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Question 1 Value Chain Analysis: This is a process of dividing various activities of the business into primary and support activities and analyzing them, keeping in mind, their contribution towards value creation to the final product. And to do so, inputs consumed by the activity and outputs generated are studied, so as to decrease costs and increase differentiation. Value chain analysis is used as a tool for identifying activities, within and around the firm and relating these activities to an assessment of competitive strength.

The elements of Value Chain Analysis are grouped into primary and support activities, and are as discussed under:

Primary Activities: This consist of functions which are directly concerned with the conversion of input into output and distribution activities. It includes:

Inbound Logistics: This includes a range of activities like receiving, storing, distributing, and so on. It ensures that, goods and services are available for operational processes. Some of those activities are material handling, transportation, stock control and many more others.

Operations: The activity of transforming input raw material to final product ready for sale, is termed as operation. Machining, assembling, packaging are the activities covered under operations.

Outbound Logistics: As the name suggests, the activities that help in collecting, storage and delivering the product to the customer is outbound logistics.

Marketing and Sales: All the activities like advertising, promotion, sales, marketing research, public relations, etc. performed to make the customer aware of the product or service and create demand for it, comes under marketing.

Service: Service means service provided to the customer so as to improve or maintain the value of the product. It includes financing service, after-sales service and so on.

Support Activities: Those activities which assist primary activities in accomplishment, are support activities. They includes:

Procurement: This activity serves the organization, by supplying all the necessary inputs like material, machinery or other consumable items, that required by the organization for performing primary activities.

Technology Development: At present, technology development requires heavy investment, which takes years for research and development. However, its benefits can be enjoyed for several years and by a multitude of users in the organization.

Human Resource Management: It is the most common plus important activity which excel all primary activities of the organization. It encompasses overseeing the selection, retention, promotion, transfer, appraisal and dismissal of staff.

Infrastructure: This is the management system, which provides, its services to the whole organization and includes planning, finance, information management, quality control, legal, government affairs, etc.

In the fast paced world, the main focus of the organization is customer satisfaction, and value chain analysis is the technique that helps to attain that level. Under this, each business activity is considered as essential, which contributes value and is constantly analyzed, to increase value as regards the cost incurred. (John Wiley 2010)

Question 2 Production is an organized activity of transforming resources into finished products in the form of goods and services with the objective of satisfying the demand for such transformed resources. Production is the result of combined efforts of the factors of production. These factors may be fixed or variable. However, the major variables that production personnel should zero on are as below:

Cost: Every customer cares about cost relative to value. So the production personnel need to develop an efficient and waste-free supply chain to minimize costs that reduces cost of production which in turn leads to low selling price.

Raw materials and ingredients: Quality characteristics of a product can be measured objectively and sometime by machines. Therefore reliance should be placed on subjective assessment by operators and the more operators that examine the raw materials, ingredients, process and product, the greater will be the level of control. The importance of proper staff training and involvement in production are particularly important in production

Product quality: When a producer wishes to ensure the quality of products, it is necessary to identify where losses in quality are likely to occur and then find methods to control the process and to improve the product. If for example, a problem is due to poor quality raw materials or ingredients, this should be discussed with suppliers and if necessary, the processor should introduce appropriate testing methods with tolerance limits that are agreed with the supplier.

Flexibility–Adapt to constantly changing customer demands. Make sure production planning and production processes provide flexibility given changing types of product or services and changes to product mix, volume and delivery.

Employee Availability: One of the factors the production manager must zero on, is the role and availability of employees for the project. Depending on the size of the project, employees may play a significant role in completing the job in question. The company doing the production may have employees available for some tasks, but the production manager is responsible for identifying jobs that need to be outsourced. For instance, the company may not have the expertise to finish smaller tasks in the various production stages.

Packaging, storage and distribution: Although other products like fruits and vegetables are stabilized by processing, their long term preservation depends on the type of package that is used and the temperature and humidity in which packages are stored. For these reasons, it is important that packaging, distribution and storage are included in a processor's quality assurance schedule.

Maintenance: Another common reason for lost in production is delays caused by equipment breakdowns and waiting for spare parts. Most small scale producers do not have a stock of spare parts for equipment used in their processes, citing the cost as a reason. Equally however, few producers have compared the cost of a stock of spares with the cost of delayed production. Thus production personnel should zero on this factor as well.

However, much as the production personnel zero on the above mentioned variables, there are also some other indirect factor that they must also consider as they equally contribute to the success of the production process. These factors are as below:

Hygiene and sanitation: Together, a manager and processing staff should be able to identify all areas of potential hazard in the production and then develop a cleaning plan and personal hygiene rules that ensure safe preparation of the product.

Budgeting Limitations: Another factor that must be considered in the production process is the overall budget given for the production. This can be an ongoing budget for product or service production or be a single large budget for a production project. When planning the production, the manager must consider the employees, renting the equipment, the price of raw materials and additional supplies and save some funds for emergency situations, such as broken machinery.

Supplier Lead Time: One can’t promise an end result if one don’t have what he or she need to create. Therefore, supplier lead times need to be an essential part to zero on especially when planning production.

Staff management: It is not possible in a book of this type to detail the different features of successful personnel management, but an outline of the principles on which an owner or manager can provide fair and reasonable working conditions for staff. One aim of a manager should be to ensure that all staff understand the nature of the business and are active in working towards its success. This is particularly important in relation to quality assurance which requires all staff to agree quality management procedures and as individuals, to routinely monitor product quality.

Deadline and Scheduling: Another factor that must be zero on in the production is the overall deadline set by the company executives. At times, the deadline given is a desired deadline, where the manager needs to try to finish the production within the given time frame. However, given unforeseen circumstances like the bad weather or broken machinery, company executives may be flexible with the deadline. Part of the production planning includes creating a schedule with weekly or daily goals to stay on track for the given deadline.

Health and safety: The provision of facilities for staff are important for improved efficiency and staff morale, but the entrepreneur also has a responsibility to staff to provide a safe and healthy working environment. In some countries, this is a legal requirement, but even if legislation does not exist, the consequences of accidents and illness arising from poor working conditions are far greater than any difficulty in ensuring safety.

In conclusion, there various variables in the production process. Such Variables are described as inputs that are required to produce goods and services with an objective of making an economic profit. Such inputs are zero on in order to receive efficiency and efficacy in the production process. (William J Stevenson 2014)

Question3 Just-in-Time or JIT is an inventory management system wherein the material, or the products are produced and acquired just a few hours before they are put to use. The Just-in-time system is adopted by the firms, to reduce the unnecessary burden of inventory management, in case the demand is less than the inventory raised. The objective of Just-in-time is to increase the inventory turnover and reduce the holding cost and any other costs associated with it. This concept is again popularized by the Japanese firms, who place an order for the material, the same day the product is to be produced. Yes JIT is utopia in the following ways:

Reduction in the order to payment timeline: cash is king in business. Many businesses suffer with cash flow problems as they often have to purchase large amounts of raw materials prior to manufacturing and subsequent payment by the customer. Often this gap is many months. By implementing JIT one can considerably reduce that time period.

Reduction in Inventory costs: one of the main aims with any JIT implementation is to improve stock turns and the amount of stock being held. Reduction in the stock comes with many other associated benefits.

Reduction in space required: by removing large amounts of stock from the system and moving processes closer together leads to significant reduction in the amount of floor space being used.

Reduction in handling equipment and other costs: if one don’t have to move large batches there is less need for complex machinery to move them and all of the associated labor and training.

Lead time reductions: one of the most significantly impacted areas is that of the time it takes for products to flow through the process. Instead of weeks or months most JIT implementations result in lead times of hours or a few days.

Reduced planning complexity: the use of simple pull systems such as Kanban, even with the suppliers, can significantly reduce the need for any form of complex planning. With many implementations the only planning is the final shipping process.

Improved Quality: the removal of large batch manufacturing and reduction in handling often results in significant quality improvements.

Productivity increases: to achieve JIT there are many hurdles that must be overcome with regards to how the process will flow. These will often result in productivity improvements upwards.

Problems are highlighted quicker: often this is cited as being a negative aspect of JIT in that any problems will often have an immediate impact on the whole production process. However this is the perfect way to ensure that problems are highlighted and solved immediately when they occur.

Employee empowerment: one requirement of JIT as with most other aspects of Lean manufacturing is that employees are heavily involved in the design and application of the system.

Just in Time is one of the pillars of a lean manufacturing system and as such it cannot be implemented in isolation and without a firm foundation on which to build. Trying to reduce batch sizes without tackling setup times for instance cannot be done.  The following are some of the things that must be implemented for JIT to work:

Reliable Equipment and Machines: if your machinery is always breaking down or giving you quality problems then it will frequently manifest in big issues with any JIT flow. The implementation of Total Productive Maintenance is required to ensure that you can rely on your equipment and to minimize the impact that any failures have on your processes.

Well-designed work cells: poor layout, unclear flow, and a host of other issues can all be cleared up by the implementation of 5S within your production. This simple and very easy to implement lean tool will make a significant improvement in your efficiencies all by itself.

Quality Improvements: an empowered workforce that is tasked with tackling their own quality problems with all of the support that they need is another vital part of any lean and JIT implementation. Setting up kaizen or quality improvement teams and using quality tools to identify and solve problems is vital.

Standardized Operations: only if you know how each operation is going to be performed can you be sure what the reliable outcome will be. Defining standard ways of working for all operations will help to ensure that your processes are reliable and predictable.

Pull Production: 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 Kanban which are signals (flags) to tell the previous process what needs to be made.

Single piece Flow: the ideal situation is one in which you will produce a single product as ordered by the customer. This for some industries is not immediately possible but should always be your end goal. To achieve this you will need to work on reducing batch sizes significantly through the use of Single Minute Exchange of Die (SMED) which seeks to significantly reduce the time taken for any setup. It will also often require the use of smaller dedicated machines and processes rather than all singing all dancing mega machines.

Flow at the beat of the customer: the demand of your customer is often referred to as your Take time. You need to ensure that your cells and processes are organized, balanced and planned to achieve the pull of the customer.

Just-in-Time (JIT) is not just a manufacturing technique but a philosophy of manufacturing that influences a company's relationship with its suppliers, customers, and employees. The two basic underpinnings of this philosophy are elimination of anything that does not add value for the customer, and continuous improvement. Thus, the emphasis is on efficient utilization of resources, where resources can include time, material, and people. JIT activities include setup and lead time reduction, minimization of inventory, employee involvement in the decision making process, cooperative arrangements with suppliers, and a focus on meeting the needs of the customer in terms of batch sizes

In conclusion, Just in Time (JIT) is a Japanese invented competition survival production philosophy aimed at reducing total production cost by minimizing waste and at the same time continuously improving total product quality. JIT as an integrated production and control system with interdependence of components has had a lot of benefits to large manufacturing companies like Automobile and Electronics where it was first developed and implemented. (Leonard 1993)

Question 4 A computer is a machine or device that performs processes, calculations and operations based on instructions provided by a software or hardware program. It is designed to execute applications and provides a variety of solutions by combining integrated hardware and software components. A computer can aid in Development, Analysis and Forecasting in the following ways,

Paving the way for a more equitable world: Computer science can really help level the playing field in terms of inexpensive solutions. Computer science is a tool for societal rebalance when it comes to gender identity, background, and ethnicity and beyond.

Accelerating healthcare progress: Healthcare tends to be a pretty high priority when you consider how to improve people’s lives. One of the most exciting facets of computer science is its power to improve and accelerate every other field. “Data science and artificial intelligence as subsets of computer science allow people and organizations to accelerate and ‘prepackage.

Furthering education: One cannot imagine modern education without computer software or the internet. Whether taking a class online, researching for a paper or sharing work via the cloud, computer science made this possible.

Expanding communication: One of the biggest contribution computer science has made is in the field of communication. Computer Science has made the whole world a very small place. For example the use of social media, Video calls, chatting and the applications that allows one to share documents and photos with someone in a long distance.

Predicting and avoiding catastrophes: Computer science help in scaling and is very fast in prediction. This can have a huge impact on the world. Predicting human behavior; climates, seasons, ocean currents. With these tools, it is easy to predict everything from an incoming tsunami to the outbreak pattern of a pathogen.

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.

Computational Finance: Computational finance is an interdisciplinary process that incorporates elements of mathematical science, economic theory, statistics, and computer simulation and modeling. The applications for computational finance are varied, but they typically focus on investment planning and risk management. Using available statistical data, computers generate simulations that show the outcomes of investments under various situations and the potential for gains and losses.

Economic Forecasting: Computers are used in the creation of complex forecasting models. As in computational finance, computer simulations and models can be used to predict how markets will change. While no forecast is completely reliable, these forecasts factor a diverse array of variables in a fraction of the time a human could manually crunch the numbers.

Online Trading and E-Commerce: The emergence of e-commerce and online trading of goods, services and stocks has considerably changed the way we do business. Many transactions, especially those between two businesses as opposed to a business and a consumer, are now performed online, with the exchange of information and digital purchases taking place instantly. This has vastly changed the way stocks are traded, as enormous bulk trades can be made the instant prices change, and exchanges are made based on computer algorithms with preset parameters rather than based on instructions to a human trader.

Data Presentation: The presentation of statistical and financial data has evolved with the involvement of computers. The mountains of data, which in their raw form constitute a decidedly bland list of numbers and figures, can be visually displayed with charts and graphs. The charts convey both data and relational concepts, making the information easier to understand for anyone involved in analysis. While creating these charts required careful attention to detail for accuracy in the past, modern software automates the process, accelerating the generation of accurate and visually dynamic presentations and charts.

Increase productivity: Computers increase productivity and, with a good understanding of the software running on them, one will become more productive at everything. For example, basic understanding of using a word processor to create, store, edit, share, and print documents and letters. Each of these things was either impossible or much slower with all pre-existing technologies.

Helps sort, organize, and search through information: A computer can use its stored information more efficiently than any other device. Example a computer have the ability to store thousands of books. Once those books are stored on a computer, they can be sorted into categories, alphabetized, and then searched to find exactly what you are looking for in less than a minute.

Get a better understanding of data: Computers can also give a better understanding of data and big data. For example, a business could have a database of items they've sold. Using that data, they can quickly identify what items sell best at what time of year, when to mark up or down an item, and what items are not selling. Having access to this type of information can give the business a better understanding of their customers and a competitive edge against their competitors.

Help in learning and keeping one informed: The computer connected to the Internet is a great learning tool and something that can help answer almost any question, teaching anything of one’s interests. One can also access news around the world to keep up-to-date with all of the latest news, weather, and stories around the world.

Can make you money: When connected to the Internet, a computer can help one make money in many different ways. For example, it is much cheaper to create and run an online store than having a physical store. Also, once online, store or product has a global audience and one could sell to anyone in the world. In addition to helping one make money, the computer with a spreadsheet is an excellent tool for keeping track of finances and breakdown spending habits.

Improves your abilities: People with poor grammar, not great at math, don't have a great memory, or need help with something else, by using all of a computer's abilities, one can improve all of his or her abilities.

Can help automate and monitor: A computer can be programmed to complete a task and, once done, be made to repeat that task as many times as needed. For example, a computer could be programmed to move a robotic arm that builds a part for a car or filter, sort, respond, and forward incoming e-mails.

Although there are advantages to using a computer, there are also disadvantages and are as below,

Unemployment: Different tasks are performed automatically by using computers. It reduces the need of people and increases unemployment in society.

Wastage of time and energy: Many people use computers without positive purpose. They play games and chat for a long period of time. It causes wastage of time and energy. Young generation is now spending more time on the social media websites like Facebook, Twitter etc or texting their friends all night through smartphones which is bad for both studies and their health. And it also has adverse effects on the social life.

Data Security: The data stored on a computer can be accessed by unauthorized persons through networks. It has created serious problems for the data security.

Computer Crimes: People use the computer for negative activities. They hack the credit card numbers of the people and misuse them or they can steal important data from big organizations.

Privacy violation: The computers are used to store personal data of the people. The privacy of a person can be violated if the personal and confidential records are not protected properly.

Health risks: The improper and prolonged use of computer can results in injuries or disorders of hands, wrists, elbows, eyes, necks and back. The users can avoid health risks by using the computer in proper position. They must also take regular breaks while using the computer for longer period of time. It is recommended to take a couple of minutes break after 30 minutes of computer usage.

Impact on Environment: The computer manufacturing processes and computer waste are polluting the environment. The wasted parts of computer can release dangerous toxic materials. Green computer is a method to reduce the electricity consumed and environmental waste generated when using a computer. It includes recycling and regulating manufacturing processes. The used computers must be donated or disposed off properly.

In conclusion, introduction of computers marked a big difference between the no-computer eras. Computers have evolved strongly in time allowing many different uses. Increasing capability of the computers has let to possibility of things that were impossible before. (Robert 2006)

Question 5 A Computerized system is the documented process of assuring that a computer does exactly what it is designed to do in a consistent and reproducible manner. The process begins with the system proposal or requirements definition and continues until system retirement and retention of the e-records based on regulatory rules.

Computerized systems are a convenient way of recording, storing, analyzing and reporting financial information. At some stage, everyone will need to use this type of system to manage and submit their accounts for example tax returns. In this regards, the benefits of computerized systems for a businesses are as below:

Reduce the time spent on manual processes: Computerized Systems uses sophisticated software to automate manual accounting and bookkeeping processes, such as complex calculations. For small to medium-sized businesses, digital accounting will save hours of time and resource by enabling one to manage accounts in a fraction of the usual time.

Less errors and increased accuracy: Digital accounting ensures all entered data is calculated precisely, which means, there is no need for manual checking of accounts every time a new data is entered. This includes income, expenses, transactional data, account reconciliation, period end adjustments, as well as stock.

Real-time financial information: Computerized accounting systems are synchronized and aligned with one’s online bank account. This means one can always have access to up-to-date information on whether invoices are being paid by customers, as well as the business outgoings.

Automated invoices, credit notes and receipts: Many online accounting systems enable automated invoicing, crediting and receipting processes, which means one can remove time spent creating manual invoices, credit notes and receipts. Some systems also send chaser emails if debts have not been paid, which is a very useful tool for small and medium businesses who usually do not have adequate resources available for debt recovery.

Innovative financial technology: Many computerized accounting systems are cloud-based, which means one can download apps for mobile phones and tablets. This enables one to check accounts at any time, no matter where you are in the world.

Save money on resources: Streamlining accounting and bookkeeping processes by using a computerized system, one need not to spend as much time managing financial information. Many computerized accounting systems can be provided by way of an affordable monthly subscription fee.

Faster record-keeping leads to more business: Due to automated complex calculations, continual awareness of finances, and less time spent on processing and checking accounts, one can spend more time focusing on business operations thus increasing profit margin.

Automation: Since all the calculations are handled by the software, computerized accounting eliminates many of the mundane and time-consuming processes associated with manual accounting. For example, once issued, invoices are processed automatically making accounting less time-consuming.

Data Access: By using accounting software, it becomes much easier for different individuals to access accounting data outside of the office securely. This is particularly true if an online accounting solution is being used.

Reliability: Because the calculations are so accurate, the financial statements prepared by computers are highly reliable.

Scalable: When your company grows, the amount of accounting necessary not only increases but becomes more complex. With computerized accounting, everything is kept straightforward because sifting through data using software is easier than sifting through a bunch of papers. Speed: Using accounting software, the entire process of preparing accounts becomes faster. Furthermore, statements and reports can be generated instantly at the click of a button. Managers do not have to wait for hours, even days, to lay their hands on an important report.

Security: The latest data can be saved and stored in offsite locations so it is safe from natural and man-made disasters like earthquakes, fires, floods, arson and terrorist attacks. In case of a disasters, the system can be quickly restored on other computers. This level of precaution is taken by Clever Accounting.

Cost-effective: Since using computerized accounting is more efficient than paper-based accounting, than naturally, work will be done faster and time will be saved. When one considers that Clever Accounting, one of the latest online accounting solutions, starts at a low monthly subscription (check out pricing here), then computerized accounting really becomes a no-brainer.

Visuals: Viewing your accounts using a computer allows you to take advantage of the option to view your data in different formats. You can view data in tables and using different types of charts.

In conclusion, computerized system represents a technological advancement in the field of business. There are many computerized systems available including programs such as Xero and Sage One. Each system has its own selling points, so it is advisable always to review a system and check whether it’s the right fit for one’s business and operations. (Rogler 2015)

Question 6 A Flexible Manufacturing System is a manufacturing system that consists of numerical control machines Connected by an automated material handling system. It is operated through central computer Control and is capable of simultaneously processing a family of parts with low to medium demand, different process cycles and operation sequences.

Yes the use of computer can facilitates Flexible manufacturing system through the following ways,

Error Reduction: Computers 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, computers 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 assignment and reporting functions on factory floor operations drastically reduces the error rate.

Speed: Assignment and reporting in a computerized 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. Computerized system 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 computerized system, changes to various operations can also be performed more easily. Computerized 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-computerized situations; manufacturing operations and material usage must be reported by humans who perform transactions. Computers 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.

Features: Computerized system allows businesses to manage financial transactions, product life cycles and supply chain activities. The software has various analytical features, such as evaluating performance, reporting and decision making. Computers can analyze data from any source and conduct collaborative decision making. These features allow computer system to meet the needs of many complex businesses and government organizations.

Computers helps in tracking of work flow which is helpful in positioning inspection throughout the process. This helps to minimize the number of parts which require rework or which must be scrapped. FMS changes the outlook of inspection from a post-position to an in-process position. Hence, feedback is available in real time which improves quality and helps product to be within the tolerance level.

Flexible manufacturing systems are virtually always used in conjunction with just-in-time (JIT) order systems. This combination increases the throughput and reduces throughput time and the length of time required to turn materials into products.

Flexible Manufacturing Systems have made a huge impact on activity-based costing. Using these systems helps firms to switch to process costing instead of job costing. This switching is made possible because of the reduced setup delays. With set-up time only a small fraction of previous levels, companies are able to move between products and jobs with about the same speed as if they were working in continuous, process type environment.

To look at another aspect of strategic benefits, enterprise integration can be facilitated by computers as it operates with the lowest total cost and has the greatest ability to “delight” its customers.

In conclusion the concept of flexible manufacturing systems evolved during the 1960s when robots, programmable controllers, and computerized numerical controls brought a controlled environment to the factory floor in the form of numerically-controlled and direct-numerically-controlled machines. For the most part, Flexible Manufacturing System is limited to firms involved in batch production or job shop environments. Normally, batch producers have two kinds of equipment from which to choose: dedicated machinery or automated, general-purpose tools. Dedicated machinery results in cost savings but lacks flexibility. General purpose machines such as lathes, milling machines, or drill presses are all costly, and may not reach full capacity. Flexible manufacturing systems provide the batch manufacturer with another option one that can make batch manufacturing just as efficient and productive as mass production.(Robert J 1997)

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