Biyani's Think Tank

Concept based notes

Management of Information System

(BBA)

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Preface

I am glad to present this book, especially designed to serve the needs of the students. The book has been written keeping in mind the general weakness in understanding the fundamental concepts of the topics. The book is self-explanatory and adopts the "Teach Yourself" style. It is based on question-answer pattern. The language of book is quite easy and understandable based on scientific approach.

Any further improvement in the contents of the book by making corrections, omission and inclusion is keen to be achieved based on suggestions from the readers for which the author shall be obliged.

I acknowledge special thanks to Mr. Rajeev Biyani, *Chairman* & Dr. Sanjay Biyani, *Director* (*Acad.*) Biyani Group of Colleges, who are the backbones and main concept provider and also have been constant source of motivation throughout this Endeavour. They played an active role in coordinating the various stages of this Endeavour and spearheaded the publishing work.

I look forward to receiving valuable suggestions from professors of various educational institutions, other faculty members and students for improvement of the quality of the book. The reader may feel free to send in their comments and suggestions to the under mentioned address.

Author

Chapter-1

Introduction to MIS

Q.1 What is MIS? Discuss in detail?

OR

Describe the three words of MIS: Management, Information, System.

OR

Discuss the objectives and characteristics of MIS.

Ans.: Management Information Systems (MIS), referred to as Information Management and Systems, is the discipline covering the application of people, technologies, and procedures collectively called information systems, to solving business problems.

"'MIS' is a planned system of collecting, storing and disseminating data in the form of information needed to carry out the functions of management."

Academically, the term is commonly used to refer to the group of information management methods tied to the automation or support of human decision making, e.g. Decision Support Systems, Expert Systems, and Executive Information Systems.

Management : Management is art of getting things done through and with the people in formally organized groups. The basic functions performed by a manager in an organization are: Planning, controlling, staffing, organizing, and directing.

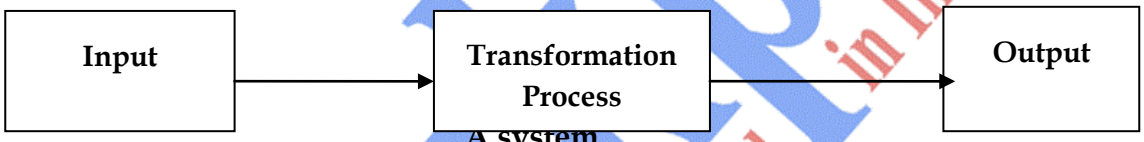
Information : Information is considered as valuable component of an organization. Information is data that is processed and is presented in a form which assists decision maker.

Information Generation

System : A system is defined as a set of elements which are joined together to achieve a common objective. The elements are interrelated and interdependent. Thus every system is said to be composed of subsystems. A system has one or multiple inputs, these inputs are processed through a transformation process to convert these input(s) to output.

These subsystems are interrelated through a process of

Input - Throughput - Output



A system

Objectives of MIS :

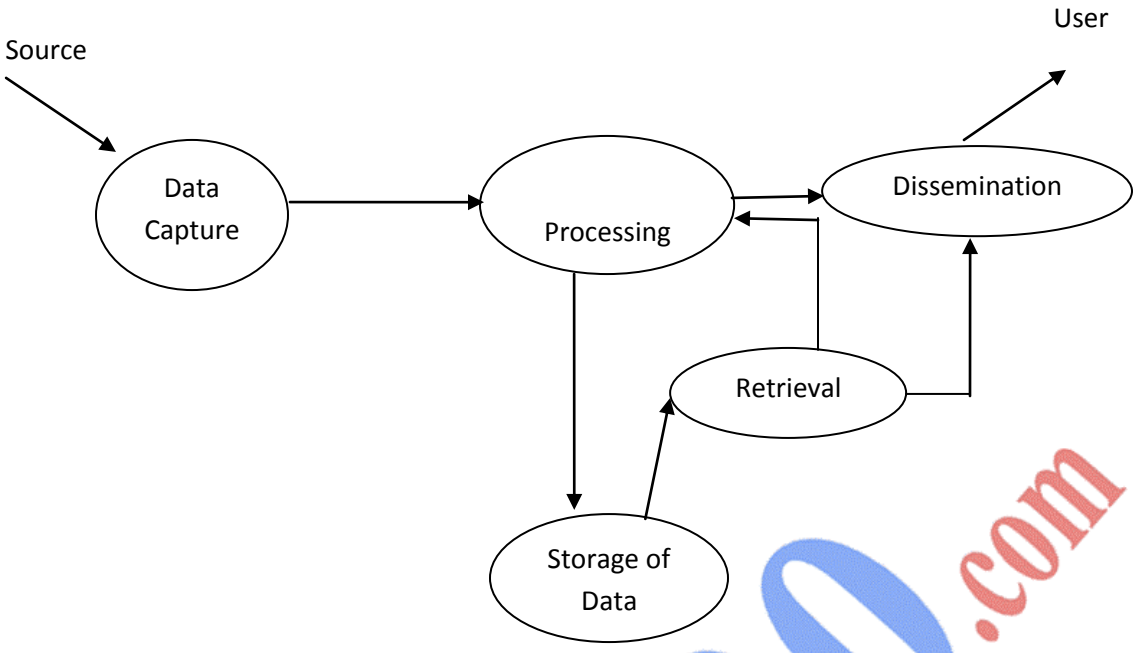
Data Capturing : MIS capture data from various internal and external sources of organization. Data capturing may be manual or through computer terminals.

Processing of Data : The captured data is processed to convert into required information. Processing of data is done by such activities as calculating, sorting, classifying, and summarizing.

Storage of Information : MIS stores the processed or unprocessed data for future use. If any information is not immediately required, it is saved as an organization record, for later use.

Retrieval of Information : MIS retrieves information from its stores as and when required by various users.

Dissemination of Information : Information, which is a finished product of MIS, is disseminated to the users in the organization. It is periodic or online through computer terminal.



Objectives of MIS

Characteristics of MIS :

Systems Approach : The information system follows a systems approach. Systems approach means taking a comprehensive view or a complete look at the interlocking sub-systems that operate within an organization.

Management Oriented : Management oriented characteristic of MIS implies that the management actively directs the system development efforts. For planning of MIS, top-down approach should be followed. Top down approach suggests that the system development starts from the determination of management's needs and overall business objective. To ensure that the implementation of system's polices meet the specification of the system, continued review and participation of the manager is necessary.

Need Based : MIS design should be as per the information needs of managers at different levels.

Exception Based : MIS should be developed on the exception based also, which means that in an abnormal situation, there should be immediate reporting about the exceptional situation to the decision –makers at the required level.

Future Oriented : MIS should not merely provide past of historical information; rather it should provide information, on the basis of future projections on the actions to be initiated.

Integrated : Integration is significant because of its ability to produce more meaningful information. Integration means taking a comprehensive view or looking at the complete picture of the interlocking subsystems that operate within the company.

Common Data Flow : Common data flow includes avoiding duplication, combining similar functions and simplifying operations wherever possible. The development of common data flow is an economically sound and logical concept, but it must be viewed from a practical angle.

Long Term Planning : MIS is developed over relatively long periods. A heavy element of planning should be involved.

Sub System Concept : The MIS should be viewed as a single entity, but it must be broken down into digestible sub-systems which are more meaningful.

Central database : In the MIS there should be common data base for whole system

Q-2 What is the concept of MIS?Explain in detail?

Ans The Concept of Management Information System

A management information system (MIS) is designed by an organization for its smooth functioning. The MIS, a decision-making instrument used by top management, comprises of a set of controls. These controls cover the basic spheres of the business: its people, technologies, policies and procedures. The MIS gathers information on all the important realms of the business, tabulates the information and provides meaningful reports.

Features

- The management information system presents data such as the organization's processes, operating procedures, internal controls and audit preparation, which the management uses to make effective and efficient decisions. The internal controls for each department contain guidelines for operation. The flow of work assigned to employees, their responsibilities and duties, for example, are listed under internal controls.

Benefits

- An organization benefits immensely by using an MIS. This fully automated system enables the organization to record, process and tabulate all of its business dealings and transactions. Also, the information collected makes it possible to make necessary changes and improvements to the gaey areas. For example, the organization can compare actual and projected sales and take steps to correct any deviations.

  By using a good MIS, the top management of the organization is able to make informed decisions. The data present in the MIS is studied and analyzed objectively and the organization is able to choose the best trade-off for its operations, sales and other functions. Also they can judge whether their resources are being used correctly.

  MIS facilitates a two-communication process in the organization. The top management communicates to its employees what is expected of them and how they must accomplish the tasks entrusted. The employees in turn freely discuss their problems and concerns.

Types

- There are four types of MIS. The first one, TPS (Transaction Processing System), is the most elementary. This methodology processes routine, mundane and recurring business transactions. OIS (Operations Information Systems) gathers comprehensive data and tabulates it for operations managers to use and maximize their output and minimize losses. DSS (Decision Support Systems) and ES (Expert Systems) are the two types of MIS used by the top management to make informed and intelligent decisions. The two types make extensive use of databases and modelling techniques

Limitations

- MIS is heavily technology driven and therefore lacks a human element. The information represented by the MIS is often rich in nature. The expertise of humans is needed to analyze the information presented and to make decisions accordingly.

Considerations

- Developing an MIS costs money. Usually the organization requires the help of a consultant to develop the system, therefore all the organizational procedures and controls have to be carefully and elaborately spelled out to the consultants.

Q-3 What is the role of Manegement information systems in an organization?

Ans Role of Management Information Systems

Role of Management Information Systems

Role of Management Information Systems

Management Information Systems (MIS) provide regular information to managers to allow them to make decisions based on data rather than guesses. Certain data and analysis can play a very useful role in making good decisions about where and when to use human and other resources to achieve the mission of an organization. Managers with quality MIS are able to make decisions from an informed stance rather than a haphazard one. MIS can answer questions such as: Would it be better to add staff at the beginning or end of a manufacturing process? How do we choose the most efficient way to use our space? Do we need more patient exam rooms or a bigger lab? How much inventory should I store and when do I order more stock? What hours have the most customers, so I'll have an adequate staff to serve them?

Health and Capacity of the Whole System

The world is developing an increasingly global market and economy. Managers know that one tool they need is regular, clear and consistent information to help them in guiding their organization. This does not happen by chance. A system needs to be thoughtfully created with the purpose of providing useful information in the simplest and most elegant way possible. The basic management information system measures inputs and/or outputs, allowing managers to analyze the relationship between them and make decisions based on the outcomes they desire.

We are familiar with these types of systems in our daily life. For instance, a speedometer tracks the speed of a car by being attached to the motion of the tires. It is a speed-measuring system used to make decisions. If I have to be somewhere in half an hour and it's 15 miles away and I'm going 70 miles an hour, by checking the speedometer I realize I can slow down or take a scenic route, or even stop for a cup of java.

A Prius has a chart on the dashboard that lets you know second by second the miles per gallon you are using, so you can change your driving pattern to get higher mileage. The graphic is one management information system that helps the driver make decisions about her driving. It also is part of a larger system of vehicles emitting greenhouse gases. Since better mileage equates with fewer emissions, it allows an individual to influence his small contribution to global warming.

The body is a living system; someone trying to gain or lose weight measures food intake through calorie counts or points and gets on a scale to track the outcome.

Key Information

- The amount of information available for analysis is almost infinite, so it is important to choose the critical information that will let managers see their situation clearly. When airlines and hotels developed management information systems that included the revenue lost in not selling empty seats or rooms, they developed ways to get some value from the rooms by offering them to latecomers at deep discounts. The key information for these managers was not the end of the month profit or gross sales, but the occupancy rate by time of year, day of week, routes, and so on.

  When a McDonalds store manager is setting his employees' schedules for the coming week or month, he needs to know when sales are usually highest, and if there are daily or weekly variations in that data. Do more people come in between 6 and 7:30 a.m. Monday through Friday than on Saturday or Sunday? Maybe the factory down the road quit running a shift and that impacted sales at the time those workers go to or from work.

  Retail managers need to balance inventory on hand with rate of sales and type of goods sold. Health care managers need to know how many hours a physician or other essential care provider can work safely and provide staffing to allow adequate coverage.

Public Sector

- Legislators want to know that if they invest a large amount of taxpayer money in streetcars, they won't be reviled for having it placed in low-demand routes, or that the streetcar manufacturer used poor materials that wear out way too quickly. Legislators have staff and public servants who provide them with information. Lobbyists are also very glad to provide the information that will support the role of their special interest.

Soup kitchen managers need to know now much food to prepare, so they don't have hungry people on the one hand or an excess of food that goes to waste on the other. They need to know the clientele they serve and if there are some special needs that need attention.

One of the current uses of management information in the public sector is to notice that there is disparity between the number of people in certain groups and their over- or underrepresentation in other populations--for instance, that a higher percentage of low-income children drop out of school, or that there are more Native American youth in foster care than their percentage of the population would indicate.

MIS and the Organization's Purpose

- Organizations exist for reasons. Legislators review the needs and demands of the citizens to decide how to allocate tax revenues to promote the sometimes competing economic and social goals of the state. Perhaps the reason for the legislature is to seek the greatest good for the greatest number, Some others operate from the position that the goal is to assure that the needs of the most vulnerable in the population are not ignored.

  Airlines exist to get people to distant locations efficiently and safely and make a profit for the shareholders. The balancing of those three goals is critical. For example, in the desire for higher profits, or even fiscal solvency, the airlines have created closer seating arrangements and annoyingly cheap snacks.

  It is essential that the information system designed for management helps them support the organization's purpose. Toyota is legendary for its management system in which any employee can stop the assembly line to make an improvement to the process.

Putting It All Together

- Management steers the organization to achieve the organization's purpose. To have the information necessary to make changes in resource allocation or personnel use, management needs key indicators as to how the process is working. A management information system provides regular information about the health and function of the organization. The MIS needs to provide timely, accurate, clear and consistent information that gives managers a view of the entire organization.

Q-4 Explain about the emergence of MIS?

Ans Before the concept of management information systems was created, computer scientists were just programmers creating applications for science and math calculations. As computer usage evolved in fields of business and data management, software applications were needed to process nonscientific data . A field of study would be needed to bridge the gap between computer programmers and the business world to create information-based applications for business and networks.

Mainframe Processing of Data

- In 1939, Dr. John V. Atanasoff and his assistant Clifford Berry, constructed the first electronic digital computer. Their machine, the Atanasoff-Berry-Computer (ABC) provided the foundation for the advances in electronic digital computers. These computers processed binary bits of information and performed mathematical computations for science projects.

  The invention of the first mainframe computer led to a career field established as Computer Science. The category of Computer Science was given because computer usage was strictly related to the science field and the processing of scientific data.

The ENIAC Computer

- In 1944, a leap in computer processing would take place with the ENIAC computer. The ENIAC Computer is the prototype from which all modern computers evolved from. The ENIAC comprised thirty separate units and weighed more than thirty tons and consumed 200 kilowatts of electrical power. The ENIAC was still used for the processing of scientific data in the field of ballistics and played a role in the development of the atomic bomb.

  On the horizon was the concept of applying computers in other areas of education, business and everyday life. The concept of creating business applications would emerge with IBM creating the 8-bit punch card system. The processing of punch cards from a business perspective would become known throughout the industry as "information science application".

Q-5 Explain the relation between MIS and computers?

Ans Characteristics of Computerized MIS :

(i) Ability to process data into information with accuracy and high speed. It involves complex computation, analysis, comparisons and summarization.

(ii) Organizing and updating of huge amount of raw data of related and unrelated nature, derived from internal and external sources at different periods of time.

(iii) The information processing and computer technology have been so advanced that managers are able to obtain real time information about ongoing activities and events without any waiting period.

(iv) The input data in computer can be converted into different output formats for a variety of purpose. The system is so organized that managers at different levels and in different activity units are in a position to obtain information in whatever form they want , provided that relevant " programmes" or instructions have been designed for the purpose.

(v) Super-human memory, tremendous volume of data and information and the set of instructions can be stored in the computer and can be retrieved as and when needed. Management can get bit of stored information from the computer in seconds.

Advantages of Computer : The usage of computer gives following advantages in comparison to manual MIS **:**

a) **Speed :** The speed of carrying out the given instructions logically and numerically is incomparable between computers and human beings. A computer can perform and give instructions in less than a millionth of second

b) **Accuracy :** Computer can calculate very accurately without any errors.

c) **Reliability :** The information stored in the computer is in digital format. The information can be stored for a long time and have long life. A user may feel comfortable and be rely on, while using information stored in computer.

d) **Storage :** Computer can store huge data for a long time in comparison to human brain.

e) **Automaticity :** Computers perform automatically in user friendly and menu driven program.

f) **Repetitiveness :** Computer can be used repetitively to process information without any mental fatigue as in case of human brain.

g) **Diligence :** A computer is an electronic device. It does not suffer from the human traits of lack of concentration.

h) **No Feeling :** Computers are devoid of any emotions. They have no feelings and no instincts because they are machines.

Limitations of Computer :

a) **Lack of Common Sense :** Computer is only an electronic device. It can not think. If we provide an incorrect data, it does not have a commonsense to question the correctness of the data.

b) **Memory Without Brain :** Computer can store data in its memory; however, if a wrong instruction is given to computer it does not have a brain to correct the wrong instruction.

Q-6 State the impact of MIS?

Ans

The impact of the Management Information System

The impact of MIS on the functions is in its management. With a good MIS support, the management of marketing, finance, production and personnel becomes more efficient, the tracking and monitoring the functional targets becomes easy. The functional managers are informed about the progress, achievements and shortfalls in the activity and the targets. The manager is kept alert by providing certain information indicating the probable trends in the various aspects of business. This helps in forecasting and long-term perspective planning. The manager'' attention is brought to a situation which is exceptional in nature, inducing him to take an action or a decision in the matter. A disciplined information reporting system creates a structured database and a knowledge base for all the people in the organization. The information is available in such a form that it can be used straight away or by blending and analysis, saving the manager's valuable time.

The MIS creates another impact in the organization which relates to the understanding of the business itself. The MIS begins with the definition of a data entity and its attributes. It uses a dictionary of data, entity and attributes, respectively, designed for information generation in the organization. Since all the information systems use the dictionary, there is common understanding of terms and terminology in the organization bringing clarity in the communication and a similar understanding of an event in the organization.

The MIS calls for a systemization of the business operations for an effective system design. This leads to streamlining of the operations which complicate the system design. It improves the administration of the business by bringing a discipline in its operations everybody is required to follow and use systems and procedures. This process brings a high degree of professionalism in the business operations.

Since the goals and objective of the MIS are the products of business goals and objectives, it helps indirectly to pull the entire organization in one direction towards the corporate goals and objectives by providing the relevant information to the people in the organization.

A well designed system with a focus on the manager makes an impact on the managerial efficiency. The fund of information motivates an enlightened manager to use a variety of tools of the management. It helps him to resort to such exercises as experimentation and modeling. The use of computers enables him to use the tools and techniques which are impossible to use manually. The ready-made packages make this task simpler. The impact is on the managerial ability to perform. It improves the decision making ability considerably.

Q-7 What do you mean by Systems approach to MIS?

Ans System Concepts

The word `System' is used in day to day life very frequently in describing the subjects, as the traffic system, education system, business system, etc. The system provides a meaningful framework for describing and understanding the features and problems of the subject.

System is defined as a set of elements arranged in an orderly manner to accomplish an objective. Some examples are given in Table below:

Examples of System

System	Elements	Objective
Computer	Input, process and output devices. Operating system, compilers, packages, DBMS, personnel.	Process the data and provide information.
Accounting	Financial transactions,	Process the transactions

	accounting principles and rules, transaction processing methods of accounting.	and produce monthly books of accounts and the information for financial management.
Business Organization	People, plant and machinery, product and services, communications, transport, materials.	Produce goods and services to achieve the business objectives of service, turnover and profits.

It is to be noted that a system is not a randomly arranged set. It is arranged with some logic governed by rules, regulations, principles and policies. Such an arrangement is also influenced by the objective the system desires to achieve. For example, if a computer system is designed to perform commercial data processing, then the elements will be the data entry devices a CPU, a disk, a memory, application programmes and a printer.

A system may have single input and multiple outputs or may have several inputs and outputs. For example, a business organization system has several inputs and multiple objectives, such as sales, profit, service and growth. The choice of inputs and processing methodology is governed by the objectives set for the system. Any misalignment in this arrangement would lead to a wasteful collection of inputs, and its processing will fail to achieve the desired objective.

All the systems operate in an environment. The environment may influence the system in its design and performance. When a system is designed to achieve certain objective, it automatically sets the boundaries for itself. The understanding of boundaries of the system is essential to bring clarity in explaining the system components and their arrangement.

Since the systems are designed for specific objectives/outputs, the designer provides a filter around the system to control the influence on the system. For example, take a manufacturing system, where the objective is to produce products of desired quality. Since the raw material and the processes are selected with this objective, the quality control systems exercise a control on the quality of incoming raw material and keep a continuous watch on the process parameters to keep the desired quality of production. The quality control system which protects the system from the undesirable influences of the environment.

The designer of the system, therefore, has to consider the environment and select appropriate inputs, and filtering mechanism to protect the system from the undue or undesirable influences of the environment.

Most of the failures of the systems lie in the area of selection of the inputs and the processes, and not providing the appropriate filtering systems.

Multiple Choice Questions

1 What are Characteristics of MIS :-

a) Systems Approach
b)Need Based
c) Management Oriented
d)all of the above

2 What are Examples of System:-

a)Computer
b)Business Organization
c)Accounting
d)All of the above

3 What are advantages of Computer:-

a)Speed
b)Accuracy
c)Reliability
d)All of the above

4 In 1939, and his assistant, constructed the first electronic digital computer.

a) Dr. John V. Atanasoff
b) Clifford Berry
c) Both of the above
d) None of the above

5 There are _____types of MIS:-

a)TPS (Transaction Processing System),
b)DSS (Decision Support Systems
c)ES (Expert Systems),OIS (Operations Information Systems)
d)All of the above

Unit-2

Information Concepts

Q-1 What is the meaning of Data and information?State its importance too.

Ans **Data :** Data is raw facts. Data is like raw material. Data does not interrelate and also it does not help in decision making. Data is defined as groups of non-random symbols in the form of text, images, voice representing quantities, action and objects.

Information : Information is the product of data processing. Information is interrelated data. Information is equivalent to finished goods produced after processing the raw material. The information has a value in decision making. Information brings clarity and creates an intelligent human response in the mind.

According to Davis and Olson : "Information is a data that has been processed into a form that is meaningful to recipient and is of real or perceived value in the current or the prospective action or decision of recipient."

Information Generation

It is a most critical resource of the organization. Managing the information means managing future. Information is knowledge that one derives from facts placed in the right context with the purpose of reducing uncertainty.

IMPORTANCE OF DATA AND INFORMATION

i) **Timeliness :** Timeliness means that information must reach the recipients within the prescribed timeframes. For effective decision-making, information must reach the decision-maker at the right time, i.e. recipients must get information when they need it. Delays destroys the value of

information. The characteristic of timeliness, to be effective, should also include up-to-date, i.e. current information.

ii) **Accuracy :** Information should be accurate. It means that information should be free from mistakes, errors &, clear Accuracy also means that the information is free from bias. Wrong information given to management would result in wrong decisions. As managers decisions are based on the information supplied in MIS reports, all managers need accurate information.

iii) **Relevance :** Information is said to be relevant if it answers especially for the recipient what, why, where, when, who and why? In other words, the MIS should serve reports to managers which is useful and the information helps them to make decisions..

iv) **Adequacy :** Adequacy means information must be sufficient in quantity, i.e. MIS must provide reports containing information which is required in the deciding processes of decision-making. The report should not give inadequate or for that matter, more than adequate information, which may create a difficult situation for the decision-maker. Whereas inadequacy of information leads to crises, information overload results in chaos.

v) **Completeness :** The information which is given to a manager must be complete and should meet all his needs. Incomplete information may result in wrong decisions and thus may prove costly to the organization.

Q-2 What is relevance of information in Decision making?

Ans Relevance of information in Decision making:-

The objective of an MIS (Management Information System) is to provide information for decision making on planning, initiating, organizing, and controlling the operations of the subsystems of the form and to provide a synergetic organization in the process. Decision Support System: It is sometimes described as the next evolutionary step after Management Information Systems (MIS) . MIS support decision making in both structured and unstructured problem environments.. It supports decision making at all levels of the organization .IS (Information Systems) are intended to be woven into the fabric of the organizations , not standing alone. IS support all aspects of the decision making process.MIS are made of people, computers, procedures, databases, interactive query facilities and so on. They are intended to be evolutionary/adaptive and easy for people to use. The human intelligence is

closely related with the human experience and decision making skills which is strongly backed by information's. Now a day's in every field of human working right information is considered as the most important resource of good decision making. Every organization runs by the managers of organization, who are making decisions in every step of organizational activities. Due to the importance of information in decision making a separate field has emerged to serve the appropriate information's to managers for effective and good decision making purpose. Serving the suitable information use to pass through a process called management information system as the information is using to make management decisions. Management Information System sounds very much related with technology yes now it is absolutely true but manual procedures of delivering information's to the managers is also available in backdated organizations of the world. Basically the technology based information system is not very old. In past organizations used to use traditional management information system. The main purpose of management information system is to ensure the flow of appropriate information to the appropriate people of organization as well as parties related with organization. So that they can (Internal and external decision makers) can make good decisions for running the organization. The entire process objective is to provide complete, timely, reliable and quality information's to the decision makers. Todays managers depend on information systems for decision making. The managers have handful of data around them but manually they cannot process the data accurately and with in the short period of time available to them due to heavy competition in modern world. Therefore mangers depend on information systems.

Q-3 W hat are the sources and types of information?

Ans **Classification of Information :** The information can be classified in a number of ways provide to better understanding.

Jhon Dearden of Harvard University classifies information in the following manner **:**

(1) **Action Verses No-Action Information :** The information which induces action is called action **Information**. 'No stock'report calling a purchase action is an action information.

The information which communicates only the status is **No-Action Information**. The stock balance is no-action information.

(2) **Recurring Verses No-Recurring Information :** The information generated at regular intervals is **Recurring Information**. The monthly sales reports, the stock statement, the trial balance, etc are recurring information. The financial analysis or the report on the market research study is **no-recurring** information.

(3) **Internal and external information :** The information generated through the internal sources of the organization is termed as **Internal Information**, while the information generated through the govt. reports, the industry survey etc., termed as **External Information**, as the sources of the data are outside the organization.

The information can also be classified, in terms of its application :

- **Planning Information :** Certain standard norms and specifications are used in planning of any activity. Hence such information is called the **Planning Information**. e. g. Time standard, design standard.
- **Control Information :** Reporting the status of an activity through a feedback mechanism is called the **Controlling Information**. When such information shows a deviation from the goal or the objective, it will induce a decision or an action leading to control.
- **Knowledge Information :** A collection of information through the library records and the research studies to build up a knowledge base as an information is known as **Knowledge Information**.
- **Organization Information :** When the information is used by everybody in the organization, it is called **Organization Information**. Employee and payroll Information is used by a number of people in an organization.
- **Functional/ Operational Information :** When the information is used in the operation of a business it is called **Functional/Operational Information**.
- **Database Information :** When the information has multiple use and application, it is called as **database information**. Material specification or supplier information is stored for multiple users.

Sources of information:-

- **Articles, online and in print –** Scholars publish their latest findings in articles, which are published in periodicals (a.k.a. journals.) Articles cover topics that are important, but not broad enough to fill a whole book.

- **Newspaper articles, editorials** - Journalists (who are usually not subject experts) write articles based on interviews and press releases. Investigative reports, as their name suggests, may also involve some research. Editorials are based on opinions.
- **Books, e-books** – Also called **monographs**. Scholars write monographs after they've done many years of study on a topic and have a lot to say about it. The information isn't as recent as the information in articles, but it's usually much more in-depth.
- **Dissertations, theses** – Graduate students write these at the conclusion of their graduate studies. A dissertation or thesis has to be original research, so it is very cutting edge when it comes out. Also, because the topics are obscure, a dissertation or thesis may be the only source that actually talks about that topic in that way.
- **Conference proceedings** – Scholars get together and present their latest research to one another. It's less formal than a published article, and it's not peer reviewed, but the information may be newer and may not yet be available in articles or books.
- **Web sites** – Government agencies, organizations and companies make reports, white papers, articles and data available on the web. Libraries, archives and museums digitize primary sources – documents, scanned images, audio and video recordings and photographs of artifacts.
- **Microform** – Many libraries have microfilm or microfiche archives of primary sources such as old newspapers and census records.
- **Images** – Available in online archives and databases like ArtSTOR. Images may also be photocopied out of art books and print journals, or printed from microfilm machines.
- **Video** – Documentaries and other kinds of films may be used as primary sources for your research and are available in a variety of formats, such as reel-to-reel, VHS, DVD, streaming online video and online video recordings.
- **Audio** – Audiobooks, music and spoken art forms may be used as primary sources and are available in a variety of formats, such as records, tapes, CDs, streaming online audio and online audio recordings.

Q-5 **Write a note on cost benefit analysis?**

Ans

Cost - Benefit Analysis : Since the cost plays an important role in deciding the new system, it must be identified and estimated properly. Benefits of different type can be grouped on the basis of advantages they provide to the management. Benefits of a project include four types:

Cost Saving Benefits : Leads to reductions in administrative and operational costs, example reduction in the clerical staff.

Cost Avoidance Benefits : Those which eliminate future administrative and operational costs, example no need to hire additional staff in future to handle administrative activity.

Improved Service Level Benefits : Those where the performance of a system is improved by new computer based method, example registering a student in fifteen minutes rather than 30 minutes.

Improved Information Benefit : Those where computer based methods lead to better information for decision making. A system that reports most-improved fifty customers, as measured by an increase in sales is an improved-information.

Categories of Costs and Benefits : The cost associated with the system are expenses, outlays or losses arising from developing and using the system.

Costs and Benefits can be classified as follows :

a) **Tangible or Intangible Costs and Benefits :** Tangible refers to ease with which costs or benefits can be measured. An outlay of cash for any specific item or activity is referred to as a tangible cost.

Costs that are known to exist but their financial value cannot be exactly measured are referred to as intangible costs. The estimation is only an approximation. For example Employee movable problem because of installing new system is an intangible cost.

Tangible benefits such as computer jobs in fewer hours or producing error free reports are quantifiable. Intangible benefits such as more satisfied customers or an improved corporate image because of using new system are not easily quantified.

b) **Direct and Indirect Costs & Benefits :** direct costs are those which are directly associated with a system. They are applied directly to operator.

Direct benefits also can be especially attributable to a given project. For example, a new system that can process 30 percent more transaction per day is a direct benefit.

Indirect costs are not directly associated with a specific activity in the system. They are often referred to as overhead expenses, e.g. cost of space to install a system, maintenance of computer center, light are tangible costs but it is difficult to calculate the proportion of each attribute to a specific activity such as a report.

Indirect benefits are realized as a by-product of another system, e.g. a system that takes sales calls on customer provides an indirect marketing benefit by giving additional information about competition.

c) **Fixed or Variable Costs & Benefits :** Some costs and benefits remain constant, regardless of how a system is used. Fixed are considered as sunk costs. For e.g. the purchase of equipment for a computer center is called as fixed cost as it remains constant whether equipment is being used extensively or not.

Variable costs are incurred on a regular basis they are generally proportional to work volume and continue as long as the system is in operation. For example the cost of computer forms varies in proportion to amount of processing.

Fixed benefits also remain constant. By using a new system, if 20 % of staff members are reduced, we can call it a fixed benefit. Variable benefits, on the other hand, are realized on a regular basis. For example the library information system that saves two minutes in providing information about a particular book whether it is issued or not, to the borrower compared with the manual system. The amount of time saved varies with the information given to the number of borrowers.

Cost Benefit Analysis : We define cost benefit analysis as -

a) The method by which we find and estimate the value of gross benefits of a new system specification

b) The method by which we find and determine the increased costs associated with the above mentioned gross benefits.

c) The subtraction of these operating costs and associated gross benefits to arrive at total benefits.

d) Those methods by which we find and estimate the monetary values of the development costs that produce the above mentioned benefits.

e) Those methods by which we show the time-phased relationship between new benefits and development costs as they are related to each cash flow, payback on investments, and time in process taking into operation.

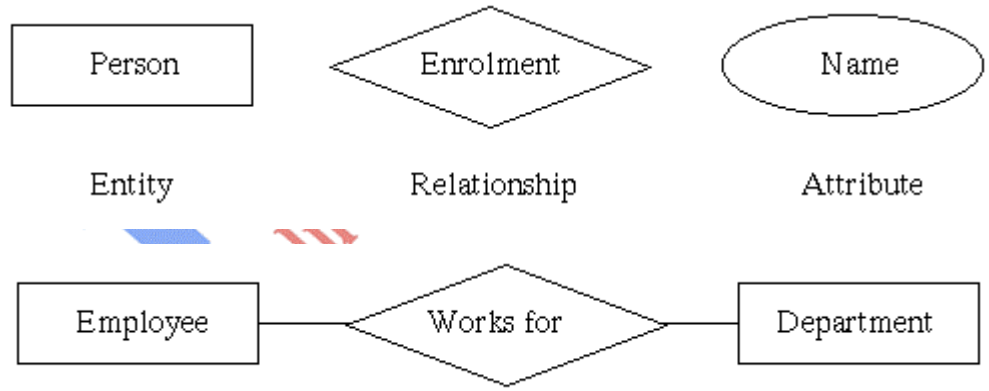
Q-6 What are quantitative aspects of MIS?

Ans Following tools are used for system analysis **:**

(1) **Entity – Relationship Diagrams :** The object-relationship pair can be represented graphically using an ER diagram. An entity represents an object. Examples: a computer, an employee, a song, a mathematical theorem. Entities are represented as rectangles.

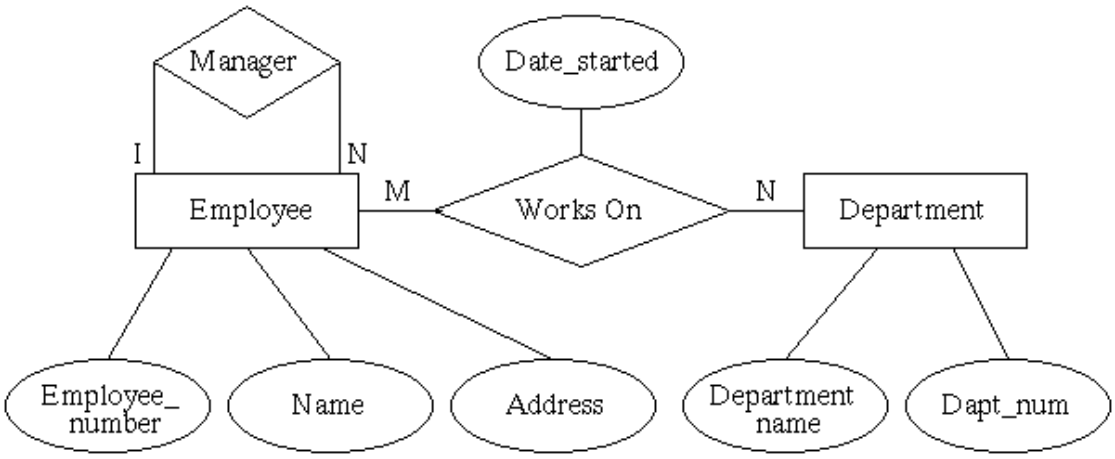
A relationship captures how two or more entities are related to one another. Examples: an *owns* relationship between a company and a computer, a *supervises* relationship between an employee and a department, a *performs* relationship between an artist and a song. Relationships are represented as diamonds, connected by lines to each of the entities in the relationship.

Entities and relationships can both have attributes. Examples: an employee entity might have an employee ID number attribute; the *proved* relationship may have a *date* attribute. Attributes are represented as ellipses connected to their entity by a line.



A simple E-R diagram

The following E-R diagram gives the attributes as well -



An E-R diagram with attributes

(2) **Structured English :** Structured English, as the name implies, is "English with structure." That is, it is a subset of the full English language with some major restrictions on the kind of sentences that can be used and the manner in which sentences can be put together. It is also known by such names as PDL (Program Design Language) and PSL (Problem Statement Language or Problem Specification Language). Its purpose is to strike a reasonable balance between the precision of a formal programming language and the casual informality and readability of the English language.

In Structured English you can use simple verbs from a small set of action-oriented verbs such as:

GET (or ACCEPT or READ)

PUT (or DISPLAY or WRITE)

FIND (or SEARCH or LOCATE)

ADD

SUBTRACT

MULTIPLY

DIVIDE

Most organizations find that 40 to 50 verbs are sufficient to describe any policy in any process specification.

(3) **Decision Tables :** There are situations where structured English is not appropriate for writing process specifications. This is particularly true if the process must produce some output or take some actions based on complex decisions. If the decisions are based on several different variables (e.g., input data elements), and if those variables can take on many different values, then the logic expressed by structured English or pre/post conditions is likely to be so complex that the user won't understand it. A decision table is likely to be the preferred approach.

As shown in Figure, a decision table is created by listing all the relevant variables (sometimes known as conditions or inputs) and all the relevant actions on the left side of the table; note that the variables and actions have been conveniently separated by a heavy horizontal line. In this example, each variable is a logical variable, meaning that it can take on the value of true or false.

In many applications, it is easy (and preferable) to express the variables as binary (true-false) variables, but decision tables can also be built from multivalued variables; for example, one could build a decision table with a variable called "customer-age" whose relevant values are "less than 10," "between 10 and 30," and "greater than 30."

	1	2	3	4	5	6	7	8
Age > 21	Y	Y	Y	Y	N	N	N	N
Sex	M	M	F	F	M	M	F	F
Weight > 150	Y	N	Y	N	Y	N	Y	N
Medication 1	X				X			X
Medication 2		X			X			
Medication 3			X			X		X
No medication				X			X	

A Typical Decision Table

Next, every possible combination of values of the variables is listed in a separate column; each column is typically called a *rule*. A rule describes the action (or actions) that should be carried out for a specific combination of values of the variables. At least one action needs to be specified for each rule (i.e., for each vertical column in the decision table).

(4) **Data Dictionary :** A data dictionary is a structured repository of data, about data. In other words it is set of precise and accurate definitions of all DFDs, data elements and data structures.

There are three main items present in a data dictionary **:**

i) **Data Item :** It is the smallest unit of data and cannot be decomposed further.

ii) **Data Structures :** It is a group of elements handled as a unit. A data structure contains a number of data elements as its fields,

iii) **Data Flows and Data Stored :** Data flows are nothing but data structure in motion where the data stores are data structures at rest.

Data Dictionary Notation : There are many common notational schemes used by systems analyst. The one shown below is the more common, and it uses a number of simple symbols:

= is composed of

+ and

( ) optional (may be present or absent)

{ } iteration

[ ] select one of several alternative choices

** comment

@ identifier (key field) for a store

| separates alternative choices in the [ ] construct

As an example, we might define name as follows :

name = **courtesy-title** + **first-name** + (**middle-name**) + **last-name**

courtesy-title = [Mr. | Miss | Mrs. | Ms. | Dr. | Professor]

first-name = {**legal-character**}

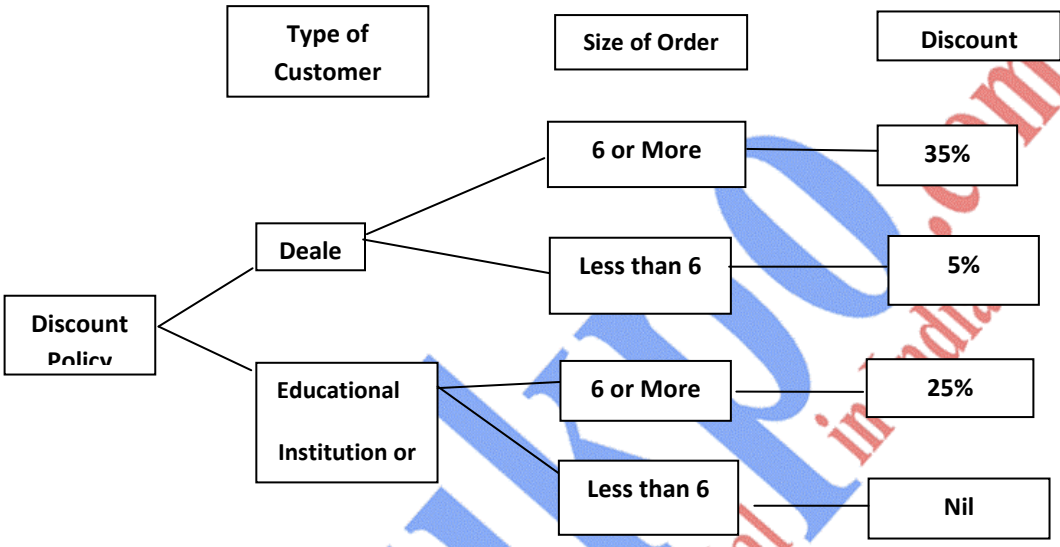
middle-name = {**legal-character**}

last-name = {**legal-character**}

legal-character = [A-Z|a-z|0-9|'|-| |]

(5) **Decision Tree :** Decision trees are graphical representation methods of representing sequences of logical decisions. When initial decision guided the next, when and then next one. This can be done with Decision Tree.

In decision analysis, a **decision tree** (or tree diagram) is a decision support tool that uses a graph or model of decisions and their possible consequences, including chance event outcomes, resource costs, and utility. A decision tree is used to identify the strategy most likely to reach a goal. Another use of trees is as descriptive means for calculating conditional probabilities.

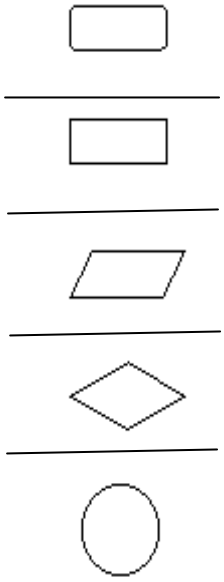


(6) **Flow Charts :** The flowchart is a means of graphical representation of the flow of data through an information processing system, the operations performed within the system and the sequence in which they are performed. A programmer prefers to draw a flowchart prior to writing a computer program. As in the case of the drawing of a blueprint, the flowchart is drawn according to defined rules and using standard flowchart symbols.

"A flowchart is a diagrammatic representation that illustrates the sequence of operations to be performed to get the solution of a problem. "

Guidelines for Drawing a Flow Chart : Flowcharts are usually drawn using some standard symbols; however, some special symbols can also be developed when required. Some standard symbols, which are frequently, required for flowchart for many computer programs are as follows :

Start or end of the program



Computational steps or processing function of a program

Input or output operation

Decision making and branching

Connector or joining of two parts of program

Flow Lines

Flowchart Symbols

Advantages of Using Flowcharts :

i) **Communication :** Flowcharts are better ways of communicating the logic of a system to all concerned.

ii) **Effective Analysis :** With the help of flowchart, problems can be analyzed in more effective way.

iii) **Proper Documentation :** Program flowcharts serve as a good program documentation, which is needed for various purposes.

iv) **Efficient Coding :** The flowcharts act as a guide or blueprint during the systems analysis and program development phase.

v) **Proper Debugging :** The flowchart helps in debugging process.

vi) **Efficient Program Maintenance :** The maintenance of operating program becomes easy with the help of flowchart. It helps the programmer to put efforts more efficiently on that part.

Limitations of Using Flowcharts :

i) **Complex Logic :** Sometimes, the program logic is quite complicated. In that case, flowchart becomes complex and clumsy.

ii) **Alterations and Modifications :** If alterations are required the flowchart may require re-drawing completely.

iii) **Reproduction :** As the flowchart symbols cannot be typed, reproduction of flowchart becomes a problem.

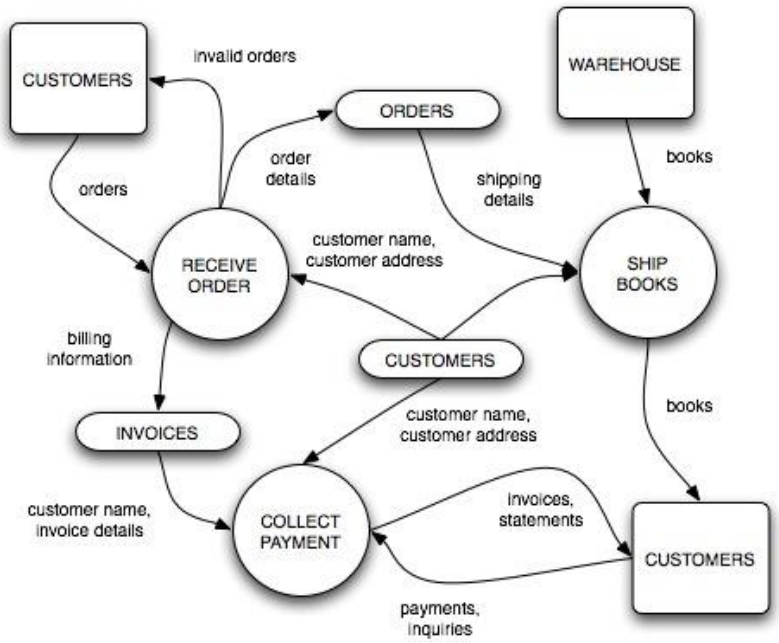
iv) The essentials of what is done can easily be lost in the technical details of how it is done.

(7) **Data Flow Diagram :** DFD is graphical modeling tool for structured analysis. The dataflow diagram is a modeling tool that allows us to picture a system as a network of functional processes, connected to one another by "pipelines" and "holding tanks" of data. Following terms are used as synonyms for dataflow diagram **:**

- Bubble Chart
- DFD (the abbreviation we will use throughout this book)
- Bubble Diagram
- Process Model (or Business Process Model)
- Business Flow Model
- Work Flow Diagram
- Function Model
- A picture of what's going on around here

The dataflow diagram is one of the most commonly used systems-modeling tool, particularly for operational systems in which the *functions* of the system are of paramount importance and more complex than the data that the system manipulates.

The Components of a DFD : Following diagram shows a typical DFD for a small system. Before we examine its components in detail, notice several things: -



A Typical DFD has following features **:**

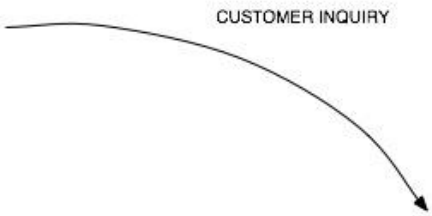
- It hardly needs to be explained at all;
- The diagram fits easily onto one page.
- The diagram has been drawn by a computer.

The Process : The first component of the DFD is known as a process. Common synonyms are a bubble, a function, or a transformation. The process shows a part of the system that transforms inputs into outputs; that is, it shows how one or more inputs are changed into outputs. The process is represented graphically as a circle, oval or a rectangle with rounded edges, or rectangle,

Process

The Flow : A *flow* is represented graphically by an arrow into or out of a process; The flow is used to describe the movement of chunks, or packets of information from one part of the system to another part. Thus, the flows represent data in motion, whereas the stores represent data at rest.

An example of a flow :



The name represents the meaning of the packet that moves along the flow. A corollary of this is that the flow carries only one type of packet, as indicated by the flow name. It is sometimes useful to consolidate several elementary dataflows into a consolidated flow.

The Store : The store is used to model a collection of data packets at rest. The notation for a store is two parallel lines or a rectangle open with one side.; Typically, the name chosen to identify the store is the plural of the name of the packets that are carried by flows into and out of the store.

Graphical Representation of a Store

We can to exclude the issues and model only the *essential* requirements of the system.

As we have seen in the examples thus far, stores are connected by flows to processes. Thus, the context in which a store is shown in a DFD is one (or both) of the following :

- A flow from a store
- A flow to a store

In most cases, the flows will be labeled. While some of the procedural questions can thus be answered by looking carefully at the labels attached to a flow, not all the details will be evident.

A flow from store is often described as a read.

A flow to a store is often described as a write, an update, or possibly a delete.

In all these cases, it is evident that the store is changed as a result of the flow entering the store. It is the process (or processes) connected to the other end of the flow that is responsible for making the change to the store.

The Terminator : The next component of the DFD is a *terminator*; it is graphically represented as a rectangle, Terminators represent external entities with which the system communicates. Typically, a terminator is a person or a group of people, for example, an outside organization or government agency, or a group or department that is *within* the same company or organization, but *outside* the control of the system being modeled. In some cases, a terminator may be another system, for example, some other computer system with which your system will communicate.

Graphical representation of a terminator;

Guidelines for constructing DFDs : The guidelines include the following **:**

i) **Choosing Meaningful Names for Processes, Flows, Stores and Terminators :** As we have already seen, a process in a DFD may represent a *function* that is being carried out, or it may indicate how the function is being carried out, by identifying the person, group, or mechanism involved. A good discipline to use for process names is a verb and an object.

ii) **Number the Processes :** As a convenient way of referencing the processes in a DFD, most systems analysts number each bubble. It doesn't matter much how you go about doing this — left to right, top to bottom, or any other convenient pattern will do -- *as long as you are consistent in how you apply the numbers*.

iii) **Avoid Overly Complex DFDs :** The purpose of a DFD is to accurately model the functions that a system has to carry out and the interactions between those functions. But another purpose of the DFD is to be read and understood, not only by the systems analyst who constructed the model, but by the users who are the experts in the subject matter. This means that the DFD should be readily understood, easily absorbed, and pleasing to the eye.

v) **Redraw the DFD As Many Times As Necessary :** In a real-world systems analysis project, DFD will have to be drawn, redrawn, and redrawn again, often as many as ten times or more, before it is (1) technically correct, (2) acceptable to the user, and (3) neatly enough drawn that you wouldn't be embarrassed to show it to the board of directors in your organization.

Q-6 How can we asses information?

Ans Different methods of information collection are:-

Several methods are available for the collection of data. The choice of method will have an impact on the quality of information. Similarly the design of data collection method also decides the quality of data and information.

Following are the **methods** of **Information** collection **:**

i) Observation
ii) Experiment
iii) Survey
iv) Subjective Estimation
v) Transaction Processing
vi) Purchase from Outside
vii) Publication
viii) Government Agencies

Multiple Choice Questions

1 What are the sources of information:-
a)Books, e-books
b)Articles, online and in print
c)Newspaper articles, editorials
d)All of the above

2 Features of a Typical DFD are:-

a)It hardly needs to be explained at all;

b)The diagram fits easily onto one page.

c)The diagram has been drawn by a computer.

d)All of the above

3 What are the synonyms for dataflow diagram:-

a)Bubble Chart

b)DFD (the abbreviation we will use throughout this book)

c)Bubble Diagram

d)All of the above

4 What are the methods of Information collection **:**

a)Observation

b)Experiment

c)Survey

d)All of the above

5 A DFD should be:-

a) Technically correct

b) Acceptable to the user, and

c) Neatly enough drawn that you wouldn't be embarrassed to show it to the board of directors in your organization.

d)All of the above

Unit-3

Information Systems for Decision Making

Q.1 What do you understand by Decision Making? Discuss the nature and characteristics of Decision?

Ans.: The word "**decision** "is derived from the Latin word "decido". Which means "A decision, therefore is

- A Settlement
- A fixed intuition to bringing to a conclusive result
- A judgment
- A resolution

Decision : A decision is the choice out of several options made by the decision maker to achieve some objective in a given situation.

Business Decision : Business decisions are those which are made in the process of conducting business to achieve its objective in a given situation.

Characteristic of Business Decision Making :

a) Sequential in nature.

b) Exceedingly complex due to risk and trade off.

c) Influenced by personal values.

d) Made in institutional setting and business environment.

Rational Decision Making : A rational decision is the one which, effectively and efficiently, ensure the achievement of the goal for which the decision is made .In reality there is no right or wrong decision but a rational decision or irrational decision which depends on situation.

Type of Rationality :

Objectively : Maximum the value of the objectives.

Subjective : If it is minimize the attainment of value in relation to the knowledge and awareness of subject.

Consciously : Extent the process of the decision making is a conscious one

Organizationally : degree of the orientation towards the organization.

Personal: Rational to the extent is achieve's an individual's personal reason (goals).

Type of Decision Making System : There are two types of decision making system on the basis of knowledge about the environment.

(i) **Closed :** If the manager operates in a known environment then it is called closed decision making system.

Conditions :

a) Manager knows the set of decision alternative and know their outcome in term of values.

b) Manager has a model, by which decision alternatives can be generated, tested and ranked.

c) The manager can choose one of them, based on some goal or objective.

(ii) **Open :** If the manager operates in unknown environment then it is called open decision making.

Conditions :

a) Manager does not know all alternatives.

b) Outcome is not known.

c) No methods or models are used.

d) Decide objective or goal; select one where his aspirates or desire are met best.

Types of Decision : Types of decision are based on the degree of knowledge about the out come of the events which are yet to take place.

Certainty : If the manager has full knowledge of event or outcome then it is a situation of certainty.

Risk : If the manager has partial knowledge or probabilistic knowledge then it is decision under risk.

Uncertainty : If the manager does not have any knowledge, it is decision making under uncertainty

MIS converts the uncertainty to risk and risk to certainty. The decision at the low level management is certain, at middle level of the management the decision is under risk and at the top level management the decision is in under uncertain.

Nature of decision : Decision making is a complex task. To resolve the complexity the nature of decision are of two types :

Programmed and Non-Programmed Decision :

a) If a decision can be based on a rule, methods or even guidelines, it is called the programmed decision.

b) A decision which can not be made by using a rule or model is the non-programmed decision.

Q.2 What is DSS? What is the purpose of Decision Support System in MIS.

Ans.: Decision Support System refers to a class of systems which support in the process of decision making and does not always give a decision it self.

Decision Support Systems (DSS) are a specific class of computerized information system that supports business and organizational decision-making activities. A properly designed DSS is an interactive software-based system intended to help decision makers compile useful information from raw data, documents, personal knowledge, and/or business models to identify and solve problems and make decisions

DSS is an application of Hebert Simon model, as discussed, the model has three phases **:**

i) Intelligence

ii) Design

iii) Choice

The DSS basically helps in the information system in the intelligence phase where the objective is to identify the problem and then go to the design phase for solution. The choice of selection criteria varies from problem to problem.

It is therefore, required to go through these phases again and again till satisfactory solution is found.

In the following three phase cycle, you may use inquiry, analysis, and models and accounting system to come to rational solution.

These systems are helpful where the decision maker calls for complex manipulation of data and use of several methods to reach an acceptable solution using different analysis approach. The decision support system helps in making a decision and also in performance analysis. DSS can be built around the rule in case of programmable decision situation. The rules are not fixed or predetermined and requires every time the user to go through the decision making cycle as indicated in Herbert Simon model.

Attributes :

i) DSS should be adaptable and flexible.

ii) DSS should be interactive and provide ease of use.

iii) Effectiveness balanced with efficiency (benefit must exceed cost).

iv) Complete control by decision-makers.

v) Ease of development by (modification to suit needs and changing environment) end users.

vi) Support modeling and analysis.

vii) Data access.

viii) Standalone, integration and Web-based

DSS Characteristics :

i) Support for decision makers in semi structured and unstructured problems.

ii) Support managers at all levels.

iii) Support individuals and groups.

iv) Support for interdependent or sequential decisions.

v) Support intelligence, design, choice, and implementation.

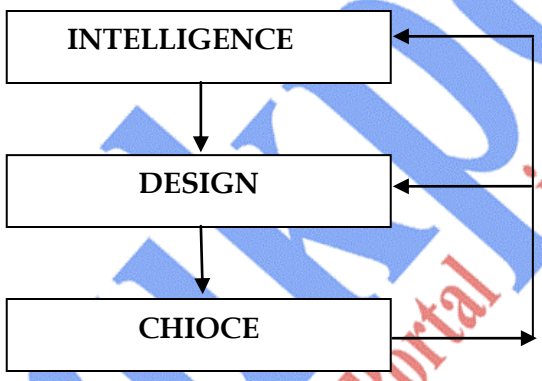
vi) Support variety of decision processes and styles

Q-3 Discuss in brief the Hebert A. Simon 'Decision Support System Model'. Define the term Intelligence, Design and Choice as Model.

OR

Discuss the essential steps in process of decision making.

Ans.: There are three phases in Hebert Simon model **:**



Hebert Simon Model

Intelligence : In this phase MIS collects the raw data. Further the data is sorted and merged with other data and computation are made, examined and presented. In this phase, the attention of the manager is drawn to the entire problem situation, calling for a decision.

Design : Manager develops a model of problem situation on which he can generate and test, summarizing the different decision alternatives and test the feasibility of implementation. Assess the value of the decision outcome.

Choice : In this phase the manager evolves a selection criterion and selects one alternative as decision based on selection criteria.

In these three phases if the manager fails to reach a decision, he starts the process all over again from intelligence phase where additional data and information is

collected, the decision making process is refined, the selection criteria is changed and a decision is arrived at.

Q-4 Define organizational decision making and MIS?

Ans Management Information Systems (MIS) should be designed, viewing the organization as discussed earlier. MIS design should give due weight age to the human side of the organization and its culture. The task and technology are the physical aspects of the organization which can be ascertained very easily. But culture and people are very difficult to assess from the design point of view. The structure of the five sub-systems should be considered while designing the MIS. MIS design should give reports in line with the organization structure. This means that the main decision makers and the power centers must be recognized in the MIS.

If the organization works on a standardized system where rules, policies, systems and procedures have been laid down, then these become part of the MIS. The processing routines in the MIS incorporate these features as an integral part. This is safe as it has already been approved by the management of the organization. Along with the information, if the decision making responsibilities are also clearly defined and allocated, then the MIS can produce information reports by processing the data and summarizing the results in line with the decision maker's position in the structure.

If the basic model of the organization is modified as a product or a project organization system, then the MIS should focus on the management of product or project where the concerned manager has a composite responsibility of planning and control of the multiple functions. Besides these functions, he has to know the status of the other support functions.

The information should be such that it highlights the trouble spots and shows the interconnection with the other functions. It must summarize all information relating to the span of control of product or project manager. The MIS should be able to cater to the view of the product or the project manager and also of the top management.

If the organization culture provides sufficient incentive for efficiency and results, the MIS should support this culture by providing such information which will aid the promotion of efficiency. If the culture encourages delegation of power and authority, then the MIS should incorporate the decision making rules in the system.

The organization system is an open system and MIS should be so designed that it highlights the critical business, operational, technological and environmental changes to the concerned level in the organization, so that the action can be taken to correct the situation. The principle of the feed forward control should be extensively used as a design feature to provide a prior warning to the decision maker.

The design of the MIS, in isolation from organizational factors, is destined to fail as it just does not fit into the structure. Since organization systems in the business differ for various reasons such as the leadership style, the management style, culture and group of people as a body and so on, it is difficult to evolve a standard model of the MIS for a business and / or an industry.

MIS plays a very important role in creating organization behavior which in turn sets the goals for achievement. Technology and people decide the organization structure and style of the management.

Multiple Choice Questions

1 What are The three phases in Hebert Simon model **:-**

a)Intelligence
b) Design
c) Choice
D) All of the above

2 A decision, is:-

a)A Settlement
b)A fixed intuition to bringing to a conclusive result
c)A judgment
d)all of the above

3 There are _____types of decision making system on the basis of knowledge about the environment:-

a)one
b)two
c)three

d)none of the above

4 What are the Types of Rationality **:-**

a) Objectively : Maximum the value of the objectives.

b) Subjective : If it is minimize the attainment of value in relation to the knowledge and awareness of subject.

c) Consciously : Extent the process of the decision making is a conscious one.

5 **What are the Attributes of DSS :**

a)DSS should be adaptable and flexible.
b)DSS should be interactive and provide ease of use.
c)Effectiveness balanced with efficiency (benefit must exceed cost).
d)all of the above

Solution of MCQ's:-

D,D,C,D,D

Unit IV

Network

Q.1 What do you understand by the term Computer Network?

OR

Define Computer Network. Discuss merits and demerits of using Computer Network?

OR

What is Computer Network? Describe different type of Computer Network?Also Explain LAN VAN.

Ans.: A network consists of two or more computers or devices that are linked in order to share resources such as printers and CD-ROMs, exchange files, or allow electronic communications. The computers on a network may be linked through cables, telephone lines, radio waves, satellites, or infrared light beams.

The three basic types of networks include **:**

- Local Area Network (LAN)
- Wide Area Network (WAN)
- Metropolitan Area Network (MAN)

Local Area Network : A Local Area Network (LAN) is a network that is confined to a relatively small area. It is generally limited to a geographic area such as a writing lab, school, or building. Rarely are LAN computers more than a mile apart.

For example, a library will have a wired or wireless LAN for users to interconnect local devices e.g., printers and servers. Current LANs are most likely to be based on Ethernet technology.

Wide Area Network : A WAN is a data communications network that covers a relatively broad geographic area i.e. one city to another and one country to another country and that often uses transmission facilities provided by common carriers, such as telephone companies.

Wide Area Networks (WANs) connect larger geographic areas, such as Florida, the United States, or the world. Dedicated transoceanic cabling or satellite uplinks may be used to connect this type of network.

Using a WAN, schools in Florida can communicate with places like Tokyo in a matter of minutes, without paying enormous phone bills. A WAN is complicated.

Metropolitan Area Network (MAN) : A Metropolitan Area Network is a network that connects two or more Local Area Networks but does not extend beyond the boundaries of the immediate town, city, or metropolitan area. Multiple routers, switches & hubs are connected to create a MAN.

Advantages of Network :

- **Speed :** Networks provide a very rapid method for sharing and transferring files. Without a network, files are shared by copying them to floppy disks, then carrying or sending the disks from one computer to another. This method of transferring files is very time-consuming.
- **Cost :** Networkable versions of many popular software programs are available at considerable savings when compared to buying individually licensed copies. Besides monetary savings, sharing a program on a network allows for easier upgrading of the program. The changes have to be done only once, on the file server, instead of on all the individual workstations.
- **Security :** Files and programs on a network can be designated as "copy inhibit," so that you do not have to worry about illegal copying of programs. Also, passwords can be established for specific directories to restrict access to authorized users.
- **Centralized Software Management :** One of the greatest benefits of installing a network at an organization is the fact that all the software can be loaded on one computer. This eliminates the need to spend time and energy in installing updates and tracking files on independent computers throughout the building.
- **Resource Sharing :** Sharing resources is another area in which a network exceeds stand-alone computers. Most organizations cannot afford enough laser printers, fax machines, modems, scanners, and CD-ROM players for each computer. However, if these or similar peripherals are added to a network, they can be shared by many users.

Disadvantages of Network :

- **Expensive to Install :** Although a network will generally save money over time, the initial cost of installation can be prohibitive. Cables, network cards, and software are expensive, and the installation may require the services of a technician.
- **Requires Administrative Time :** Proper maintenance of a network requires considerable time and expertise. Many organizations have installed a

network, only to find that they did not budget for the necessary administrative support.

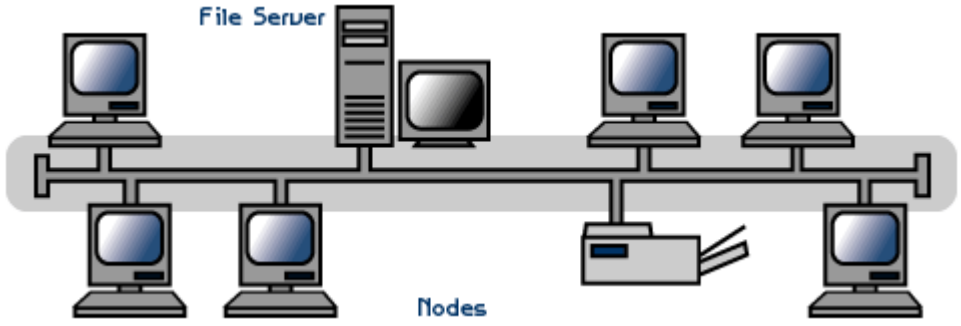
- **File Server May Fail :** Although a file server is no more susceptible to failure than any other computer, when the files server "goes down," the entire network may come to a halt.
- **Cables May Break :** Some of the configurations are designed to minimize the inconvenience of a broken cable; with other configurations, one broken cable can stop the entire network.

Q.2 Discuss the various types of Topologies?

Ans-2 Ans.: The physical topology of a network refers to the configuration of cables, computers, and other peripherals.

Types of Topologies :

Bus : A linear bus topology consists of a main run of cable with a terminator at each end, All nodes file (server, workstations, and peripherals) are connected to the linear cable. Ethernet and Local Talk networks use a linear bus topology.



Linear Bus Topology

Advantages of a Linear Bus Topology :

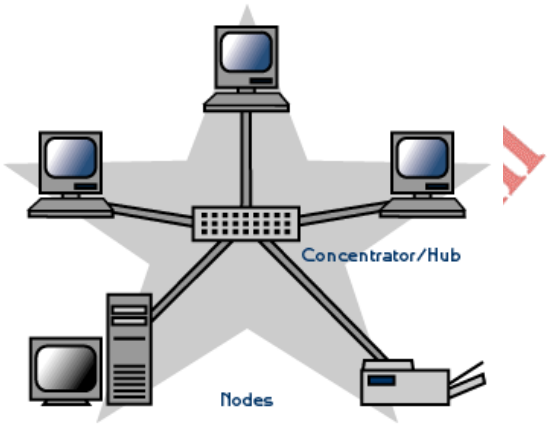
- Easy to connect a computer or peripheral to a linear bus.
- Requires less cable length than a star topology.

Disadvantages of a Linear Bus Topology :

- Entire network shuts down if there is a break in the main cable.
- Terminators are required at both ends of the backbone cable.

- Difficult to identify the problem if the entire network shuts down.
- Not meant to be used as a stand-alone solution in a large building.

Star : A Star Topology is designed with each node (file server, workstations, and peripherals) connected directly to a central network hub or concentrator. Data on a star network passes through the hub or concentrator before continuing to its destination. The hub or concentrator manages and controls all functions of the network



Star topology

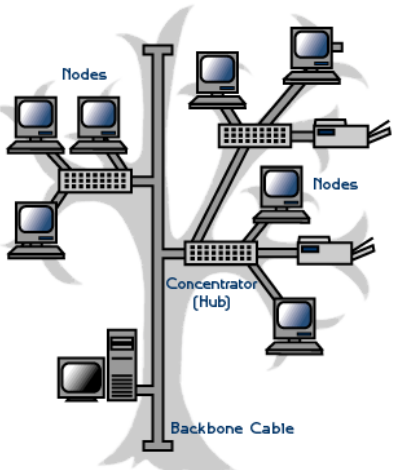
Advantages of a Star Topology :

- Easy to install and wire.
- No disruptions to the network in then connecting or removing devices.
- Easy to detect faults and to remove parts.

Disadvantages of a Star Topology :

- Requires more cable length than a linear topology.
- If the hub or concentrator fails, nodes attached are disabled.
- More expensive than linear bus topologies because of the cost of the concentrators.

Tree : A tree topology combines characteristics of linear bus and star topologies. It consists of groups of star-configured workstations connected to a linear bus backbone cable . Tree topologies allow for the expansion of an existing network, and enable schools to configure a network to meet their needs.



Tree Topology

Advantages of a Tree Topology :

- Point-to-point wiring for individual segments.
- Supported by several hardware and software vendors.

Disadvantages of a Tree Topology :

- Overall length of each segment is limited by the type of cabling used.
- If the backbone line breaks, the entire segment goes down.
- More difficult to configure and wire than other topologies.

Ring Topology : A **ring network** is a network topology in **which each** node is connected to exactly two other nodes, forming a circular pathway for signals: a ring. Data travels from node to node, with each node handling every data.

Advantages :

- Very orderly network where every device has access to the token and the opportunity to transmit.
- Performs better than a star topology under heavy network load.
- Does not require network server to manage the connectivity between the computers.

Disadvantages :

- One malfunctioning workstation or bad port can create problems for the entire network.
- Moves, adds and changes of devices can affect the network.
- Much slower than a bus network under normal load.

Q.3 What do you understand by Data Communication? What are the characteristics of Data Transmission?

OR

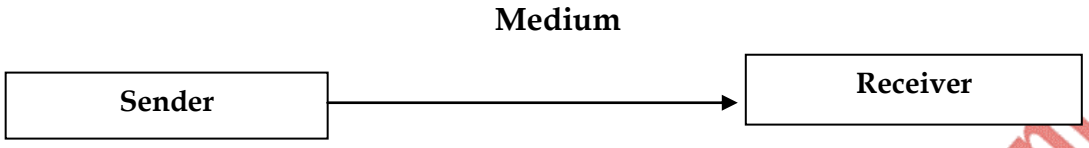
What is Data Communication? Discuss the various modes of Data Transmission.

Ans.: Communication is the process of transferring messages from one place to another place. There are three basic elements of any communication system **:**

i) **Sender :** Which creates the message to be transmitted**.**

ii) **Medium :** Which carries the message from one place to another.

iii) **Receiver :** Which receives the message.



Basic Elements of Communication system

Data Transmission Modes : There are three ways or modes of data transmission **:**

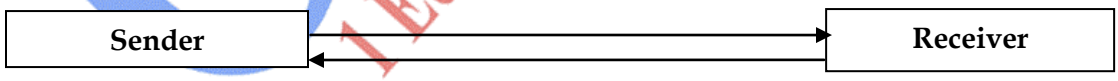
Simplex : Communication can take place in one direction. The devices are connected in a circuit in which there is either send only or receive only mode.

Half Duplex : A half duplex system can transmit data in both directions, but only in one direction at a time.

Full Duplex : A full duplex system can transmit data simultaneously in both directions on transmission path.

(a) Simplex

(b) Half Duplex



KEY TERMS:-

a)Local Area Network : A Local Area Network (LAN) is a network that is confined to a relatively small area. It is generally limited to a geographic area such as a writing lab, school, or building. Rarely are LAN computers more than a mile apart.

b)Wide Area Network : A WAN is a data communications network that covers a relatively broad geographic area i.e. one city to another and one country to another country and that often uses transmission facilities provided by common carriers, such as telephone companies.

c)Metropolitan Area Network (MAN) : A Metropolitan Area Network is a network that connects two or more Local Area Networks but does not extend beyond the boundaries of the immediate town, city, or metropolitan area. Multiple routers, switches & hubs are connected to create a MAN.

d) Tree : A tree topology combines characteristics of linear bus and star topologies. It consists of groups of star-configured workstations connected to a linear bus backbone cable.

e) Star : A Star Topology is designed with each node (file server, workstations, and peripherals) connected directly to a central network hub or concentrator. Data on a star network passes through the hub or concentrator before continuing to its destination. The hub or concentrator manages and controls all functions of the network

Multiple Choice Questions:-

1 The three basic types of networks include :-

a)Local Area Network (LAN)

b)Wide Area Network (WAN)

c)Metropolitan Area Network (MAN)

d)All of the above

2 A Metropolitan Area Network is a network that connects two or more Local Area Networks but does not extend beyond the boundaries of the:-

a)Immediate town

b)City

c)Metropolitan area

d)All of the above

3 A Local Area Network (LAN) is a network that is confined to:-

a)School

b)building

c)writing lab

d)all of the above

4 There are ways or modes of data transmission **:-**

a)Simplex

b)Half Duplex

c)Full Duplex

d)all of the above

5 What are the Advantages of Network :

a)Speed

b)Cost.

c)Security

d)all of the above

Unit-V

MIS in functional areas

1 Write a short note on production information systems.

Ans **Production information systems Or MIS for Production Management :** The objective of production management function is to provide manufacturing services to the organization. This involves the manufacturing of products of a certain specified quality and within certain costs in a stipulated time, fulfilling the promises given to the customer.

The production management function is supported by other functions like production, planning and control, industrial engineering, maintenance and quality control. It has a very strong interface with materials management function. The organization of production management differs according to the types of production i.e. job shop or continuous. It also varies with the production policy of the organization, like whether the production is initiated against a customer order or for stock.

The system methodology differs with respect to the manufacturing technology the organization has adopted. The goals of the production management are fuller utilization of the manufacturing capacity, minimal rejection, maximum uptime of planst and equipments meeting the delivery promises. The function is of key importance when business strength is in technology and manufacturing, and the market for product and services exist. The function is pegged with the responsibility of managing high investment in plant, equipment and machinery. It also has to control the large labour force at its disposal.

Inputs of Production Management Information System : The production management is conducted through innumerable transaction. They relate to

planning, issuing and controlling the various task involved in the course of production.

i) process Planning Sheet
ii) quality Assurance Rating Form
iii) Production Schedule
iv) Process Planning Sheet
v) Job Cards
vi) Finished Goods Advice
vii) Material Requisition
viii) Customer Order
ix) Breakdown Advice
x) Material requirement
xi) Production Programme

The production management also uses standards and norms extensively developed over a period of time as input in the system. These are generally known as production rate available capacity, labour components, material usage standards, rejection norms etc.

Documents mentioned above are indicative and may be more or less different, depending upon the type of production and nature of production of industry. The input data in each transaction would also vary from industry to industry as would the production methodology adopted by the organization. The system and procedures used by the organization in performing the production function also vary respectively.

Components of Production Management Information System : The components of production management information system include:

a) Sales department to find out what the customer wants and to compare this with what the firm can provide.
b) Design department to design new requirements and make modifications in established items either to bring them up to date or to make them meet a specific requirement of the customer.
c) Purchasing department buys the material required at the best possible price and on the most reliable delivery to make the various items either on one off basis for individual job or replenish material held in the stores on maximum and minimum levels

d) Manufacturing process sees that the parts are produced as economically as possible for delivery at the time required by the customer and to meet the standards set by the design department.

Q-2 Write a short note on Financial information systems.

Ans- Financial information systems or MIS for Financial Management : Financial management function has a primary objective of meeting the financial needs of the business. The second objective of FM is to meet the statutory compliance by way of declaring the auditing financial result, submitting reports and returns to the govt. and Tax authorities and fulfill the obligations to the shareholders. FM uses variety of tools and techniques like Break Even Analysis, ABC Analysis, Ratio Analysis, Management Accounting and Cost Analysis.

Input Documents :

- Receipts from customers, authorities, employees, share holders, financial institution and others.
- Payment to suppliers, authorities, share holders, financial institutions and others.
- Data from stock exchange on the shares prices consolidated financial results of the other companies etc.

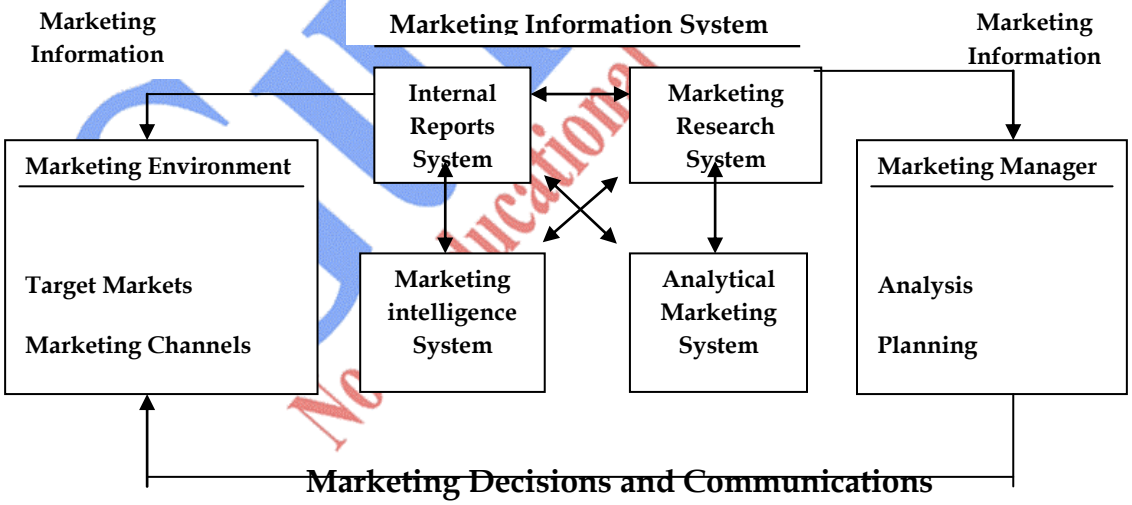
Transactions are payments and receipts and they are documented through journal vouchers, bills, debit notes, credit notes, receipts and transfer documents.

Application of Financial Management Information System : The major application of financial management information system includes financial accounting system, which accounts for the financial transactions of the company and produces financial results for the company. It produces balance sheet for the company where the performance of the company is published in standard format prescribed by the govt. The system is made so comprehensive that it not only collects financial data but also collects data on different matters such as job, department, and division and so on. It forms a basis for certain reports which are required by the top level management. The users of the financial data base are finance managers, cost controller, auditors, material managers, marketing managers, company secretaries and the top management.

MIS for Marketing : In order to pursue market opportunities as well as anticipate marketing problem, manager need to collect comprehensive and reliable information. Managers cannot carryout marketing analysis, planning, implementation and control without monitoring and researching customers , competitors, dealers and their sales and cost data. Every firm has many information flows of interest to marketing management. Many companies are studying their executive's information needs and design information system for marketing to meet these needs. Instead of plethora of unrelated data, an MIS combines various inputs and present integrated reports.

Definition : Marketing Information System is a continuing and interacting structure of people, equipments and procedures to gather, sort, analyze, evaluate, and distribute pertinent, timely and accurate information for use by marketing decision makers to improve their marketing planning, implementation and control activities.

Components of Marketing Information System : As shown in figure below, the box on the left shows components of the marketing environment that manager must monitor. Trends in the marketing environment are picked up and analyzed through four subsystems making up the marketing information system- Internal Accounting System, Marketing Intelligence System, Marketing Research System and Analytical Marketing System.



Internal Accounting System is the most basic information system used by marketing executives. It is the system that reports orders, sales inventory levels, receivable, payable. By analyzing the information, marketing managers can spot important opportunities and problems.

- **The Order Shipping Cycle :** Sales representatives, dealers and customers dispatch orders to the firm. The order department prepares multi-copy invoice and sends them to various departments. Out of stock items are back ordered. Shipped items are accompanied and sent to various departments. The company wants to carryout these steps quickly and accurately. The computer is harnessed to expedite the order shipping billing cycle.
- **Improving the Timeliness or Sales Reports :** Marketing executives receive sales reports some times, after the sales have taken place. Many companies complain that sales are not reported fast enough in their company. Marketing information system can improve these things rapidly.
- **Designing a User Oriented Report System :** In designing an advanced sales information system, the company should avoid certain pitfalls.

The marketing information system should represent a cross between what managers think they need, what managers really need and what is economically feasible. Management information system should provide the reports for all marketing departments. Information system can delete the unwanted system from the survey and from other departments and prepare reports which are required by different persons of marketing department.

Q3 Write a short note on Human resource information systems.

Ans Human resource information systems. Or MIS for Personnel Management : Personnel management has the primary objective of providing suitable manpower in number and with certain ability, skills and knowledge, as the business organization demands from time to time. Its goal is to control personnel cost through continuous increase in manpower productivity resorting to the following techniques :

a) Motivation through Leadership and Job Enrichment

b) Grievance Handling

c) Structuring the Organization

d) Promotion and Rewards through Performance Appraisal

e) HRM through Training and Upgrading the Skills

The information and scope of personnel function have resulted in greater complexity in field. There is need to cope with incredible volume of information and maintaining it. There is need to classify, reclassify and

cross this information. This can be achieved by computerized personnel system which enables personnel management to manage more efficiently and effectively and to provide more positive services to the organization.

Input for Personnel Development : The following documents serve as the input in personnel information system :

- Productivity Data on the Job
- Industry Data on Manpower, Skills, Qualification
- Bio-Data of Self and Family
- Personnel Application Form
- Attendance and Leave Record
- Appraisal Form
- Appointment Letter
- Wage/ Agreement
- Record Sources of Manpower, University, Institutes, and Companies

Components of Personnel Information : A computer based personnel information system is designed to support the operational, managerial and decision making functions of the personnel division in an organization. Following are the components of the personnel management information system:

i) **Establishment Records :** Establishment relates to the setting up of budgets for appropriate staff levels and grades throughout the organization. The system should encompass these budgeted posts and report on variations between actual staff numbers and the budget numbers.

ii) **Recruitment Records :** Details of all vacancies and applicants should be held by the system. These should show the status of each vacancy and of each applicant and should perform as much as possible of the administrative process. This will generally mean that the system should interface with a word processing system.

iii) **Personnel Records :** These relate to identification data, current and historical salary and allowances data and various employees attributes such as grades and key dates.

iv) **Pensions Records :** The system maintains all details of service entitlements of employees, contribution by both the employee and the organization to pension scheme, details of dependents, spouse and children, data required for actuarial purpose to verify the

viability of the scheme and details and entitlements of employees who have become pensioners.

v) **Training Records:** These include data relating to each employees qualification, skills and experience. The system would also hold details of internal and external training courses and its relevant details.

vi) **Absence records:** The system should allow for the recording of various absence types like sick leave, special leave etc. Input of this sub-system should be automatically reflected in the establishment sub-system.

vii) **Industrial relations records:** The system should hold data to assist management in negotiations and planning for alternative strategies. Much of this would be held for normal administrative purpose. It is the facility to extract the data in meaningful terms, to able to project forward and to test the impact of applying various rules and scenarios.

Multiple choice questions:-

1 What are the Inputs of Production Management Information System :-

a)process Planning Sheet

b)quality Assurance Rating Form

c)Production Schedule

d)all of the above

2 What are the Inputs for Personnel Development :-

a)Productivity Data on the Job

b)Industry Data on Manpower, Skills, Qualification

c)Bio-Data of Self and Family.

3 What are the Components of Personnel Information **:-**

a)Personnel Records

b)Recruitment Records

c)Establishment Records

d)All of the above.

4 Who dispatch orders to the firm:-

a)Sales representatives

b) Customers

c) Dealers

d)All of the above

Key Terms

A) MIS -"'MIS' is a planned system of collecting, storing and disseminating data in the form of information needed to carry out the functions of management."

B)Management : Management is art of getting things done through and with the people in formally organized groups. The basic functions performed by a manager in an organization are: Planning, controlling, staffing, organizing, and directing.

C)Information : Information is considered as valuable component of an organization. Information is data that is processed and is presented in a form which assists decision maker.

D)System : A system is defined as a set of elements which are joined together to achieve a common objective. The elements are interrelated and interdependent.

E)Data Capturing : MIS capture data from various internal and external sources of organization. Data capturing may be manual or through computer terminals

F) **Data :** Data is raw facts. Data is like raw material. Data does not interrelate and also it does not help in decision making. Data is defined as groups of non-random symbols in the form of text, images, voice representing quantities, action and objects.

G)Information : Information is the product of data processing. Information is interrelated data. Information is equivalent to finished goods produced after processing the raw material. The information has a value in decision making. Information brings clarity and creates an intelligent human response in the mind.

H)Cost - Benefit Analysis : Since the cost plays an important role in deciding the new system, it must be identified and estimated properly. Benefits of different type can be grouped on the basis of advantages they provide to the management. Benefits of a project include four types:

I)**Structured English :** Structured English, as the name implies, is "English with structure." That is, it is a subset of the full English language with some major restrictions on the kind of sentences that can be used and the manner in which sentences can be put together. It is also known by such names as PDL (Program Design Language) and PSL (Problem Statement Language or Problem Specification Language). Its purpose is to strike a reasonable balance between the precision of a formal programming language and the casual informality and readability of the English language.

J)**Data Dictionary :** A data dictionary is a structured repository of data, about data. In other words it is set of precise and accurate definitions of all DFDs, data elements and data structures

K)**Decision :** A decision is the choice out of several options made by the decision maker to achieve some objective in a given situation.

L)Business Decision : Business decisions are those which are made in the process of conducting business to achieve its objective in a given situation.

M)Intelligence : In this phase MIS collects the raw data. Further the data is sorted and merged with other data and computation are made, examined and presented. In this phase, the attention of the manager is drawn to the entire problem situation, calling for a decision.

N) **Risk :** If the manager has partial knowledge or probabilistic knowledge then it is decision under risk.

O)Uncertainty : If the manager does not have any knowledge, it is decision making under uncertainty

P)Choice : In this phase the manager evolves a selection criterion and selects one alternative as decision based on selection criteria.

Q)Production information systems Or MIS for Production Management : The objective of production management function is to provide manufacturing services to the organization. This involves the manufacturing of products of a certain specified quality and within certain costs in a stipulated time, fulfilling the promises given to the customer.

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number and with certain ability, skills and knowledge, as the business organization demands from time to time.

S)MIS for Marketing: In order to pursue market opportunities as well as anticipate marketing problem, manager need to collect comprehensive and reliable information. Managers cannot carryout marketing analysis, planning, implementation and control without monitoring and researching customers , competitors, dealers and their sales and cost data

T)The Order Shipping Cycle: Sales representatives, dealers and customers dispatch orders to the firm. The order department prepares multi-copy invoice and sends them to various departments. Out of stock items are back ordered.

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Bibliography

1.Upadhya and upadhya-MIS (RBD,jaipur)

2.Javedkar,W.S.,Management information system

3.www.managemntstudyguide.com

4.www.scribd.com

5.www.wikipedia.com