DATA AND INFORMATION,

INFORMATION SYSTEM

AND ITS TYPES

WHY IS IT IMPORTANT TO LEARN ABOUT DATA AND INFORMATION

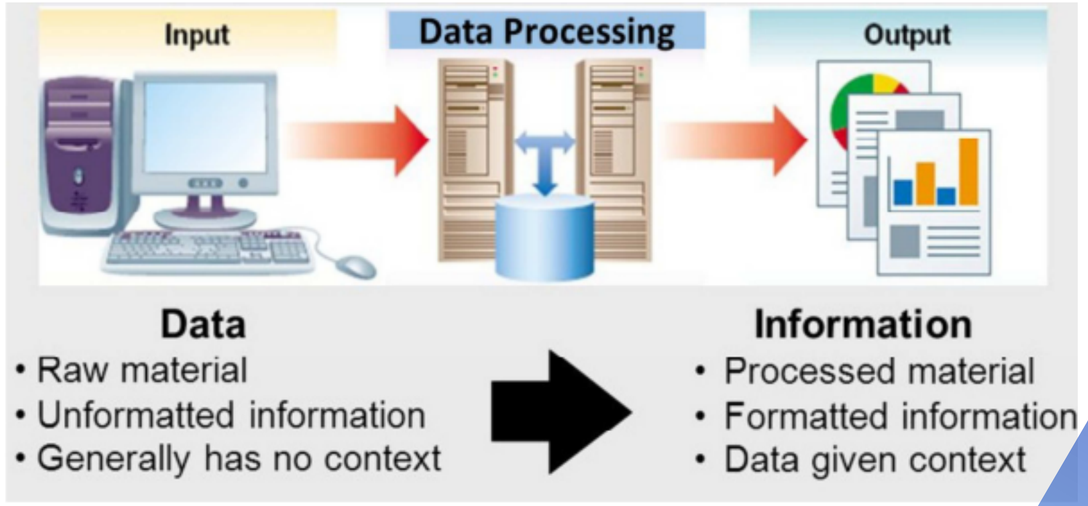
It’s important to learn the differences between data and information because each term can provide valuable pieces needed to complete research or analysis. While data can supply raw figures, information can help you apply context to draw meaningful conclusions. Understanding the differences guarantees that you use each figure to its fullest potential and apply the necessary context or analysis.

DATA

- Data is a collection of raw, unorganised facts and details like text, observations, figures, symbols and descriptions of things etc.
- It is also present in the form of a set of a number of variables.
- data is measured in terms of bits and bytes – which are basic units of information in the context of computer storage and processing.

INFORMATION

- Information is processed, organised and structured data. It provides context for data and enables decision making.
- The comprehensible output derived from raw data helps inform decisions, strategies, and actions. Information is essentially data made valuable and accessible—an integral component of decision-making.



DIFFERENCE BETWEEN DATA AND INFORMATION

DATA	INFORMATION
Are the variables that help to develop ideas/conclusions.	Information is meaningful data.
Are text and numerical values.	Is refined form of actual data.
Doesn’t rely on Information.	Relies on data
Bits and Bytes are the measuring unit of data.	Is measured in meaningful units like time, quantity, etc.
Does not have any specific purpose	Assigned by interpreting data.
Does not directly help in decision making.	Directly helps in decision making.
Is a collection of facts, which itself has no meaning.	Information puts those facts into context.
Example of data is student test scores.	Example of information is average score of class that is derived from given data.

INFORMATION SYSTEMS

What is an information system?

An information system (IS) is an interconnected set of components used to collect, store, process and transmit data and digital information. At its core, it is a collection of hardware, software, data, people and processes that work together to transform raw data into useful information. An IS supports a variety of business objectives such as improved customer service or increased efficiency.

How does an information system work?

An IS is a powerful tool that can bring many different functions together. By connecting system components, it enables IT departments to collect, store and process information in an efficient way and distribute it for a variety of purposes. The system can also produce reporting in different formats and to a variety of devices.

The effectiveness of an IS depends on its alignment with the organization's goals, reliability, security and usability.

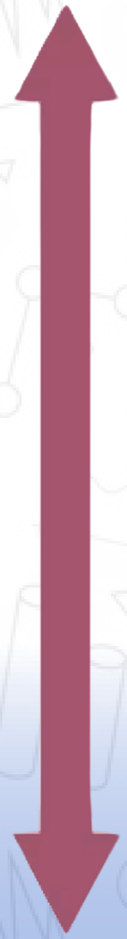
The basic process an IS follows includes the following steps:

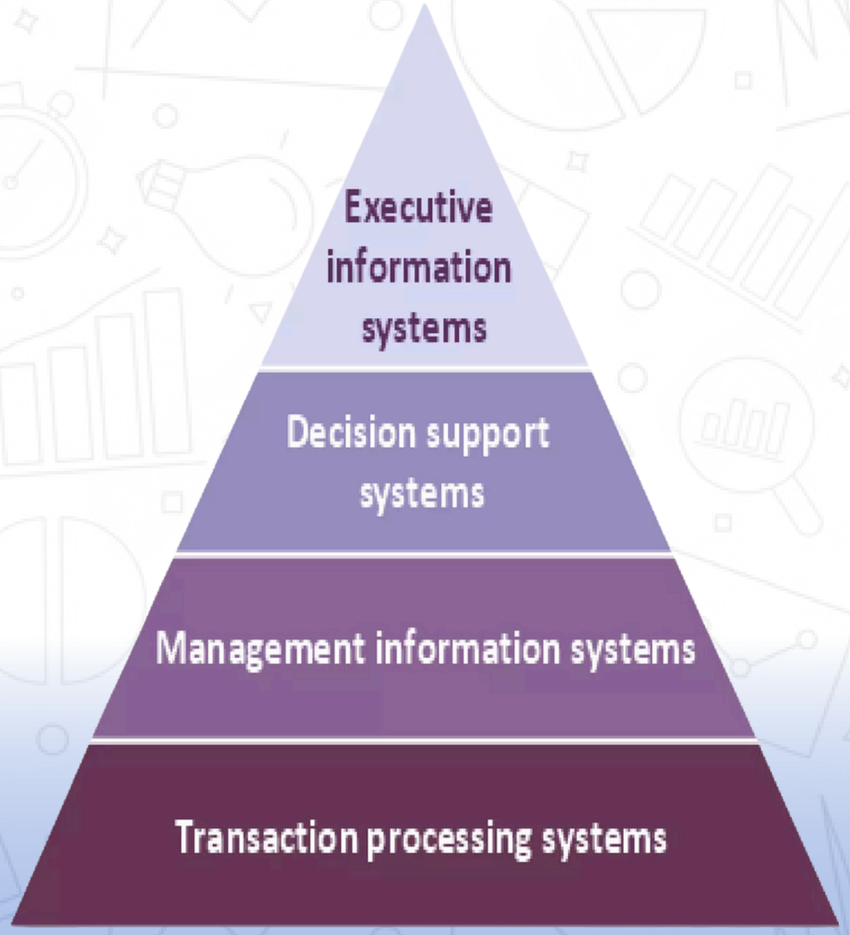
- Input - The system collects data and information from various sources, such as sensors, keyboards, scanners or databases.
- Processing - The system transforms the raw data into meaningful information by applying various operations, such as sorting, classifying, calculating, analyzing or synthesizing.
- Storage - The system stores the processed information in a structured and secure way, such as in a database, a file system or in cloud storage.
- Output - The system presents the information to the users in a usable format, such as reports, graphs, charts or dashboards.
- Feedback - The system collects feedback from users and other stakeholders to evaluate its performance and improve its design and functionality.

Types of Information Systems

Businesses can optimize their operations with four types of IS.

- **Executive information systems (EIS)**
- **Decision Support Systems (DSS)**
- **Management Information Systems (MIS)**
- **Transaction Processing Systems (TPS)**





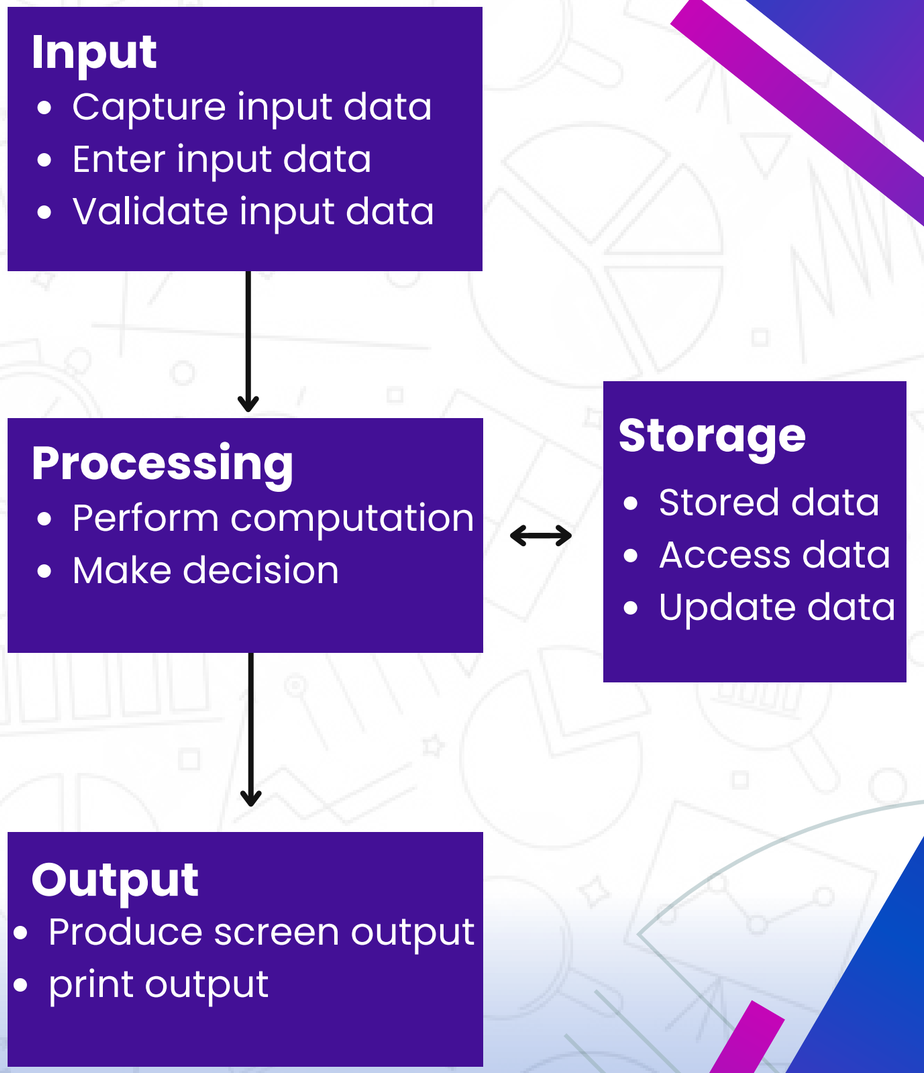
Transaction Processing Systems

What is Transaction Processing Systems (TPS)?

Is a type of data management information-processing software used during a business transaction to manage the collection and retrieval of both customer and business data.

FOUR COMPONENTS OF TPS

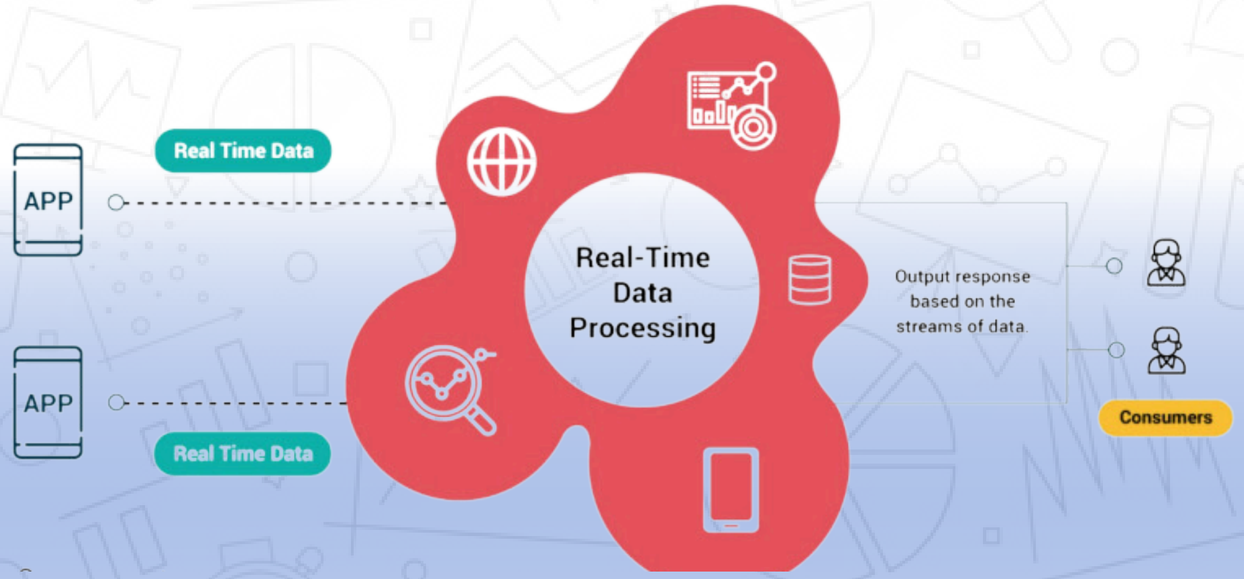
Inputs	Outputs	Processing	Storage
Any number of transactions—including invoices, bills, coupons and other types of orders like a purchase order	Can generate a variety of use-case-specific outputs ranging from cash flow reports to receipts, and it can be utilized for record-keeping, data analysis, tax reporting and other official business purposes.	Reads the input, completes any data modifications or updates, and creates a useful output, such as a confirmation of sale or inventory report.	Refer to physical data storage hardware, an average TPS will also create easily navigable directories for storing both input and output data, typically in some form of database.



Types of Transaction Processing Systems

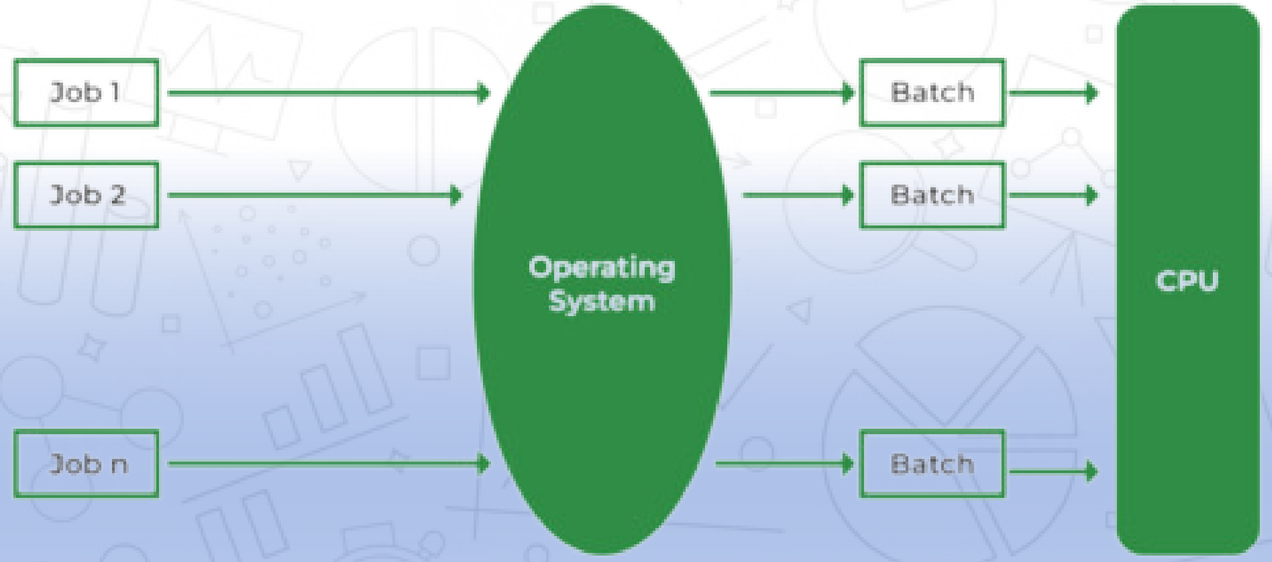
Real-time processing

Offers faster response times and better accuracy, but it can be more expensive to implement and maintain.

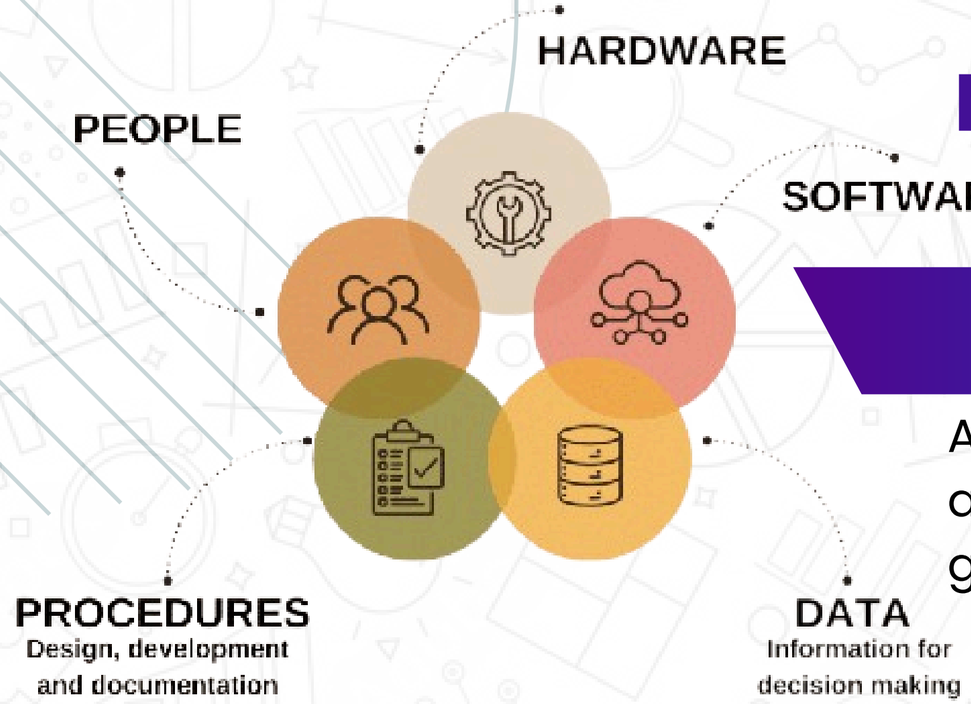


Batch processing

iis more cost-effective for non-critical tasks but may result in delays in processing and updating data



Management information systems (MIS)



What is Management Information Systems?

Are the processes organizations have in place to gather, analyze, and organize essential information. They're used to generate valuable reports that inform decision-makers.

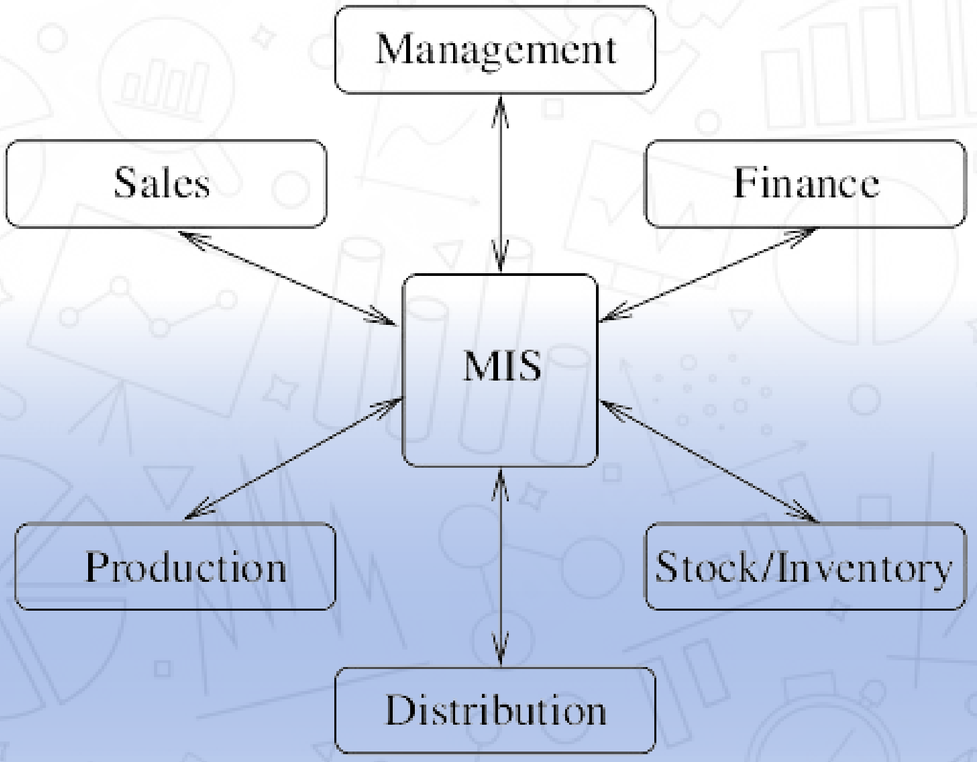
FIVE KEY COMPONENTS OF MIS

- People: The people who use the information system or will use it in the future are vital to every MIS.
- Data: These systems are fueled by data. Some data is gathered manually, whereas other bits of information are gathered automatically through digitized processes.
- Business procedures: Specific operations determine how information will be collected, recorded, analyzed, and stored.
- Hardware: System hardware includes all the tangible equipment used to gather, store, transmit, and analyze data.
- Software: Software programs designed to handle a constant data flow. There will likely be multiple programs in play, with programs meant for compiling data and transmitting info, all working together toward a common goal.

FUNCTIONS OF MIS

DATA PROCESSING REQUIREMENT

Inputs	Processing	Outputs
Internal transactions Internal files Structured data	Sorting Merging Summarizing	Summary reports Action reports Detail reports

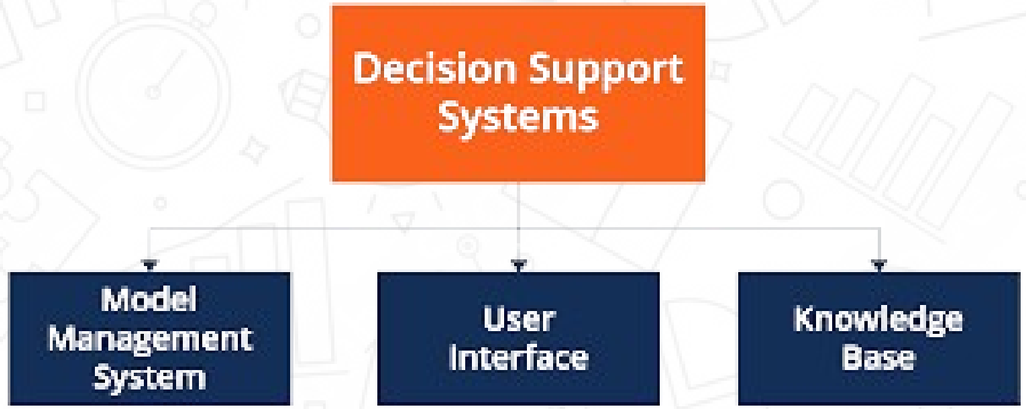


Decision Support Systems (DSS)

What is Decision Support Systems (DSS)?

Are computer-based systems that support knowledge workers, such as researchers and analysts by helping them create reports and presentations.

- Refers to systems which support the process of decision-making dealing with unstructured problems
- May be defined as the “what-if” approach that assists management in formulating policies and projecting the likely consequences of decisions
- Considered as an extension of MIS
- An effective blend of human intelligence, information technology and software
- Provides strategic information



3 COMPONENTS OF DSS

01

Model Management System

The model management system S=stores models that managers can use in their decision-making. The models are used in decision-making regarding the financial health of the organization and forecasting demand for a good or service.

02

User Interface

The user interface includes tools that help the end-user of a DSS to navigate through the system.

03

Knowledge Base

The knowledge base includes information from internal sources (information collected in a transaction process system) and external sources (newspapers and online databases).

FUNCTIONS OF DSS

Inputs	Processing	Outputs
Internal transactions Internal files External Information	Modeling Simulation Analysis Summarizing	Summary reports Forecasts Graphs/Plots

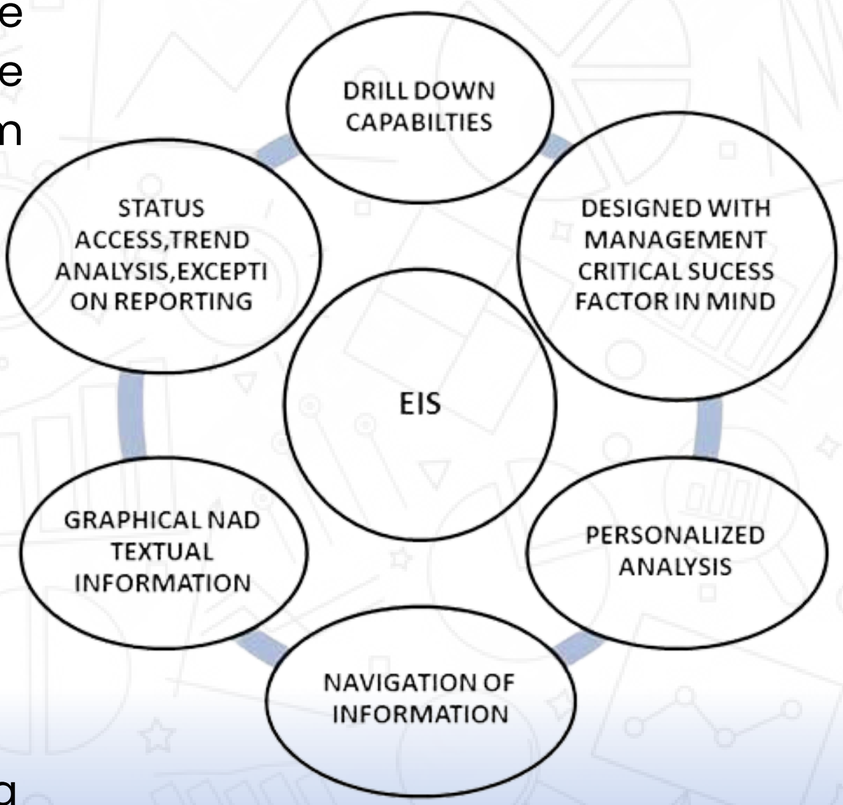
COMPARISON BETWEEN MIS AND DSS

MIS	DSS
Focuses on structured task	Focuses on semi-structured tasks
Emphasis on data storage	Emphasis on data manipulation
Data is often accessed indirectly by managers	Data is accessed directly by managers
Places emphasis on efficiency of decision	Places emphasis on effectiveness of decision
Provides tactical information to top management to take decisions	Provides strategic information
Need is regular and recurring	Need is irregular

Executive Information System (EIS)

What is Executive Information System (EIS)?

Are strategic-level information systems that are found at the top of the Pyramid. They help executives and senior managers analyze the environment in which the organization operates, to identify long-term trends, and to plan appropriate courses of action.



- Specialized form of DSS
- Used by top-level managers
- Reduce the information overload on executives
- Makes use of internal and external information
- Provides managers and executives flexible access to information for monitoring operational results and general business conditions
- Provides a comprehensive picture of business performance by analyzing key performance indicators for growth
- Meets strategic information needs of the top management
- Also known as Executive Support System

4 COMPONENTS OF EIS

USER INTERFACE

allows the users to communicate with the EIS. Users should not be required to understand the complex query languages and other mathematical or statistical formulas.

HARDWARE

Refers to devices by which users give input, data processing and the output is received. Users may give input via keyboard and mouse and CPU may be used for processing and output may be received on monitor or from printer.

SOFTWARE

providing graphical view to the management, storing data in the form of Information, etC.. Also allows user to get information in the form it is actually required.

TELECOMMUNICATION

Users may require transferring information from one point to another point. The information might be a little confidential in nature. The secrecy of the information should be well maintained.

FUNCTIONS OF EIS

Inputs	Processing	Outputs
External Data Internal Files Pre-defined models	Summarizing Simulation "Drilling Down"	Summary reports Forecasts Graphs/Plots

ANALYSIS

Based on my research about these 3 topics, First would be the data and information. Data is simply raw, unorganized facts, figures, or symbols, lacking meaningful structure or context. Data is also measured in terms of bits or bytes, which are just basic units of information but not information itself. Information is when the data is processed, refined, analyzed. It provides context for data. It is to provide actionable insights and to have strategic decision-making.

Second, would be the Information Systems. It is a combination of technology, a system used to manage and use data, a set of components for collecting, and storing. An IS is a powerful tool that can bring many different functions together. Also, it is a collection of hardware, software, and data. The system also helps people by providing information for making decisions and running daily operations smoothly.

Third, we have the different types of support systems in Information System. Listed at the very bottom at the pyramid would be Transaction Processing System, a type of data management information, used for business transaction that handles day to day activities by processing transaction quickly and accurately. Next is Management Information Systems, helps managers make better decisions by summarizing important data, providing useful and organized essential information.

ANALYSIS

Collects data from different sources, such as sale reports. This way, managers can quickly see trends, track performance, and make smart decisions to help the business run better. Then we have Decision Support Systems, assists the mid and high-level management by analyzing unstructured data and provide timely relevant information. aids in decision-making that require judgement, determination, and a sequence of actions, integrates data, models, and analytical tools to solve complex problems. Lastly, at the top, we have Executive Information Systems. It is designed to give top managers a quick and clear overview of a company or an organization's performance. Used to assist executives and senior managers in the decision-making process, provides key information and high-level summaries. Helps leaders stay informed and focused on important business issues.

Finally, data and information serve as the foundation of Information Systems, which are critical for effective managing and utilizing data in the organizations. These frameworks of support systems improve decision-making processes and operational efficiency while providing to specific needs and levels within an organization. Understanding and implementing these systems can result in significant improvements in performance, strategic planning, and competitive advantage.

REFERENCES

Sanjay, J. (2023). What is Data vs. What is Information

https://bloomfire.com/blog/data-vs-information/

Christine, R. et al., (2024). Data vs. Information: What's the Difference?

https://www.getguru.com/reference/what-is-data-vs-information

Stephen, R. (2022) What is the difference between data and information?

https://blog.hubspot.com/marketing/difference-between-data-and-information

Difference Between Data and Information

https://byjus.com/biology/difference-between-data-and-information/

Ican (2019). DATA AND INFORMATION

https://portal.abuad.edu.ng/lecturer/documents/1554208765DATA_AND_INFORMATION.pdf

Rita, Z. (2023) What is the difference between data and information?

https://www.sweephy.com/blog/what-is-the-difference-between-data-and-information

Katherine, W. et al. (2023). Information Systems | Definition, Concepts & Examples

https://study.com/learn/lesson/information-systems-examples-types.html

Zwass, V. (2024). information system. Encyclopedia Britannica.
https://www.britannica.com/topic/information-system
Sritoma, M. (2024). What is Information System? Definition, Examples, & Facts
https://emeritus.org/in/learn/information-system/
Luke, S. (2022). What is information systems? Definition, uses, and examples
https://zapier.com/blog/what-is-information-systems/
Valacich, J. and Schneider, C. (2010). Information Systems Today – Managing in the Digital World
https://www.academia.edu/40499212/Information_Systems_Today_Managing_the_Digital_World_Global _Edition
Sharma, V. (2020). Types of Information Systems
https://www.srcc.edu/sites/default/files/TYPES_OF_INFORMATION_SYSTEMS.pdf
Coursera Staff (2024). What Is Management Information Systems (MIS)?
https://www.coursera.org/articles/management-information-system
Naik, S. and Rathore, R. (2023) Management Information System(MIS)
https://www.educba.com/mis/
Maylshev, A. (2024). What Is a Transaction Processing System: Definition, Types, and Benefits
https://sdk.finance/what-is-a-transaction-processing-system-definition-types-and-benefits/

Scheider, J. and Smalley, I. (2024). What is a transaction processing system (TPS)? https://www.ibm.com/topics/transaction-processing-system

Bhattacharyya, R. and Vaidya, D. (2024). Transaction Processing System https://www.wallstreetmojo.com/transaction-processing-system/

Segal, T. (2024). Decision Support System (DSS): What It Is and How Businesses Use Them https://www.investopedia.com/terms/d/decision-support- system.asp#:~:text=A%20decision%20support%20system%20(DSS)%20is%20a%20computerized%20program%20used,problems%20and%20in%20decision%2Dmaking.

Er, M.C (1988) Decision Support Systems: A summary, problems, and future trends https://www.sciencedirect.com/science/article/abs/pii/016792368890022X

Rouse, M. (2022). Executive Information System https://www.techopedia.com/definition/1016/executive-information-system-eis

Techslang (2022). What is an Executive Information System? A short definition of Executive Information System https://www.techslang.com/definition/what-is-an-executive-information-system/

Dhoot, R. (2024). Executive Information System: Components, Advantages https://www.caknowledge.in/executive-information-system/#COMPONENTS_OF_EIS