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**NAME: STEWARD EMMANUEL ELIKANA MIGIDO**

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**MODULE THREE ASSIGNMENTS**

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

Value chain analysis (VCA*)* is a process where a firm identifies its primary and support activities that add value to its final product and then analyse 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 is a way to visually analyse a company's business activities to see how the company can create a competitive advantage for itself.

Value chain analysis helps a company understands how it adds value to something and subsequently how it can sell its product or service for more than the cost of adding the value, thereby generating a profit margin.

In other words, if they are run efficiently the value obtained should exceed the costs of running them i.e. customers should return to the organisation and transact freely and willingly.

Originated in the 1980s by [Michael Porter](https://en.wikipedia.org/wiki/Michael_Porter), value chain analysis is the conceptual notion of value-added in the form of a value chain. He suggested that an organisation is split into 'primary activities' and 'support activities'.

The figure below divides activities into primary and support activities as suggested by Porter's Value Chain Analysis model:

**What is Competitive Advantage?**

Value Chain Analysis is mentioned extensively in the first half of the book "[Competitive Advantage](https://www.amazon.com/Competitive-Advantage-Creating-Sustaining-Performance/dp/0684841460/)" in 1985 by Michael Porter.

Porter suggested that activities within an organisation add value to the service and products that the organisation produces, and all these activities should be run at optimum level if the organisation is to gain any real competitive advantage.

Competitive Advantage is the ability for a firm to put "generic strategy" into practice, generic strategy includes:

1. Cost Leadership: offer the lowest price to customers
2. Differentiation: selecting the important attributes that buyers want so the company can get a premium price
3. Focus: doing each strategy according to each market segment

What activities a business undertake is directly linked to achieving competitive advantage.

For example:

1. A business which wishes to outperform its competitors through differentiating itself through higher quality will have to perform its value chain activities better than the oppositions.
2. By contrast, a strategy based on seeking cost leadership will require a reduction in the costs associated with the value chain activities, or a reduction in the total amount of resources used.

**Value and Value Chain**

Value is the total amount (i.e. total revenue) that buyers are willing to pay for a firm's product. The difference between the total value and the total cost performing all of the firm's activities provides the margin.

Margin implies that organizations realize a profit margin that depends on their ability to manage the linkages between all activities in the value chain. In other words, the organization is able to deliver a product / service for which the customer is willing to pay more than the sum of the costs of all activities in the value chain.

A value chain concentrates on the activities starting with raw materials till the conversion into final goods or services.

The sources of the competitive advantage of a firm can be seen from its discrete activities and how they interact with one another. The ultimate goals in performing value chain analysis are to maximize value creation while also monitoring and minimizing costs.

**Basic Concepts of Value Chain Analysis**

Most organizations engage in hundreds, even thousands, of activities in the process of converting inputs to outputs. These activities can be classified generally as either primary or support activities that all businesses must undertake in some form.

**Primary Activities**

Primary activities are directly concerned with creating and delivering a product. They can be grouped into five main areas: inbound logistics, operations, outbound logistics, marketing and sales, and service.

Each of these primary activities is linked to support activities which help to improve their effectiveness or efficiency; and According to Porter (1985), the primary activities are:

**Inbound logistics**

Refers to goods being obtained from the organisation's suppliers and to be used for producing the end product

**Operations**

Raw materials and goods are manufactured into the final product. Value is added to the product at this stage as it moves through the production line.

**Outbound logistics**

Once the products have been manufactured they are ready to be distributed to distribution centres, wholesalers, retailers or customers. Distribution of finished goods is known as outbound logistics.

**Marketing and Sales**

Marketing must make sure that the product is targeted towards the correct customer group. The marketing mix is used to establish an effective strategy; any competitive advantage is clearly communicated to the target group through the promotional mix.

**Services**

After the product/service has been sold what support services does the organisation offer customers? This may come in the form of after sales training, guarantees and warranties.

With the above activities, any or a combination of them are essential if the firm are to develop the "competitive advantage" which Porter talks about in his book.

**Support Activities**

Support activities assist the primary activities in helping the organisation achieve its competitive advantage. There are four main areas of support activities: procurement, technology development (including R&D), human resource management, and infrastructure (systems for planning, finance, quality, information management etc.). They include:

**Firm infrastructure**

Every organisation needs to ensure that their finances, legal structure and management structure work efficiently and helps drive the organisation forward. Inefficient infrastructures waste resources, could affect the firm's reputation and even leave it open to fines and sanctions.

**Human resource management**

The organisation will have to recruit, train and develop the correct people for the organisation to be successful.

Staff will have to be motivated and paid the 'market rate' if they are to stay with the organisation and add value.

Within the service sector such as the airline industry, employees are the competitive advantage as customers are purchasing a service, which is provided by employees; there isn't a product for the customer to take away with them.

**Technology development**

The use of technology to obtain a competitive advantage is very important in today's technological driven environment.

Technology can be used in many ways including production to reduce cost thus add value, research and development to develop new products and the internet so customers have 24/7 access to the firm.

**Procurement**

This department must source raw materials for the business and obtain the best price for doing so. The challenge for procurement is to obtain the best possible quality available (on the market) for their budget.

**Link between Primary and Support Activities**

As mentioned before, primary activities add value directly to the production process, but they are not necessarily more important than support activities.

Nowadays, competitive advantage mainly derives from technological improvements or innovations in business models or processes.

Therefore, such support activities as 'information systems', 'R&D' or 'general management' are usually the most important source of differentiation advantage.

On the other hand, primary activities are usually the source of cost advantage, where costs can be easily identified for each activity and properly managed.

**Value Chain Diagram Example Super Store Super Market**

Value chain analysis is based on the principle that organisations exist to create value for their customers. In the analysis, the organisation's activities are divided into separate sets of activities that add value.

The organisation can more effectively evaluate its internal capabilities by identifying and examining each of these activities. Each value adding activity is considered to be a source of competitive advantage.

When executives choose strategies, an organization’s resources and capabilities should be examined alongside consideration of its value chain.

A value chain charts the path by which products and services are created and eventually sold to customers. [1](http://www.opentextbooks.org.hk/ditatopic/17146) The term value chain reflects the fact that, as each step of this path is completed, the product becomes more valuable than it was at the previous step.

Within the lumber business, for example, value is added when a tree is transformed into usable wooden boards; the boards created from a tree can be sold for more money than the price of the tree.

Value chains include both primary and secondary activities. Primary activities are actions that are directly involved in creating and distributing goods and services. Consider a simple illustrative example: doughnut shops.

Doughnut shops transform basic commodity products such as flour, sugar, butter, and grease into delectable treats.

Value is added through this process because consumers are willing to pay much more for doughnuts than they would be willing to pay for the underlying ingredients.

**There are five primary activities.** Inbound logistics refers to the arrival of raw materials. Although doughnuts are seen by most consumers as notoriously unhealthy, the Doughnut Plant in New York City has carved out a unique niche for itself by obtaining organic ingredients from a local farmer’s market.

**Operations refer** to the actual production process, while outbound logistics tracks the movement of a finished product to customers. One of Southwest Airlines’ unique capabilities is moving passengers more quickly than its rivals.

This advantage in operations is based in part on Southwest’s reliance on one type of airplane (which speeds maintenance) and its avoidance of advance seat assignments (which accelerates the passenger boarding process).

Attracting potential customers and convincing them to make purchases is the domain of marketing and sales.

For example, people cannot help but notice Randy’s Donuts in Inglewood, California, because the building has a giant doughnut on top of it.

Finally, service refers to the extent to which a firm provides assistance to their customers. Voodoo Donuts in Portland, Oregon, has developed a clever website (voodoodoughnut.com) that helps customers understand their uniquely named products, such as the Voodoo Doll, the Texas Challenge, the Memphis Mafia, and the Dirty Snowball.

Secondary activities are not directly involved in the evolution of a product but instead provide important underlying support for primary activities.

Firm infrastructure refers to how the firm is organized and led by executives. The effects of this organizing and leadership can be profound.

For example, Ron Joyce’s leadership of Canadian doughnut shop chain Tim Hortons was so successful that Canadians consume more doughnuts per person than all other countries.

In terms of resource-based theory, Joyce’s leadership was clearly a valuable and rare resource that helped his firm prosper.

Also important is human resource management, which involves the recruitment, training, and compensation of employees.

A recent research study used data from more than twelve thousand organizations to demonstrate that the knowledge, skills, and abilities of a firm’s employees can act as a strategic resource and strongly influence the firm’s performance.

Certainly, the unique level of dedication demonstrated by employees at Southwest Airlines has contributed to that firm’s excellent performance over several decades.

Technology refers to the use of computerization and telecommunications to support primary activities.

Although doughnut making is not a high-tech business, technology plays a variety of roles for doughnut shops, such as allowing customers to use credit cards. Procurement is the process of negotiating for and purchasing raw materials.

Large doughnut chains such as Dunkin’ Donuts and Krispy Kreme can gain cost advantages over their smaller rivals by purchasing flour, sugar, and other ingredients in bulk.

Meanwhile, Southwest Airlines has gained an advantage over its rivals by using futures contracts within its procurement process to minimize the effects of rising fuel prices.

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

**What are Variable Costs?**

Variable costs are expenses that vary in proportion to the volume of [goods](https://corporatefinanceinstitute.com/resources/knowledge/accounting/inventory/) or services that a business produces. In other words, they are costs that vary depending on the volume of activity.

Variable costs increase as the volume of activities increases and they decrease as the volume of activities decreases.

**The Most Common Variable Costs**

* Direct materials
* Direct labor
* Transaction fees
* Commissions
* Utility costs
* [Billable labour](https://corporatefinanceinstitute.com/resources/careers/compensation/)

Essentially, if a cost varies depending on the volume of activity, it is a variable cost.

Costs incurred by businesses consist of fixed and variable costs. As mentioned above, variable expenses do not remain constant when production levels change.

On the other hand, fixed costs are costs that remain constant regardless of production levels. Understanding which costs are variable and which costs are fixed are important to business decision-making.

For example, Amy is quite concerned about her bakery as the revenue generated from [sales](https://corporatefinanceinstitute.com/resources/knowledge/accounting/sales-revenue/) are below the total costs of running the bakery. Amy asks for your suggestion on whether she should close down the business or not.

Additionally, Amy already paid for one year of rent, electricity, and employee salaries. Therefore, if the business were to shut down, Amy would still incur these costs until year end.

In January, the business reported revenues of $3,000 but incurred total costs of $4,000 for a net loss of $1,000.

Amy estimates that February would experience revenues similar to that of January. Amy’s list of costs for the bakery is as follows:

 If Amy did not know which costs were variable or fixed, it would be harder to make an appropriate decision. In this case, we can see that total fixed costs are $1,700 and total variable expenses are $2,300.

If Amy were to shut down the business, Amy must still pay monthly fixed costs of $1,700. If Amy were to continue operating despite losing money, she would only lose $1,000 per month ($3,000 in revenue – $1,700 in fixed costs – $2,300 in variable costs). Therefore, Amy would actually lose more money if she were to discontinue the business.

The example illustrates the role variable costs play in decision-making. In this case, the optimal decision would be for Amy to continue business while looking at ways to reduce the variable expenses incurred from [production](https://corporatefinanceinstitute.com/resources/knowledge/accounting/cost-of-goods-manufactured-cogm/)

**Example of Variable Costs**

Let us consider a bakery that produces cupcakes. It costs $5 in raw materials and $20 in direct labour to bake one cake. In addition, there are fixed costs of $500 (the equipment used). To illustrate the concept, see the table below:

**Variable Costs in a Break-even Analysis**

Variable costs play an integral role in a [break-even analysis](https://en.wikipedia.org/wiki/Break-even_%28economics%29). The break-even analysis is used to determine the amount of revenue or the required units to sell to cover total costs. The break-even point formula is given as follows:

**Video Explanation of Variable Cost**

Watch this short video to quickly understand the main concepts covered in this guide, including what variable costs are, the common types of variable costs, the formula, and break-even analysis.

**3. What is Just in Time management system? Is JIT utopia? Can it be made to work? What is its philosophic approach in terms of Batch size?**

The just-in-time (JIT) inventory system is a management strategy that aligns raw material orders from suppliers directly with production schedules.

Companies use this inventory strategy to increase efficiency and decrease waste by receiving goods only as they need them for the production process, which reduces inventory costs. This method requires producers to forecast demand accurately.

The JIT inventory system contrasts with [just-in-case](https://www.investopedia.com/terms/j/jic.asp) strategies, wherein producers hold sufficient inventories to have enough products to absorb maximum market demand.

### Understanding Just in Time (JIT)

One example of a JIT inventory system is a car manufacturer that operates with low inventory levels relying on its [supply chain](https://www.investopedia.com/terms/s/supplychain.asp) to deliver the parts it needs to build cars. The manufacturer orders the parts required to assemble the cars only when an order is received.

JIT production systems cut inventory costs because manufacturers do not have to pay storage costs. Manufacturers are also not left with unwanted inventory if an order is canceled or not fulfilled.

### Just-in-Time (JIT) Inventory System Advantages

JIT inventory systems have several advantages over traditional models. Production runs are short, which means that manufacturers can quickly move from one product to another.

This method reduces costs by minimizing warehouse needs. Companies also spend less money on [raw materials](https://www.investopedia.com/terms/r/rawmaterials.asp) because they buy just enough resources to make the ordered products and no more.

### Disadvantages of the Just-in-Time System

The disadvantages of JIT inventory systems involve disruptions in the supply chain. 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.

### Special Considerations: Kanban Scheduling for Just in Time (JIT)

[Kanban](https://www.investopedia.com/terms/k/kanban.asp) (signboard or billboardin Japanese) is a scheduling system often used in conjunction with lean manufacturing and JIT. Taiichi Ohno, an industrial engineer at Toyota, developed kanban to improve manufacturing efficiency.

The system highlights problem areas by measuring lead and cycle time across the production process. The process identifies upper limits for work in process inventory to avoid overcapacity.

### Example of Just in Time

Toyota is famous for its implementation of a JIT inventory system. Toyota orders parts only when it receives new orders from customers. The company started this method in the 1970s, and it took over 15 years to perfect. Several elements of JIT manufacturing need to occur for Toyota to succeed.

The company must have steady production, high-quality workmanship, no machine breakdowns at the plant, reliable [suppliers](https://www.investopedia.com/articles/insights/050116/walmart-stock-analyzing-5-key-suppliers-wmt.asp), and quick ways to assemble machines that assemble the vehicles.

Fast Fact: Just-in-time (JIT) manufacturing is known as the Toyota Production System (TPS). The production system was originally developed in Japan in the 1960s and 1970s and was famously implemented with significant success by Toyota.

Toyota's JIT inventory system almost came to a crashing halt in February 1997. A fire at Aisin, a Japanese-owned automotive parts supplier to Toyota, decimated its capacity to produce a P-valve for Toyota vehicles. The company was the sole supplier of the part, and the fact that the plant remained closed for weeks could have devastated Toyota's supply line.

The auto manufacturer ran out of P-valve parts after just one day. Production lines shut down for two days until a supplier of Aisin could manufacture the valves. Other suppliers for Toyota also had to shut down because the auto manufacturer did not need other parts to complete any cars on the assembly line.

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

Along the way there may be threats of strikes, unanticipated cost increases, technical problems, and resistance from antinuclear groups. Revenues depend on future de­mand. Demand depends on production trends, in­come levels, energy use, and alternative sources of energy.

If there is a choice of projects, the firm can use the simulated rates of return to calculate both the ex­pected return and the degree of risk involved.

Using the certainty equivalent method or the risk-adjusted dis­count rate, the firm can compare these investments. However, the success of this approach depends on the quality of the probability distributions of a large number of variables.

Using sophisticated in-house technology a ma­jor computer manufacturer developed a United States-based rein voicing centre that controls literally all of the company’s cross-border transactions.

The computer system provides daily worldwide expo­sure reports, facilitating centralized exposure man­agement, aggressive leading and lagging strategies and substantial savings on holding costs each year an impossible chore without a computer.

**1. 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 programmes 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 labour 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 labour costs considerably and produce less expensive cars.

**2. 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 organisations, 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.”**

One main reason for the use of computers in economic analysis and forecasting is the widespread availability of in expense, convenient microcomput­ers. The personal computer (PC) has already become a fixture in financial departments the world over.

People are drawn by what PCs have to offer. For a small investment of time and effort one can now, perform various financial analyses more easily and quickly. The end result is increased productivity.

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 secure overseas investments.

According to a recent survey, the use of comput­ers for analysing capital project proposals will rise dramatically over the next few years. This tremen­dous surge can be attributed in part to the spread of the PCs to all aspects of financial planning.

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.

**They are involved in capital budgeting in two primary ways:**

1. They prepare a summarized list of standardized economic assumptions, which are distributed corporate-wide.

2. They 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.

**Forecasting:**

In the present age of uncertainty and informa­tion revolution managerial focus has shifted to im­proving the decision-making process in business and government. The key point in decision-making is accurate forecasts. 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.

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

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.

**Approaches to Forecasting:**

Prior to 1950s there existed hardly any method for business forecasting. In the mid-1950s exponen­tial smoothing technique was first used by the de­fence personnel for forecasting purposes. Subse­quently, this technique was applied to business or­ganisations.

In the 1960s the computer power became cheaper and techniques like multiple regression and econometric models were widely used to quantify and test economic theory with statistical data.

As economics entered the age of computers in the 1970’s the process was hastened by the availability of cheap computers.

In 1976 the Box-Jenkins method was developed. It is a systematic procedure for analysing time series data. In truth, the Box-Jenkins approach to time-series forecasting was as accurate as the econometric models and methods.

In the 1960s and 1970s technological forecast­ing methods were developed of which the Delphi method and cross-impact matrices were very pop­ular.

However, in 1970s it was first realised that forecasts were useless unless they were applied for planning and decision-making purposes.

**Six important characteristics or dimensions of planning and decision-making which determine the choice of forecasting methods are the following:**

**1. Time Horizon:**

The period of time for which the decision is made will have an impact. It may be the immediate term (i.e., less than one month), short-term (up to 3 months), medium-term (up to-2 years) long-term (more than 2 years).

**2. Level of Details:**

While selecting a forecast­ing method for a particular situation, one must know the level of details which will be needed for the fore­cast to be useful for decision-making purposes. The need for detailed information varies from situation to situation and time to time.

**3. The Number of Variables:**

The number of variables to be forecast affects the need for detail which, its turn, determines the choice of appropriate methods even in the same situation. When forecast is to be made for a single variable, the procedures used can be more detailed and complex than when forecasts are made for a number of variables.

**4. Constancy:**

Forecasting a situation which does not change is different from forecasting a situ­ation which is fairly unstable (i.e., a situation which often keeps on changing).

**5. Control vs. Planning:**

The controlling func­tion is performed by using a new technique called management by exception. Any forecasting method must be sufficiently flexible so that the changes in the basic patterns of behaviour of variables or rela­tionships among them can be detected at an early stage.

**6. Existing Planning Procedures:**

For intro­ducing new forecasting methods, often the existing planning and decision-making procedures have to be changed. Moreover, in case of any deviation from a set path it gives early warning and the managers face human resistance to such changes.

So the usual practice is to select those forecasting methods which are most closely related to the existing plans and procedures. In case of necessity, these methods can be improved later on.

**Six major factors which are considered impor­tant in forecasting are given below:**

**(1) Time Horizon:**

Two aspects of the time hori­zon are related to most forecasting methods, viz., the span of time in future for which different methods are appropriate and that the number peri­ods for which a forecast is required.

**(2) Data Pattern:**

For matching forecasting methods with the existing pattern of data (i.e., seasonal/cyclical, time-series/cross section etc.) an ap­propriate method is to be selected.

**(3) Accuracy:**

Forecasts must be as accurate as possible.

**(4) Cost:**

**In any forecasting procedure the fol­lowing costs are generally involved:**

(a) Develop­ment;

(b) Data preparation;

(c) Actual operation; and

(d) Cost of foregone opportunity.

**(5) Reliability:**

Managers should not forecast anything based on data which is not reliable for the purpose of managerial decision making.

**(6) Availability of computer software:**

It is not possible to apply any given quantitative forecast­ing method without an appropriate computer pro­gramme. Programmes must be “free” from major “bugs”, well documented and easy to use, for get­ting satisfactory results.

**Forecasting Tools:**

Economists have developed various forecasting tools to be able to foresee changes in the economy. In earlier times, economists used to look into the future by using easily available data on things like money supply, house construction, and steel produc­tion.

At a later stage this process was formalized by combin­ing several different statistics into an ‘index of lead­ing indicators’, which is now published every month by the US Department of Commerce.

Although not very accurate, the index gives an early and mechanical warning on whether the economy is heading up or sliding down.

**Computers and Forecasting:**

The commercial computers in the 1950s were very large, complicated, slow and expensive. More­over, they had minimum storage capacity. In the 1960s substantial improvement on it was made.

The powerful microcomputers of today run faster, are comparatively cheap and contain more RAM mem­ory. It is likely that there will be further improve­ment in speed memory and capacity of computers. It also seems that cost and size of the computers will also be reduced in the future.

Two major advantages of modern computers are the incredibly high speed and great accuracy with which they can do calculations.

Hence any forecast­ing method can be programmed to run on a com­puter. Even the most calculation-intensive methods can be run on a micro-computer within a few min­utes.

Finally, the whole model is put together and run as a system of equations. In small models there are one or two dozen equations.

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

The manual system of recording accounting transactions requires maintaining books of ac­counts such as journal, cash book, special purpose books, and ledger and so on. From these books summary of transactions and financial statements are prepared manually.

The advanced technology involves various machines, which can perform different accounting functions, for example a billing machine. This machine is capable of computing discount, adding net total and posting the requisite data to the relevant accounts.

With substantial increase in the number of transactions, a new machine was developed to store and process accounting data with greater speed and accuracy. A computer, to which it was connected, operated this machine.

### Objects of Introduction of Computers in Accounting:

### Labour Saving:

Labour saving is the main aim of introduction of computers in accounting. It refers to annual savings in labour cost or increase in the volume of work handled by the existing staff.

#### Time Saving:

Savings in time is another object of computerization. Computers should be used whenever it is important to save time.

It is important that jobs should be completed in a specified time such as the preparation of pay rolls and statement of accounts. Time so saved by using computers may be used for other jobs.

#### Accuracy:

Accuracy in accounting statements and books of accounts is the most important in business. This can be done without any errors or mistakes with the help of computers. It also helps to locate the errors and frauds very easily.

#### Minimization of Frauds:

Computer is mainly installed to minimize the chances of frauds committed by the employees, especially in maintaining the books of accounts and handling cash.

#### Effect on Personnel:

Computer relieves the manual drudgery, reduces the hardness of work and fatigue, and to that extent improves the morale of the employees.

### Meaning of Computer Accounting

### Accounting is the language of the business. Different parties such as shareholders, stakehold­ers, tax authorities, stock exchanges, etc. are interested in the accounting information for their varied needs.

# Electronic and manual record keeping

While some business owners prefer manual record keeping systems, most businesses use an electronic record keeping system making it easier to capture information, generate reports and meet tax and legal reporting requirements.

There are a number of issues you should consider when setting up an electronic or manual record keeping system, as each has certain advantages and limitations.

**Electronic record keeping**

Most businesses use accounting software programs to simplify electronic record keeping, and produce meaningful reports. There are many other advantages to using electronic record keeping, as listed below.

**Advantages**

* Helps You Record Business Transactions, Including Income And Expenses, Payments To Workers, And Stock And Asset Details.
* Efficient Way To Keep Financial Records And Requires Less Storage Space.
* Provides The Option Of Recording A Sale When You Raise An Invoice, Not When You Receive A Cash Payment From A Client.
* Easy To Generate Orders, Invoices, Debtor Reports, Financial Statements, Employee Pay Records, Inventory Reports.
* Automatically Tallies Amounts And Provides Reporting Functions.

**Choosing accounting software**

Your business may require more than one software program to meet all of your tax and legal needs, so it's important to:

* Seek Advice From Your Accountant Or [Financial Adviser](https://www.business.qld.gov.au/starting-business/planning/advisers) Before Purchasing Software For Record Keeping
* Check Which Accounting Software Is Tax Compliant On The [Australian Taxation Office Website](https://www.ato.gov.au/business/managing-your-small-business-records/electronic-and-manual-record-keeping-systems/electronic-record-keeping/).

**Electronic backup**

Set up a secure electronic backup system to ensure records are safely stored and regularly backed up. Daily backups are recommended, particularly for important records. Make sure the backup copies are stored in a separate location to your business in case of fire, theft or a natural disaster.

For small businesses, the cheapest backup options are CDs and memory sticks. If your business has large amounts of data, external hard drives are a popular backup option.

**Cloud backup**

Cloud computing provides a way for your business to manage your computing resources and records online. The term has evolved over recent years, and can be used to describe the use of a third party for your storage and computing needs.

Cloud backup services are becoming more popular and can be automated for your convenience, but you should make sure the method you choose protects the privacy and security of your business and customers.

**Manual record keeping**

Some business owners may want to use a simple, paper-based record keeping system. There are certain advantages to using manual record keeping, as listed below.

**Advantages**

* Less expensive to set up.
* Correcting entries may be easier with manual systems, as opposed to computerised ones that can leave complicated audit trails.
* The risk of corrupted data is much less.
* Data loss is less of a risk, particularly if records are stored in a fire-proof environment.
* Problems with duplicate copies of the same records are generally avoided.
* The process is simplified as you don't need to be familiar with how accounting software calculates and treats your information.

**Streamline your manual record keeping**

* Sort and Store All Paperwork, Receipts and Payments In 12 Separate Months.
* Keep All Original Documents And Date All Correspondence.
* Record All Transaction Dates and Payment Amounts.
* Save All Online Financial Transactions By Month And Financial Year In Your Inbox And In A Separate Folder On Your Hard Drive.

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

Flexibility in manufacturing means the ability to deal with slightly or greatly mixed parts, to allow variation in parts assembly and variations in process sequence, change the production volume and change the design of certain product being manufactured.

An **Industrial Flexible Manufacturing System** (FMS) consists of [robots](https://en.wikipedia.org/wiki/Robot), Computer-controlled Machines, Computer Numerical Controlled machines ([CNC](https://en.wikipedia.org/wiki/CNC)), [instrumentation](https://en.wikipedia.org/wiki/Instrumentation) devices, computers, sensors, and other standalone systems such as inspection machines.

The use of robots in the production segment of manufacturing industries promises a variety of benefits ranging from high utilization to high volume of productivity. Each Robotic cell or node will be located along a material handling system such as a conveyor or automatic guided vehicle.

The production of each part or work-piece will require a different combination of manufacturing nodes. The movement of parts from one node to another is done through the material handling system.

At the end of part processing, the finished parts will be routed to an automatic inspection node, and subsequently unloaded from the Flexible Manufacturing System.

The FMS data traffic consists of large files and short messages, and mostly come from nodes, devices and instruments. The message size ranges between a few bytes to several hundreds of bytes.

Executive software and other data, for example, are files with a large size, while messages for machining data, instrument to instrument communications, status monitoring, and [data reporting](https://en.wikipedia.org/wiki/Data_reporting) are transmitted in small size.

There is also some variation on response time. Large program files from a main computer usually take about 60 seconds to be down loaded into each instrument or node at the beginning of FMS operation.

[Token Bus](https://en.wikipedia.org/wiki/Token_Bus) has a deterministic message delay, but it does not support prioritized access scheme which is needed in FMS communications. [Token Ring](https://en.wikipedia.org/wiki/Token_Ring) provides prioritized access and has a low message delay; however, its data transmission is unreliable.

A single node failure which may occur quite often in FMS causes transmission errors of passing message in that node. In addition, the topology of Token Ring results in high wiring installation and cost.

A design of FMS communicationthat supports a real time communication with bounded message delay and reacts promptly to any emergency signal is needed.

## REFERENCES

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