Seminar on ISCA

Change and the second



Organized by

The Institute of Chartered Accountants of India

हे शारदे मां, हे शारदे मॉ, अज्ञानता से हमें तार दे मॉ तू स्वर की देबी है संगीत तुझसे, हर शब्द तेरा है हर गीत तुझसे । हम हैं अकेले हम हैं अधूरे, तेरी शरण में हमें प्यार दे मां ।। हे शारदे मां हे शारदे मां अज्ञानता से हमें तार दे मॉ

Cont

मुनियों ने समझी गुनियों ने जानी, बेदों की भाषा पुराणों की बानी। हम भी तो समझें हम भी तो जाने, विद्या का हमको अधिकार दे मां।। हे शारदे मां, हे शारदे मां

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Cont.

तू श्वेतवर्णी कमल पे विराजे, हांथों में बीणा मुकुट सर पे साजे। अज्ञानता के मिटा दे अंधेरे, उजालों का हमको संसार दे मां।। हे शारदे मां, हे शारदे मां

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Before we start

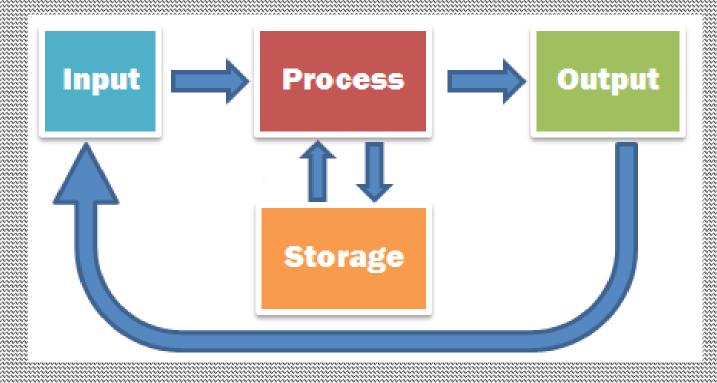


Doubts are welcome



<u>Computer</u>Computer is an electronic machine which accept data(Input), Process it and gives the Output.

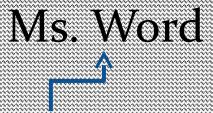
Storage



Software-Software is a term used for various kinds of programs, used to operate computers and related devices







Hardware Hardware is best described as a device that is physically connected to the computer or something that can be physically touched. Software executes within the Hardware.





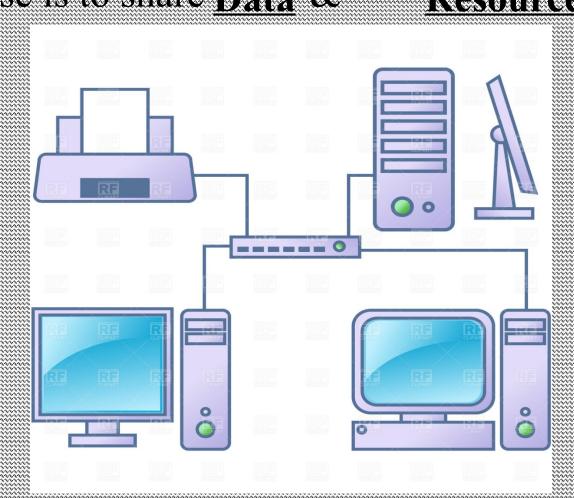




Program- A computer program, or just a **program**, is a **sequence of instructions** written to perform a **specified task** with a computer.

Programming Language are those Language which are used to write Programs

Computer Network wo or more than two computers are connected with each other. Purpose is to share **Data & Resources**



Internet: - A **network of network** is know as Internet.

Web Page: - A single page which is on Internet

Website: - Collection of Web Pages is know as Website.

Home Page : - First Page of a Web site.

WWW: - The World Wide Web commonly known as the Web is a directory where all the websites address are located.

Client: - Client are those computers who request for a particular page of a Website.

Server: - Server are those computers who give response to client.

ns Units of Measurement

- CPU understands Binary Language.
 Bi means 2 & Nary means digit
 Therefore CPU understands 2 digits i.e. o and
- 1 which are known as bits
- 8 bits = 1 Byte (01000001 = A)
 1024 Bytes = 1 KB (Kilo Byte)
- 1024 KB = 1 MB (Mega Byte)
 1024 MB = 1 GB (Giga Byte)
- -1024 GB = 1 TB (Tera Byte)
- r 1024 TB = 1 PT (Peta Byte)
 r 1024 PB = 1 EB (Exa Byte)

Data: - Computer data is information processed or stored by a computer. This information may be in the form of text documents, images, audio clips, software programs, or other types of data. It can be a meaningful or can be a meaningless.

- <u>Information</u>: Information usually apples to something which users can understand.
- Data are mere <u>numbers</u> and figures while information give meaning to these numbers and figures
- Data are meaningless while information are meaningful.

Information System Concepts

WHAT IS SYSTEM ?

System is a collection of certain components (known as inputs of system) which work together (known as processing part of System) to achieve some objectives (known as outputs of System)

Eg. Human Body, Computer System

WHAT IS INFORMATION SYSTEM?

Processed data is known as Information, and the system developed for providing Information is known as "Information System".

Data Processing Information

Abstract System

It is a system, which does not contain any physical components.

It is an orderly arrangement of ideas e.g. a computer program, architectural design, inventions.

Physical System

It is a real operational system which is made up of people, materials, machines & other physical things.

- It is more common than abstract system.
- Elements in such systems interact with each other to achieve an objective.
- For example: Computer Systems, Transport Systems etc.

Open System

It is a system that regularly exchanges feedback with its external environment.

- It interacts across its boundaries, it receives inputs from and delivers outputs to the outside world.
- Open systems can also interact with other systems and establish exchange relationship.
- It must adapt to the changing demands of the user.

Closed System

Closed system is self-contained & does not interact with its environment.

- Closed systems don't get the feedback from the external environment.
- Complete Closed System:
 - In this system there is no exchange with the environment.
 - This type of system is only applicable for the scientific application.
- Relatively Closed System:
 - A relatively (some what) closed system is one that has only controlled and well defined input and outputs.
 - Thus it not subject to disturbances from outside the

Manual System

It is a system, where all the activities are performed by human efforts. Eg. Manual Accounting System

Automated System

It is a system, where only few activities are performed by human efforts. Eg. Automated Information Processing System.

Deterministic System

This system operates in a predictable manner.

- In this type of system if the description of the system and its operation is given, the next state of the system may be given exactly, without error.
- E.g. is a correct computer program, which performs exactly according to a set of instructions which are specified in the program.

Probabilistic System

In this case the next stage of the system cannot be predicted.

- Thus it is described in terms of probable behaviour, but a certain degree of error is always attached to the prediction.
- Eg. Demand Forecasting System

- Sulb_System
- System is collection of interrelated subsystem.

- In order to achieve the task at the right time it is quiet necessary for the organization to divide the system into the small units.
- In this way the organization reduces the level of complexity by dividing the system into small-interrelated subparts, which are known as sub system.

Feedback

It is the study of the response of the output, which is taken for the further analysis regarding the performance of the system.

- If the feedback is within the desired standards it is known as positive feedback.
- If the feedback is not within the desired standards it is known as *negative feedback*.
- Feedback also helps the organization to monitor the proper functioning of the system & also suggest the controls in order to avoid the negative feedback.
- Thus feedback results in enhancements to meet the user's requirements.

- System Boundary
 - System Boundary defines the limit of a system.
- It is a limit that identifies its components, processes & interrelationships with other system.

- It is totally based on the requirements of an organization.
- For example while studying the production system one may include raw materials and finished goods inventory as within the boundaries of a production system, whereas another organization may exclude finished goods inventory from the production systems.
- A System exists inside the boundary, whereas environment exists outside the boundary.

- System Environment Components outside the boundary of a system are known as system environment.
- It is considered as supra-system within which an organization operates.
- It determines how a system must function.
- For e.g. the organization environment consisting of vendors, competitors, customers, government etc may provide constraints and also influence the actual performance of the business.

System Decomposition

Process of dividing a system into a smaller system is known as decomposition.

- A complex system is difficult to manage as a whole.
- Thus it is necessary for the organization to divide the system into smaller systems, which in turn can be further divided into other smaller units.
 The process of the sub system continuous until the smallest sub system is of manageable size.

System Stress

Systems are continuously evaluated for their objectives and in this process system or its subsystem passes through a stress to achieve the set goal.

Stress is a force transmitted by system's supra system to its sub-system that causes a subsystem to change so as to achieve its revised objective or goal.

Types of Stress

A change in the goal set of the system. New goals may be created or old goals may be eliminated.

- A change in the achievement levels desired for existing goals. The level of desired achievement may be increased or deceased.
- For e.g. a company has to decide to convert the single user system into the multi user environment.
- Now there are 2 ways to provide the stress on the system either the existing system can be modified or the new system can be adopted.
- The system can either make structural changes or process changes.
- Here structural change indicates the change in components where as process change indicates the changes in the logics.
- While making the structural or process change one thing must be followed that the changes should be as much as local rather than global.

INFORMATION SYSTEM

INFORMATION SYSTEM

Characteristic

Timeliness : -In indicates that the information must reach to the destination within the prescribed time frames.

- Purpose: -Information must have purposes to a person or machine, otherwise it is simple data.
- Mode & Format: -The mode and the format of information should be in such manner that it assists the receiver in decision making purpose, solving problems etc.
- Redundancy: -It means the excess of information carried per unit of data. Redundancy is sometime necessary to safeguard against error

INFORMATION SYSTEM

Characteristic

Frequency: -The frequency with which information is transmitted or received affects its value. Financial reports prepared weekly may show so little changes whereas monthly reports may indicate big changes.

- Complete: -The information which is provided to managers should be as complete as possible.
- Reliable: -It is the key attribute of information., Information should be from reliable resources.
- Validity: -It measures the closeness of the information to the purpose.
- Quality: -Quality refers to the correctness of information.

- TYPES
 - Operations Support System.
 - TPS
 - MIS
 - ERP
 - Management Support Systems.
 - DSS
 - EIS
 - EXPERT SYSTEM
 - Office Automation Systems.

- **Operation Support System**
 - The objective is to improve the operational efficiency of the enterprise.
 - Internal Data used primarily for Managers at Supervisory level.

Management Support

System

- The objective is to provide information to managers for planning and decision making.
- Internal Data & External Data along with various data analysis tools are used.

- Office Automation System
 - The objective is to handle office activities / operations.
 - Internal Data are used.

- **Transaction Processing**
- System
- This system processes the transactions and provides the routine and regular reports / information.
- Transaction Processing System accepts data as inputs & provides information as outputs.
- For example, accept transactions (i.e. sale, purchase, receipt, payment, etc) as inputs and provides reports (i.e. balance sheet, trial balance, etc) as outputs.
- Transaction processing systems if computerized provide speed and accuracy.

TPS components

- Inputs: Source documents such as customer orders, sales, invoices etc are the physical evidence of inputs into the TPS.
- Processing: Processing is used to covert the data into information.
 - Processing of data is done as per the accounting rules or business logics.
 - Processing uses various activities like sorting, calculation and summarization for providing various types of financial & operational reports.
 - Reports can be presented either on the computer screen or on the paper with the help of printer.
 - Even we can transmit the reports to the memory devices.

TPS Components

- Storage : -It is the very basic component of data processing.
 - It is necessary to save the data both in the case of manual and the computerized system so that the user can reuse it in the coming future.
 - Ledgers and files are used for the storage of the data in both and the computerized system.
 - File is a collection of organized collection of data.

 Outputs : - Any document is generated is known as Output.



- MIS is responsible to provide services to top level management.
- It is also known as Application Oriented Approach.
- MIS provides detailed & summarized information to managers on business functions such as accounts, marketing and production, etc.
 MIS provides information on these functions by
 - using operational databases created by TPS.



Management:

- It refers to planning, organizing, initiating & controlling operations.
- Planning: means setting of objectives & goals.
- Organize: Management organize the tasks and resources necessary for executing the plan.
- Initiate: Management initiate the process by setting the resources into similar group.
- Management is also responsible to assign the authority for achieving goals.
- Control: Implementation of internal controls

TYPES OF INFORMATION SYSTEMS EXPLAIN THE CHARACTERISTICS OF AN EFFECTIVE MIS?

Management Oriented:

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- It is the management which uses the MIS for efficient decision making.
- But such a system is not only meant for top management, it may also meet the information requirements of middle level or operating levels of management as well.

Management Directed:

- For organization effectiveness, it is necessary for management to devote their sufficient time not only at the stage of designing the system but also review the working of an organization.
 - In brief, without the involvement of management it is very difficult to develop an effective MIS.

Integrated:

- Development of information system should be an integrated one.
- It means that all the operational sub-system should be tied together into one entity.

EXPLAIN THE CHARACTERISTICS OF AN EFFECTIVE MIS?

Common Data Flows:

- It means wherever possible common input, processing and output procedures should be done.
- This helps in reducing duplication of same information and also simplifies operations and produces an efficient information system.
- However, some duplication is necessary in order to insure effective information system.

Heavy Planning Element:

- An MIS usually takes 3 to 5 years to get established firmly within a company. Therefore, a heavy planning element must be present in MIS development.
- Hence the system must be planned for the future to avoid the possibility of system obsolescence before even system come into

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Common Database:

- Database is a collection of interrelated table which is responsible to save the information in a highly organized manner for the fast extraction of data.
- It also provides the feature of centralized saving with multi user environment.
- Thus it allows the multiple sub system to access common database as it is centralized one and finally avoid the drawbacks of data redundancy, data inconsistency etc.

Computerized

- It is possible to have MIS without using a computer.
- But use of computers increases the effectiveness of the system.

WHAT ARE THE PRE-REQUISITES OF AN EFFECTIVE MIS?

Database

- It is collection of interrelated files which supports the organized saving of the data so that it can be easily accessed.
- It also reduces the level of Data Redundancy & Data Inconsistency.
- The main characteristic of database is that each sub-system utilizes same data i.e. common database.

The other important characteristics of data base are as follows:

- It should be user-oriented.
- Common data source in order to avoid duplication of data.
- It should be available to authorized persons only.
- It should be centralized in order to provide multi user environment.

WHAT ARE THE PRE-REQUISITES OF AN EFFECTIVE MIS?

Qualified System and Management Staff

 The second pre-requisite of effective MIS is that it should be managed by qualified officers.

Systems & Computer Experts

- Should expertise in their subject area
- Should also be capable of understanding management concepts to facilitate the understanding of problems.
- They should also be clear about the process of decision making for controlling functions.

Management Experts

Is required to be aware with the concepts and operations of a computer.

WHAT ARE THE PRE-REQUISITES OF AN EFFECTIVE MIS?

Support of Top Management

Involvement of top management is required in order to provide the right leadership over the staff.

The reasons for this are as follows:

- As MIS involve lot many expenditure, in order to afford all those expenditure approval of top management is required.
- Top management involvement is required not only for designing the system but also be maintain it.

WHAT ARE THE PRE-REQUISITES OF AN EFFECTIVE MIS?

Control & maintenance of MIS

- This feature is very important for the efficient working of the organization.
- In order to check such habits of users, the management should devise checks for the information system control.

Evaluation of MIS

- It should be flexible enough in order to consider the future requirements.
- Find out the views of users about the capabilities & deficiencies of the system.
- Timely issue of the guidance should be specified for the efficient working of the system.

- LEEFCISCHUSING COMPUTER COR MISS
- Fast & Timely Data Processing
- Integrates the working of different information subsystem
- More Comprehensive Information
- Prompt and easy retrieval of Information
- Increases the effectiveness of Information System
- Increase scope of use of Information System
- Scope of widen Analysis
- Increases complexity of system design & operation

ERP

A typical definition of ERP is like this, "Software solution that address the enterprise need by tightly integrating all functions of an enterprise".

In simple words, ERP promises one database, one application and one user interface for entire enterprise, where previously disparate systems were ruling manufacturing, personnel, finance and sales functions of an organization.

Enterprise resource planning (ERP) is business management software that allows an organization to use a system of integrated applications to manage the business. ERP software integrates all facets of an operation, including development, manufacturing, sales and marketing.

ERP

 ERP software consists of many enterprise software modules that are individually purchased, based on what best meets the specific needs and technical capabilities of the organization. Each ERP module is focused on one area of business processes, such as product development or marketing. Some of the more common ERP modules include those for product planning, material purchasing, inventory control, distribution, accounting, marketing, finance and HR.

The basic goal is to provide one central repository for all information that is shared by all the various ERP facets in order to smooth the flow of data across the organization.

- **Decision Support System**
 - Decision support systems are information processing systems frequently used by accountants executives and managers for assistance in decision making.
 - This system requires a combination of advanced, hardware technology, interactive computing design: graphic capabilities and user friendly software

MAIN COMPONENTS OF A DSS

The user: User is considered to be part of the Decision Support System. The user of decision support system is usually a manager or analyst having knowledge of unstructured or semistructured problems to solve. DSS has two broad classes of users:

a) Managers: These are the users who have basic computer knowledge and want the DSS to be with very user friendly interface.

b) Staff Specialist (Analysts): These are people who are more details oriented and willing to use complex mathematical and statistical system in their day-to-day work.

_MAIN COMPONENTS OF A DSS

Planning Language:

There are 2 types of planning languages used:

a) General purpose:

These planning languages allow the user to perform routine tasks like retrieving data from all existing database for statistical analysis, budgeting, forecasting etc. (What task is to be done).

b) Special purpose:

These planning languages allow the user to tackle specific problems.

MAIN COMPONENTS OF A DSS

Model Base:

- The model base is the "brain" of the DSS since it performs data manipulations and computations with the data provided to it by the user and database.
- They could be based on mathematical, statistical or financial based functions and formulation such as tabulation, regression analysis, time series or LPP or a combination of all of them to provide instant results with the input of the user.

Databases:

The DSS includes one or more databases. These databases contain data from both internal and external data sources. Internal data comes from within the organization, whereas external data may include industry data, marketing research data, etc. The external data is obtained from other organizations on some payment/fee

EXECUTIVE INFORMATION SYSTEM?

- MIS and operational systems are based on transaction processing carried out by a variety on on-line and batched inputs.
- Where as in the case of EIS, information is usually presented in numerical or textual form and graphical form, which is usually in printed format.
- Also EIS tend to be externally-focused, strategicallybased systems using both internal and external data, whereas other computer systems mainly concentrate on internal control aspects of the organization

- The Primary Purpose of an EIS is to support managerial learning about an organization, its working process, and its interaction with the external environment. Informed managers can ask better questions and make better decisions.
- A secondary purpose for an EIS is to allow timely access to information. In the traditional methods it is quiet difficult to obtain the information at the right time. Timely access also influences learning.
- When a manager obtains the answer to a question that can also promote other related questions in the manager's mind.
- Third purpose of EIS has is to direct the executive attention to specific areas of the business Problems.

Expert System

- It is an information processing system.
- It is a step ahead of the general purpose Decision Support System.
- It contains a program called "Expert choice" which allows the user to input data and answer questions about a specific problem to make use this type of DSS.
- This system takes the role of a human expert and solves the problem like a specialist.
- This system contains various components that allow the user to work interactively with the computer to develop a variety of decisions.

_COMPONENTS OF THE EXPERTSYSTEM

Knowledge Base:

- This includes data, knowledge, relationship rules of thumb and decision rules used by experts to solve a particular types of problem
- It contains the computer equivalent of all the professional knowledge and insight that an expert or a group of experts develop through years of experience in-their filed.

Inference Engine:

- This program contains the logic and resolving mechanisms that stimulate the expert logic process and devices advice.
- It uses the data obtained from both knowledge base and the user.

_COMPONENTS OF THE EXPERTSYSTEM

User Interface:

This program allows the user to design, create, update, use and communicate with the expert system.

Explanation Facility:

This facility provides the user with an explanation of the logic of the expert system used to arrive at its conclusions.

<u>_Components of the experiments (sterm</u>

Knowledge Acquisition Facility:

- Building a knowledge base, referred to as knowledge engineering, involves both human expert and a knowledge engineer.
- The knowledge engineer is the one who converts the expertise (expert knowledge) into a knowledge base using the knowledge acquisition facility.
- Expert systems may be : example based, rule based or frame based.
- **Example Based System** takes the case fact and results in the form of a decision tree and compares it with an earlier decisions in the knowledge Base and arrives at the solution.

<u>COMPONENTS OF THE EXPERISYSTEM</u>

- Rule Based Systems are created by storing data and decision rules in the form of "If then Else" rules. The system asks the user questions and applies it in the "If then Else rule" to his answers to draw a conclusion.
- **Frame Based Systems** organise the information (data, description, rules, etc.) about a topic into logical units or segment called frames. Rules are then established about now to assemble or interrelate the frames to meet the user's needs. They can also behave sometimes like a secretary or sometimes a boss.

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- They provide a cost effective alternative to human experts.
- The performance is excellent as it contains collection of knowledge of many experts.
- It is faster and consistent in decision making.
- It can increase productivity.
- The knowledge is stored even after the expert leaves or is unavailable for advice.

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- The development of such systems is time consuming and costly process.
- It is difficult to obtain knowledge from experts as they may find difficulty in describing it.
- The system can fail if not designed properly.
- It is still in the development stage needing perfection.

- Text Processor
 - Helps in creating Office documents
 - Automates the process of development of documents such as Reports, letters and memos.
 - It uses the Softwares like MS. Word, Excel etc.
 - Provides many features like Cut, Copy paste etc
 - Supported by Laser Printer and Scanner for High Quality

- _Electronic Document Monagement System
 - Office documents are Captured and stored in the computer for efficient management.
 - Adv over Manual Management
 - Lesser Space Requirement.
 - Low Cost document Management.
 - Provide Remote Access
 - Provide Secured Document Management with ids and Password
 - Prompt access of required document

- Electronic Message Communication System
 - Components
 - Email
 - Facsimile
 - Voice Mail

_Electronic Message Communication System

Components

• Email

 Electronic mail, most commonly referred to as email or email, is a method of exchanging digital messages from an author to one or more recipients. Modern email operates across the internet or other computer networks. Some early email systems required that the author and the recipient both be online at the same time, in common with instant. Today's email systems are based on a store n forward model. Email servers accept, forward, deliver and store messages. Neither the users nor their computers are required to be online simultaneously; they need connect only briefly, typically to an emial server, for as long as it takes to send or receive messages.

- _Electronic Message Communication System
 - Components
 - Facsimile
 - Fax (short for facsimile), sometimes called telecopying, is the telephonic transmission of scanned printed material (both text and images), normally to a telephone number connected to a printer or other output device.

- _Electronic Message Communication System
 - Components
 - Voice Mail
 - Voice-mail (also known as voicemail, voice message or voice bank) is a computer based system that allows users and subscribers to exchange personal voice messages; to select and deliver voice information; and to process transactions relating to individuals, organizations, products and services, using an ordinary telephone.
 - Most cell phone services offer voice-mail as a basic feature

Teleconferencing and Video Conferencing System

Teleconferencing

A teleconference or tele seminar is the live exchange and mass articulation of information among several persons and machines remote from one another but linked by a telecommunications system. Terms such as audio conferencing, telephone conferencing and phone conferencing are also sometimes used to refer to teleconferencing.

Video Conferencing

 Videoconferencing is the conduct of a videoconference (also known as a video conference or video teleconference) by a set of telecommunication technologies which allow two or more locations to communicate by simultaneous two-way video and audio transmissions THANKYOU