendor’s ship. As goods are received, the shipping cartoons are opened, the contents are checked against the information on the purchase order, the price of shipment is verified, and goods are inspected for possible damage. If the goods are satisfactory, they are typically routed either to inventory or to the department initiating the purchase request.

Accounts payable

Most firms have accounts with their major suppliers (Vendors). The accounts Payable (A/P)- or simple “payables”-System is the transaction processing subsystem that handles payments to suppliers. It keeps track of invoices from suppliers, determines the optimum time to pay invoices, Pak. J. Inform. And Technol., 2 (2): 128-134, 2003 133 produces checks to pay invoices, and performs cash management activities (thereby ensuring that cash is always available when bills must be paid). Shows a data flow representation of the payables systems. A payable is a liability that is created as soon as goods (or services) are received from vendors. The invoices and statements are validated against the actual receipt of goods found in the receipt file and, if all of the information is in order, the payable is created on the books. At this point, as many as 30, 60, or 90 days may elapse before the bill is actually paid, depending on the terms of the vendor. As soon as the payment is made and recorded, the payable is closed out.

General ledger

The general ledger system is used for budget planning, responsibility reporting, cost allocation and profitability accounting.

Some computer-based transaction processing systems have produced a new competitive business weapons: the inter-organizational system (IOS). In many organizations, electronic data interchange (EDI) and imaging system impact the manner in which some transactions are processed. Another important trend in the down sizing of transaction processing –moving transaction processing applications from mainframes to microcomputer, microcomputers to local area net work.

*QN6 What is flexible manufacturing system? Can use of computers facilitate it and why?*

The flexible manufacturing system can be defined as it is a highly automated group technology machine cell consisting of a group of processing work stations interconnected by an automated material handling and storage system and controlled by a distributed computer system. The Flexible manufacturing systems (FMS) is made up of hardware and software elements. Hardware elements are visible and tangible such as CNC machines tools. Software elements are invisible and intangible such as NC programs. Flexible manufacturing is a concept that allows manufacturing systems to be built under high customized production requirements. The issues such as reduction of inventories and market-response time to meet customer demands, flexibility to adapt to changes in the market, reducing the cost of products and services to grab more market shares, etc have made it almost obligatory to many firms to switch over to flexible manufacturing systems (FMSs) as a viable means to accomplish the above requirements while producing consistently good quality and cost effective products. FMS is actually an automated set of numerically controlled machine tools and material handling systems, capable of performing a wide range manufacturing operations with quick tooling and instruction changeovers.

Flexibility is an attribute that allows a mixed mode manufacturing system to cope up with a certain level of variation in part or product cycle , without any interruption in production due to change over’s between model and hence FMS is called flexible due to the reason that it is capable of processing a variety of different part styles simultaneously at the workstation and quantities of production can be adjusted in response to changing demand patterns. The different type of flexibility that’s exhibited by manufacturing system are given below:

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: ϖ Setup or changeover time ϖ Ease with which part-programs can be downloaded to machines ϖ Tool storage capacity of machines ϖ Skill and versatility of workers in the systems

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 following factors: ϖ Machine flexibility of individual stations ϖ Range of machine flexibilities of all stations in the system

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. However, high mix variations may result in requirements for a greater number of tools, fixtures, and other resources. Mixed flexibility depends on factors such as: ϖ Similarity of parts in the mix ϖ Machine flexibility ϖ Relative work content times of parts produced

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 fixturing of new products introduced in the manufacturing line-up. It depends upon following factors: ϖ Relatedness of new part design with the existing part family ϖ Off-line part program preparation ϖ Machine flexibility

Routing Flexibility.

It can define 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. Following are the factors which decide routing flexibility: Similarity of parts in the mix , Similarity of workstations, Common tooling

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. Factors affecting the volume flexibility are: Level of manual labor performing production, Amount invested in capital equipment

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 Type of part handling system used Flexible Manufacturing System.

Following are the derived benefits of FMS

Reduction of inventories, reduction of lead times, improved machine utilization, reduction of labor times, quick and uncompleted reaction to engineering and design changes, increased management control over the entire manufacturing process, reduced equipment cost, reduced floor space, high product quality and financial benefits.

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