What is Management?

Management is the process of **organizing** work activities **in a good and smart way** (efficiently and effectively) **with and through** other people to reach company goals.

Process

• Means **regular tasks** or **main actions** that managers do, like **planning**, **organizing**, **leading**, and **controlling**.

Coordinating

• This shows the **difference between a manager and a regular worker** by **bringing together** everyone's efforts to reach team or company goals.

Efficiency

• Means doing things **the best way**, by **getting more results** while using **less input** (time, money, effort).
• **Example:** Lowering inventory or making products faster **without lowering quality**.

Effectiveness

• Means doing the **right tasks** that help reach company goals.
• **Example:** Launching a product that **customers need**, or meeting **important business targets**.

Key Resources of MIS (Management Information System)

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1. Information

- **Role**: Information is **organized, meaningful data** that MIS provides to help make **smart decisions**. At first, data is collected from different inside and outside sources, then it is

processed into useful information for **managers and others**.

- **Examples**:
  ▪ Customer orders, sales reports, and performance data
  ▪ Financial documents and stock reports
  ▪ Market trends and competitor analysis

- **Significance**: Information is the **core part** of MIS. The main goal of the system is to **turn raw data into helpful information** that supports **decision-making and solving problems** at all levels of the company.

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2. Technology

- **Role**: Technology means the **hardware and software** that support MIS. This includes computers, servers, networks, and apps used to **store, process, and share data**, and tools for **reporting and analysis**.

- **Components**:
  ▪ **Hardware**: Computers, servers, storage devices, and networking tools
  ▪ **Software**: Databases, ERP systems, decision support systems (DSS), and executive info systems (EIS)
  ▪ **Networks**: Internet, intranet, cloud, and communication systems

- **Significance**: MIS **won't work without technology**. Hardware and software are the **foundation**, helping to collect, store, and manage data. Networks allow **smooth data sharing** inside and outside the company.

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3. People

- **Role**: People are **very important** in **creating, running, and using** the MIS. This includes **managers, IT staff, system analysts**, and **users** who use the system every day.

Roles of People in MIS

- **Managers**: Use the information from MIS to make **long-term (strategic)**, **mid-term (tactical)**, and **everyday (operational)** decisions.

- **IT Staff**: **Build, set up, and take care** of the MIS so it works properly without problems.
- **End Users**: **Enter and use information** from the system to do their **daily work**.

Significance

- People are the **main force** behind MIS.
  They:
    - **Give data to the system**
    - **Run and control the technology**
    - **Understand the information**
    - **Use it to make good decisions**
- Without people, all the **data and technology** in the system would be **useless**.

The Relationship Between Information, Technology, and People

- **Information**: Helps in **making decisions** by giving **useful knowledge**.
- **Technology**: Works as the **tool** that **collects, processes, and sends** the information quickly and correctly.
- **People**: **Understand and use** the information given by technology to reach **organization's goals**.

By **bringing together** information, technology, and people, **MIS makes sure** that:

- Data flows smoothly
- Resources are used wisely
- Good decisions are made throughout the organization

Data Collected Within an Organization

Data is a **very important resource** for any organization. It is collected from many **internal (inside)** and **external (outside)** sources and is **needed for making decisions**, **improving work processes**, and **staying ahead of competitors**.

Sources of Data in an Organization

Internal Sources (inside the company):

- **ERP Systems** (Enterprise Resource Planning)
- **CRM Systems** (Customer Relationship Management)
- **POS Systems** (Point-of-Sale)
- **HRIS** (Human Resource Information Systems)

Manual Data Collection (collected by hand):

- Employee input
- Surveys
- Paper forms

External Sources (outside the company):

- Social media platforms
- Market research companies
- Third-party vendors
- Government or legal bodies

Types of Data, Their Sources, and Uses

Type of Data	Collected From	Used For
Transactional Data	- POS systems - ERP systems - Online transactions	- Tracking sales, purchases, and payments - Studying customer behavior and demand
Customer Data	- CRM systems - Social media - Customer feedback	- Personalized marketing - Better customer service - Loyalty programs
Operational Data	- Supply chain systems - ERP systems - Inventory systems	- Watching production and supply chain - Improving operations and logistics
Employee Data	- HRIS - Payroll systems - Employee surveys	- Planning workforce - Managing performance - Salary and benefits management

Financial Data

- Comes from:
    - ERP Systems
    - Accounting Systems
    - Financial Reporting Tools
- Used for:
    - Budgeting and planning future money use
    - Checking profit and loss
    - Managing cash flow (money coming in and out)

Market and Competitor Data

- Comes from:
    - Market research companies
    - Competitor analysis reports
    - Public reports
- Used for:
    - Planning company strategies
    - Comparing with competitors (benchmarking)
    - Creating new products and services

Compliance and Regulatory Data

- Comes from:
    - Government agencies
    - Regulatory bodies
    - Internal audits
- Used for:
    - Making sure company follows laws and rules
    - Managing risks and doing audits

Characteristics of Valuable Information

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1. Accuracy

- Information must be **correct, trustworthy, and without mistakes**. Wrong information can cause bad decisions and waste resources.

- Example: A sales report with wrong numbers can cause wrong business plans.

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2. Verifiable

- Information should be **traceable to its source** and can be checked by comparing with original data.

- Example: Financial data can be checked with accounting records to make sure it is right.

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3. Timeliness

- Information must be **available when needed** for making decisions. Up-to-date data helps make better decisions.

- Example: Real-time stock data helps a company restock products before they finish.

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4. Organized

- Information should be **arranged clearly and in order** so it is easy to understand and use. Messy data causes confusion.

- Example: Grouping customer feedback by product features or price helps understand trends better.

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5. Meaningful

- Information must be **important and useful** for the user's needs and support decisions. Irrelevant data doesn't help.

- Example: Market data that shows what customers like is useful for making new products.

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6. Cost Effective

- The **value of information should be more than the cost** to collect, process, and keep it. Good information gives maximum benefit with less cost.
- Example: Using automation to collect data reduces manual work and saves money.

What is a System?

A system is a group of connected parts that work together to reach a shared goal. Systems take inputs, work on them, and give outputs in an organized way. You can find systems in many areas like business, technology, and biology. They are made to do specific jobs.

Basic Functions of a System

1. Input

- A system needs inputs, which can be data, materials, or resources that are put into the system to be processed.
- Example: In a factory, raw materials are the inputs.

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2. Processing

- The system works on or changes the inputs to create useful outputs. It does tasks based on the system's goals.
- Example: A computer processes data to create useful information.

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3. Output

- The system produces outputs, which are the results or products from processing the inputs. Outputs can be information, products, or services.

- Example: In a financial system, reports or financial statements are outputs.

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4. Feedback

- Systems often have feedback, which watches the output and makes changes to improve or fix mistakes. Feedback helps the system work well and reach its goals.

- Example: In a temperature control system, feedback from a thermostat adjusts heating or cooling.

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5. Control

- Control means managing and regulating how the system works to make sure it meets its goals. It includes watching performance, setting rules, and making changes when needed.

- Example: In a traffic control system, signals are managed to keep traffic smooth.

Chapter 2

Information Technology (IT)

Definition:
Information Technology (IT) is the part of engineering that focuses on using computers and communication systems to get, store, and send information.

Overview:
IT includes many computer tools that people and companies use to manage information and help with information processing. These tools help make work faster and better in many business processes.

Key Components:

- **Computers:** Hardware devices that handle data and run programs.
- **Telecommunications:** Systems that send data over distances, allowing communication and sharing information.
- **Software:** Programs that do specific jobs to help users manage information.
- **Databases:** Organized sets of data that help store, find, and manage information easily.

Importance of IT:

- **Efficiency:** Makes work faster and reduces manual effort.
- **Data Management:** Helps store, find, and analyze data well.
- **Communication:** Improves teamwork and communication inside and between organizations.

- **Decision-Making:** Gives correct and timely information to help make smart decisions.

Information System (IS)

Definition:
An Information System (IS) is a group of hardware, software, data, people, and procedures designed to create and manage information that supports daily tasks and decision-making in an organization.

Key Components:

- **Hardware:** Physical devices like computers, servers, and networking tools.
- **Software:** Programs that process and handle data.
- **Data:** Information processed and used for decisions.
- **People:** Users and IT staff who run and maintain the system.
- **Procedures:** Rules and steps that control how the system is used.

Purpose of Information System (IS)

IS helps information flow smoothly so the organization can manage daily work, make decisions, and work better overall.

Information System Activities

1. Input of Data Resources

- Collecting and putting raw data into the system for processing.

2. Data Entry Activities

- Manually or automatically entering data into the information system.

3. Processing of Data into Information

- Changing raw data into useful information by doing tasks like:
    - Calculations
    - Comparisons
    - Sorting
    - Filtering

4. Output of Information Products

- Creating and showing information in useful forms, such as:
    - Messages
    - Reports
    - Forms
    - Graphics

5. Storage of Data Resources

- Organizing and keeping data for future use, including:
    - Data elements
    - Databases
    - Data warehouses

6. Control of System Performance

- Watching and checking how well the system works, including:
    - Performance measurements
    - Feedback systems
    - Finding and fixing errors

Types of Information Systems

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1. Operations Support Systems

- **Transaction Processing Systems (TPS)**
    - **Function:** Record and handle daily business transactions.
    - **Examples:** Sales processing, inventory tracking, accounting systems.
- **Process Control Systems (PCS)**
    - **Function:** Monitor and control physical processes in factories or plants.
    - **Examples:** Sensors checking chemical processes in a refinery, automated machines in factories.
- **Enterprise Collaboration Systems (ECS)**
    - **Function:** Improve communication and teamwork among employees.
    - **Examples:** Email, chat apps, video calls like Zoom or Microsoft Teams.

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2. Management Support Systems

- **Management Information Systems (MIS)**

    - **Function:** Give managers regular reports and displays to help make decisions and run operations efficiently.

    - **Examples:** Reports on stock levels, sales numbers, financial results.

- **Decision Support Systems (DSS)**

    - **Function:** Help managers make hard decisions by analyzing big data, making predictions, and giving insights.

    - **Examples:** Forecasting profits, pricing products, analyzing risks.

- **Executive Information Systems (EIS)**

    - **Function:** Provide important, summarized info from MIS and DSS to top executives for strategic decisions.

    - **Examples:** Dashboards showing business results, competitor info, and long-term plans.

Transaction Processing System (TPS)

Overview:
Transaction Processing Systems (TPS) are an important part of Operations Support Systems. They are made to record and handle data from daily business transactions. These computer systems perform and save routine transactions needed to keep a business running smoothly. They mainly serve the operational level of the organization.

Examples:

- Accounting Information Systems

- Companies like FedEx and DHL use TPS to manage their transaction data efficiently.

Key Functions of TPS

TPS does four main jobs: Input, Output, Storage, and Processing.

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1. Input Functions:

- **Data Capture:** Collecting data from original documents (like sales orders, receipts).
- **Data Entry:** Putting the collected data into the system.
- **Data Validation:** Checking the data for mistakes to make sure it is correct before processing.

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2. Output Functions:

- **Report Generation:** Making reports on screen or paper, including:
    - **Detail Reports:** Full records of every transaction.
    - **Summary Reports:** Short summaries of data.
    - **Exception Reports:** Reports showing unusual or unexpected results.

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3. Storage Functions:

- **Data Storage:** Saving data in files or databases for later use.
- **Data Access & Sorting:** Getting and organizing stored data when needed.
- **Data Update:** Changing and updating stored data based on new transactions.

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4. Processing Functions:

- **Data Manipulation:** Doing calculations, comparisons, and sorting data.
- **Decision-Making:** Making decisions based on rules and transaction data (for example, ordering more stock when levels are low).

Transaction Processing Methods

There are two main ways to process transactions in a Transaction Processing System (TPS):

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1. Batch Processing:

- **Definition:** Collects many transactions over time and processes them all together as a group (batch) at certain times.
- **Example:** A bank processes all the cheques it got during the day all at once at night.
- **Use Case:** Good when real-time processing is not needed and updates can be done later.

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2. Online Processing (Real-Time Processing):

- **Definition:** Processes each transaction right away as it happens, keeping information always up-to-date.
- **Example:** A bank processes an ATM withdrawal or credit card payment instantly.
- **Use Case:** Used where transactions must be handled immediately, like banking or online shopping.

Chapter 3

Management Information System (MIS)

A Management Information System (MIS) is a computer-based system that **collects, processes, and provides information** to help with decision-making, coordination, control, analysis, and showing business operations clearly. MIS helps managers by giving **organized information** through reports and displays so they can manage their departments well.

Example:

- **Sales Performance Reports:** MIS can create reports to help managers check sales numbers, compare with past data, and make smart decisions about stock and marketing.

Key Functions of MIS

- **Report Generation:** Creates detailed and summary reports on different business areas like sales, production, and finance.
- **Real-Time Access:** Gives managers quick online access to current company performance data for fast, smart decisions.
- **Historical Data:** Provides access to past records to analyze trends and compare performance over time.

Key Characteristics of MIS

1. **Systematic and Structured:** Data is arranged in an organized way for easy management and analysis.
2. **Timeliness:** Gives information when it is needed for good decision-making.
3. **Accuracy:** Makes sure data is correct and trustworthy to support decisions.

4. **Relevance:** Provides information that fits the user's specific needs.
5. **Integration:** Combines data from many sources for a complete view.
6. **User-Friendly Interface:** Easy design for quick access to information.
7. **Flexibility:** Can adjust to changing company needs and processes.
8. **Support for Decision-Making:** Helps with both everyday and big-picture decisions.
9. **Security:** Keeps sensitive data safe using access controls and encryption.
10. **Cost-Effectiveness:** Reduces waste and improves productivity.
11. **Data Storage and Retrieval:** Keeps data organized so past information can be easily found.
12. **Consistency:** Standardizes data outputs so it can be compared across the organization.

Decision Support System (DSS)

A Decision Support System (DSS) is an interactive information system that helps managers and business people make decisions by giving them relevant, timely, and accurate information. It supports tough decisions by using data from inside and outside the company, allowing users to analyze situations and predict results.

Key Features of DSS

1. **Supports Decision-Making:**
   DSS helps decision-makers, especially when problems are unclear or partly structured, by providing useful data to guide choices.

2. **Data-Driven Analysis:**
   It uses data from inside the company, like Transaction Processing Systems (TPS) and Management Information Systems (MIS), and outside data such as competitor prices or market conditions.

3. **Interactive and Flexible:**
   Users can interact with the system, test different scenarios, and see the effects of their decisions using "what-if" analysis.

Example of Use

- A production manager might use DSS to decide how many products to make, considering expected sales from a promotion and available raw materials. The system analyzes these factors to help plan production better.

Data Sources

- **Internal Data:** Comes from systems like TPS (e.g., sales data, stock levels) and MIS (e.g., performance reports).

- **External Data:** Includes market trends, stock prices, competitor prices, and other outside factors that affect decisions.

Real-World Example

- Shipping companies use DSS to estimate voyages. It considers things like weather, fuel costs, and route efficiency. The system helps plan trips to save money and increase profits.

Key Functions of DSS

1. **Data Management:**
   Helps collect, store, and retrieve data from different sources.

2. **Model Management:**
   Provides analytical models to help with complex decisions, like simulations and forecasts.

3. **Knowledge Management:**
   Uses company knowledge and best practices to improve decision quality.
   User Interface:

- Provides easy-to-use tools for users to enter data, perform analysis, and see results clearly.

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5 Analysis and Reporting:

- Creates reports and visual charts to help users understand data patterns and trends.

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6 Scenario Analysis:

- Lets users make and check different "what-if" situations to see possible outcomes.

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7 Sensitivity Analysis:

- Studies how changing different factors affects decisions, helping find the most important ones.

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8 Integration with Other Systems:

- Connects with systems like Transaction Processing Systems (TPS) and Management Information Systems (MIS) to use all data for better analysis.

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9 Real-Time Data Processing:

- Works with up-to-date data so decisions can be made immediately.

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10 Collaboration Support:

- Helps decision-makers and team members communicate and work together easily.

Voyage-Estimating Decision Support System

A Voyage-Estimating Decision Support System is very important for shipping companies to calculate both the money and technical details of a voyage. This system helps make accurate estimates, plans, and decisions to improve shipping operations and reduce costs.

Key Parts of the Voyage-Estimating DSS

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1. Financial Details

- **Ship/Time Costs:**
- **Fuel Costs:** Estimate how much fuel will be used and how much it will cost during the voyage.
- **Labor Costs:** Calculate crew salaries and other labor expenses.
- **Capital Costs:** Costs for maintaining the ship and investing in it.
- **Freight Rates:**
  Decide the charges for carrying different types of cargo (like bulk or container goods).
- **Port Expenses:**
  Costs for docking, loading/unloading, and other services at each port.

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2. Technical Details

- **Ship Cargo Capacity:**
  Calculate the ship's maximum load and find the best way to arrange cargo to use space well and keep balance.
- **Ship Speed:**
  Estimate travel time based on ship speed, adjusting for weather or other factors.
- **Port Distances:**
  Measure the distance between ports to estimate fuel use, travel time, and costs.

- **Fuel and Water Consumption:**
  Estimate how much fuel and water will be used based on distance, cargo weight, and speed.

- **Cargo Loading Patterns:**
  Find the best way to load cargo for balance, faster loading/unloading, and better fuel efficiency.

Executive Information System (EIS)

An Executive Information System (EIS) is a special information system made for top-level managers to help with unstructured decision-making. EIS gives senior executives easy access to important internal and external information for making decisions. It uses advanced graphics and communication tools to show data clearly, helping executives track, filter, and analyze large amounts of information quickly and easily.

Features of EIS

- **Data Integration:** Combines internal data from systems like MIS and DSS with outside data like competitor info, market trends, and tax rules.

- **Summarization:** Simplifies complex data into easy-to-understand formats using dashboards, graphs, and charts.

- **Time Efficiency:** Saves time and effort in getting and analyzing important info so executives can decide faster.

- **Real-time Access:** Gives instant access to important performance numbers (KPIs) and other key metrics to help monitor how the organization is doing.

Example:

An EIS might let top executives see real-time sales data, competitor price trends, and market regulations. It filters and summarizes this info, making it easier to make smart strategic decisions like changing prices or entering new markets.

This mix of internal and external data with real-time access helps executives plan better, use resources more wisely, and improve overall company performance.

Human Resource Management System (HRMS)

A Human Resource Management System (HRMS) is software that helps manage human resources in a company. It helps HR teams automate and handle employee data, payroll, hiring, training, benefits, performance reviews, and other HR tasks. Using an HRMS makes HR work easier, helps managers make better decisions, and improves employee satisfaction.

Key Functions of HRMS

1. **Employee Data Management:**

- Stores all employee records like personal info, job history, and work status in one place.
- Makes it easy to access and update employee details.

2. **Recruitment and Hiring:**

- Automates job postings, tracking applications, and managing candidates.
- Helps with interviews, job offers, and onboarding new employees.

3. **Payroll and Compensation Management:**

- Automates salary processing, tax calculations, and benefits management.
- Ensures following labor laws and tax rules.

4. **Attendance and Time Management:**

- Tracks attendance, leave requests, and work hours.
- Helps manage overtime, paid leave, and work schedules.

5. **Performance Management:**

- Supports performance reviews, goal setting, and feedback.
- Helps monitor employee performance over time.

6. **Training and Development:**

- Manages training schedules, enrollment, and progress.
- Tracks skill development and certifications.

7. **Benefits Administration:**

- Manages employee benefits like health insurance and retirement plans.
- Automates benefits enrollment and management.

8. **Compliance and Reporting:**

- Makes sure the company follows employment laws and rules.
- Creates reports for audits, workforce planning, and decision-making.

Example:

A company can use an HRMS to manage everything about employees—from hiring, attendance tracking, payroll, to performance reviews. For example, the system can remind HR when employee certifications need renewal or when to process payroll.

Benefits of HRMS

- **Efficiency:** Automates regular HR tasks, so there is less manual work.
- **Accuracy:** Reduces mistakes in payroll, benefits, and employee information.
- **Improved Decision-Making:** Gives real-time data to help plan HR strategies better.
- **Employee Self-Service:** Lets employees see their records, update info, and apply for leave easily.

An HRMS is very important for organizations to manage their employees well and make sure HR activities support the company's goals.