

Based on ICAI Study Material

ISCA

Notes for Revision

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Chapter – 1(V.Imp) (Marks : 12)

Information System Concept

Definition of System:

“A Group of interrelated and interdependent component works to gather to accomplish some common purpose of Goal.” Example: *Human Body system* consists of various parts such as Head, Heart, Hand, leg and so on, common goal is living.

Types of System

- ● Elements
 - *Abstract* - Idea
 - *Physical* – Idea converted in to physical system
- ● Interactive Behavior
 - *Open System* – Freely Interact , Accepts Environment charges , Negative Entropy is high
 - *Close System* – Do not Interact , Relatedly close, Negative Entropy is low
- ● Degree of Human Interaction
 - *Manual* – Collection, Manipulation, Reporting done by manual intervention
 - *Automated* - Collection, Manipulation, Reporting done in computerized environment with help of human being.
- ● Working Output
 - *Deterministic* – Result is known, Predict behavior with 100% accuracy
 - *Probabilistic*–Result is unknown , Predict behavior with error

General Model of System - (Code: IPOSF)

A General Model of physical system is input, process and output.

A system have may have many input and outputs.

- Input – Data flowing from outside e.g:News Paper
- Processing – Manipulation of data in useful context
- Output – Information flowing out of a system
- Storage – Holding information for future use
- Feedback

System Environment

- ✓ **System Boundary:** Scope of activity e.g. Air-condition machine have outer cover over it.
- ✓ **Interface:** Interconnection / Interactions between subsystem or system components
- ✓ **Supra System :** Parent System
- ✓ **Sub System :** Child System – Part of Large system
 - **Characteristics of Sub System**
 - *Decomposition:* Complex system is difficult to compare as whole, so divided in to sub system to further sub system until manageable size.
 - *Simplification :* Reduce number of interaction / Minimum interaction among system
 - *Decoupling:* Minimum interdependency between two interconnected system
- ✓ **System Stress / System Change :** Force transmitted by supra system that cause sub system to change so that supra system achieve its goal better.
System Change when it under go stress
Type of stress: Goal Change.
Change in achievement level.

INFORMATION

It is a Raw Data that put into a meaningful context for intended recipient.

Definition: Information is data that has been processed into a form that is meaningful to the recipient and is real or predefined value in current or progressive decision.

Characteristics of Information:

{Code: **CAR** has **MRFTyreAndVoice Recorder**}

- **Completeness** – Information should have complete as possible
- **Cost Benefit** – Must Justify the cost incurred for
- **Accuracy and Quality** – Accuracy means free from material error, Quality refers to correctness
- **Relevance and Purpose** – content must serve purpose
- **Mode and Format** – Mode like : visual, Verbal or In written form. Format should be simple
- **Redundancy** – signifies duplication
- **Frequency** – depends up on management
- **Timeliness** – Transparency
- **Availability** - Information should be available when needed
- **Validity**
- **Reliability**
- **Decay**
- **Value of Information**

Types of Information:

Divided in two parts

Internal Information

- Created from Operation at various function area
- Processed from Junior to Top
- Eg : Production, Sales figures etc

External Information

- Collected from External Environment
- Effects performance from outside
- Eg: Govt. Policy, Competition

Factors on which Information requirements depend:-

- Operational Function :Organisation has many Function area, each area has unique set of Information needs, shared by each function area.
- Managerial Level :
 - Strategic / Top
 - Tactical / Middle
 - Operational / Lower
- Type of Decision :
 - Programmed / Structured- Decision can be predicted in advance, Routine
 - Non Programmed / Unstructured –Can't be predicted in advance, Non Routine,

Computer Based Information System

- ✓ Hardware
- ✓ Software
- ✓ Data
- ✓ Procedures
- ✓ People

Characteristics of Computer Based Information

- ✓ System works for its predetermined objectives
- ✓ System has number of interdependent and interrelates sub system
- ✓ One sub system fails whole system fails
- ✓ Sub system works with another sub system called interaction
- ✓ Sub system works for the goal of main system, sub system's goal is of lower priority.

Categories of Information System

Operation Support System(OSS)

- ✓ Transaction Processing System(TPS)
- ✓ Management Information System(MIS)
- ✓ ERP System(ERP)

Management Information System(MIS)

- * Decision Support System
- * Executive Information (Support) System
- * Expert System

Office Automation System

- ❖ **TRANSACTION PROCESSING SYSTEM (TPS)** : TPS operates at lowest level of Management. It is an Information system that records and manipulate data in useful information. TPS do not takes any management decision.

✓ **Components of TPS**

- **Input** : Source document i.e Customer order.
- **Processing** : Journal, Financial Transaction
- **Storage** : Ledger, File, Transaction , Master file
- **Output** : Report

✓ **Features of TPS (LABs)**

- Large Volume of Data
- Automation of Operation
- Benefits easily measurable
- Source of Input (Base) for other system

- ❖ **MANAGEMENT INFORMATION SYSTEM (MIS)** : MIS assist managers in decision making and problem solving. MIS consist basic three components :

✓ **Components of MIS**

- **Management** : Activities to be performed in organization
 - i. Determination of objectives and development of Plan
 - ii. Securing and organising human and physical resources.
 - iii. Exercising adequate controls over functions
 - iv. Monitoring the results
- **Information** : Data, A set of facts, figures for current decision making
- **System** : A Set of related components, activities process and human beings interacting together to accomplish common objective.

✓ **Characteristics of MIS (Code :MICS is History)**

- **Management Oriented-** furnishing information to managers
- **Management Directed-** MIS is meant for managerial decision hence manager should direct, system development efforts.
- **Integrated-**integrate various sub-system to provide meaningful information
- **Common Data Flows-**
- **Common Data Base –**
- **Computerised-**
- **Sub System Concept-**
- **Heavy Planning Element-**

✓ **Misconceptions about MIS : (M Imp)**

- **MIS is about the Use of Computers or Use of Computer must-** statement is not true but use of computer makes MIS more effective.
- **More Data in reports means more information** – statement is not true because quantity of data does not matters Quality of Data matters.
- **Accuracy is Vital Importance** – Statement is true at operational level. High accuracy leads to high cost. For top management a fairly correct presentation of relevant data is more important than accuracy because they takes decision based on rules, policies, etc.

✓ **Pre-requisites of effective MIS (Code :D-Cess)**

- **Data Base** : can be defined as “super file” – has all records or data at one place. Characteristics of DataBase: (i) User Oriented, (ii) Capable of being used by as common data source, (iii) Available to authorized person only, (iv) Controlled by separate authority (DBA).
- **Control and Maintenance of MIS** : Control refers to MIS is operating as designed to operate. Maintenance alteration and modifications according to need and requirement of user.
- **Evaluation of MIS** : Evaluate at regular intervals steps for evaluation (i) Flexible enough to cope up with any unexpected situation.
(ii) Take Feed Back, (iii) Guide the proper authority to maintain MIS.
- **System and Management staff should be Qualified**: MIS should be managed by qualified officer i.e Computer Expert, System Expert and Management Expert. All Expert must have knowledge of their area and also must have some knowledge of others area. And must have basic computer knowledge.
- **Support of Top Management**: To be effective MIS requires full support of top management.

✓ **Constraints in Operating MIS :**

- Non Availability of Experts
- Non Co operative staff
- Non Standardise system
- Problem if Selection of Sub System

✓ **Effect of Using computer in MIS (code : ISCA)**

- Increase the effectiveness of Information system
- Integrates working of different information system
- Speed of processing and retrieval of data increase
- Scope of use of Information system has expanded
- Complexity of System design and operation increase
- Comprehensive information
- Analysis widens

✓ **Limitation of MIS : (Code : Limitation)**

- Less useful for unstructured data
- Internal information is taken in to consideration
- Management keeps changing and their Goals also changing
- Input Quality determines quality of Output
- TPS's Limitation exist in MIS
- Ad-hoc reporting is not possible
- The Attitude and Moral are ignored in MIS
- Integration is lacking
- Hoarding of information reduces the effectiveness

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- Not a substitute for effective management.

❖ **ENTERPRISE RESOURCE PLANNING SYSTEM(ERP) : (Covered in Chapter-7 also)**

- ✓ ERP is a fully integrated business management system
- ✓ It organizes and integrates operation processes and information flows, to make optimum use of resources.
- ✓ ERP aims at ONE Database, ONE Application and ONE user interface.
- **Objectives**
 - Provide support for adopting best business practice
 - Implement this practice with a view towards enhancing productivity
 - Empower the customer and suppliers to modify the implemented business process to suit their needs
- ✓ **ERP System integrates various business processes**
 - Business System
 - Production
 - Maintenance
 - Quality Control
 - Marketing
 - Finance
 - Personnel
 - Consolidation of Business operation
- ✓ **Myths of ERP System**
 - ERP is computer system
 - ERP is relevant for manufacturing organization only
- ✓ **Characteristics of ERP System (Code: FMBBC)**
 - **Flexible**- ERP should be flexible enough to accommodate the changing needs
 - **Modular and Open**-Any Model can be interfaced or detached whenever required without affecting the others. Supports multiple hardware.
 - **Beyond Company** – Support online connectivity to the other business entities of the organization
 - **Best Business Practice** – Collection of best business processes
 - **Comprehensive** – Support variety of Organizational functions and must be suitable for wide range of business organization.
- ✓ **Features of ERP System**
 - Provides multi-platform, multi-facility, multi-currency
 - Updates information immediately
 - Integrated information system covering all functional area like; production,marketing,finance,accounting and HR.
 - Bridge the information gap between the organization
 - Companywide complete integration of system
 - Automatic introduction of the latest technologies ; like E Commerce, Internet,etc
 - Provides intelligent business tools like DSS,EIS to enable better decision making.
- ✓ **Benefits of ERP System**
 - Better use of organizational resources
 - Lower operating cost

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- Proactive and Decentralized Decision making
- Enhanced customer satisfaction
- Flexibility in Business operation
- ✓ Limitation of ERP
 - ERP provides current status only
 - Methods used in ERP application are not integrated with other organizational system
 - ERP may not meet all needs of business.
 - Too time consuming for certain organization

Management Support System (MSS)

- ❖ **Decision Support System (DSS) :** It is computerized information system that provides tools to managers to assist in solving *semi structured* and *unstructured problems* in their own way. DSS does not typically make decision- peoples do that. DSS is concerned with providing useful information to support the decision process.

➤ Characteristics of DSS : Mainly three characteristics

- They support structured and semi structured decision making
 - Steps in solving problem with DSS (*IMP*)
 - Define / formulate problem
 - Frame in to DSS
 - Use model to obtain result
 - Reformulate problem
- Flexible enough to support the changing need of Decision making
- Easy to use

➤ Components of DSS:

- User
 - Manager
 - Staff Specialist
- Database
 - Physical Level- Storage in hard disk
 - Logical Level- DBMS, is logically divided into various tables
 - External level-
- A Planning Language
 - General Purpose – Spread sheet
 - Special Purpose- CPM/PERT
- Model Base – Brain of DSS

- ❖ **EXECUTIVE INFORMATION SYSTEM (EIS) :** **DSS**, when it is designed to assist executives are called EIS. EIS is uses: Touch screen, light pen, Colorful graphics, Trend Analysis.

➤ Characteristics of EIS: -

- Computer based information system that serves the information need of top executives
- Enables executives to extracts data
- Rapid access to timely information
- Access both internal and external data

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❖ **Expert System** : is Highly developed DSS utilize knowledge generally possessed by an expert to share problem.

➤ **Quality for Expert System (IMP) :**

- ✓ Availability
- ✓ Complexity
- ✓ Domain
- ✓ Expertise
- ✓ Structure

➤ **Components of ES :**

- ✓ Knowledge Base (DataBase)
- ✓ Inference Engine (Model- Brain)
 - Forward-chaining mechanism – Know problem and find solution
 - Backward-chaining – Identify problem than find solution
- ✓ Knowledge acquisition subsystem
- ✓ User Interface

Office Automation System (OAS)

(Slogan : Files are Created,Captured,Calculated and Recorded before Distribution)

- Its is the application of computers to handle the office activities.
 - ✓ Filling, Search,Retrival and follow up
 - ✓ Document Creation
 - ✓ Document Capture
 - ✓ Calculation
 - ✓ Recording Utilization of resources
 - ✓ Receipts and Distribution
- Benefits of OAS :
 - ✓ Accuracy of communication skill
 - ✓ Improve communication
 - ✓ Reduce cycle time between preparation and receipt of message
 - ✓ Reduce the cost of office communication system
- Categories of OAS
 - ✓ Text processing and related system
 - Hand writing
 - Spelling Mistake
 - Similar and standard format
 - ✓ Components of Message communication system
 - Electronic mail
 - Electronic Transmission
 - Online Development and editing
 - Broadcasting and Rerouting
 - Integration with other system
 - Portability
 - Economical
 - Facsimile (Fax)
 - Voice Mail
 - Tele, Video Conferencing

~~~~~ All The Best ~~~~~