UNIT -3

Section-A

1. Components of DSS.

Following are the components of the DSS:

Data management sub system: Data management sub system includes a database that contains relevant data for the situation and is managed by software called Database management system (DBMS).

Data management sub system is composed of the following elements:

- DSS database
- Database management system
- Data directory
- Query facility

Model management sub system: this is a software packages that includes financial, statistical, management science or quantitative models that provide the systems analytical capabilities and appropriate software management

Model management sub system is composed of the following elements:

- Model
- Model base management system
- Modelling language
- Model directory
- Model execution, integration and command processor.

User interface sub system: the user communicates with and commands the DSS through the sub system. The user is considered part of the system.

Knowledge base management sub system: this sub system can support any of the other sub systems or act as an independent component.

1. Role of DSS in business.

2. The roles of DSS are as follows:

- **What if analysis**: in what if analysis an end user makes changes to variables or relationships among variables and observes the resulting changes in the values of other variable.
- **Goal oriented**: it is a process of determining the input values required to achieve a certain goal.
- **Risk analysis**: risk is important factor which affects the business enterprises. It can be classified as low, medium and high risk. A DSS is particularly useful in medium risk and high risk environments.
- **Model building**: DSS allows decision markets to identify the most appropriate model for solving the problems.
- **Graphical analysis**: this helps managers to quickly digest larger volumes of data and visualize the impact of various courses of action. They recommend the use of graph when:
    - Seeking a quick summary of data.
    - Forecasting activities
    - Detecting trends overtime
    - Composing points and patterns at different variables.

3. Applications of DSS?

Application of a DSS can be classified into following three categories:

- **Independent problems**- the independent problems are "Standalone problems" whose solutions are independent of other problems. The goal is to find the best solution to the given problem.
- **Interrelated problem**- in interrelated problems solutions are interrelated by each other to find the most effective solution to the group of interrelated problem. These types of problems usually require team effort.
- **Organisational problems**- in Organisational problems all departments within an organisation are included. Such problem required team effort. TQM is a good example of an organisational effort because for it to be effective it requires a joint effort from all departments units in the organisation.

4. Capabilities of Executive Support System (ESS)?

An effective ESS should have the following capabilities:

- Support for defining an overall vision: one of the key roles of senior executive is to provide a broad vision for the entire organisation.
- Support for strategic planning: EIS also support strategic planning. It is also planning the acquisition of new equipment, analyzing merger possibilities and making difficult decisions concerning downsizing and the sale of assets if required by unfavourable economic conditions.
- Support for strategic organizing and staffing: top level executive are concerned with organisational structure .overall direction for staffing decisions and effective communication with labour unions are also major decision areas for top level executives.
- Support for strategic control: another type of executive decision relates to strategic control, which involves monitoring and managing the overall operation of the organisation.
- Support for crisis management: even with careful strategic planning a crisis can occur. Major disasters, include hurricane, tornadoes, floods, earthquakes, fires and terrorist activities can totally shut down major parts of organisation.

5. Advantages and Disadvantages of EIS.

Advantages:

- Ability to analyze trends
- Augmentation of managers leadership capabilities
- Enhanced personal thinking and decision making
- Contribution to strategic control flexibility
- Ease access to existing information
- Instruments of change
- Better reporting system
- Better understanding of enterprise operations.

Disadvantages:

- Functions are limited cannot perform complex calculations.
- Hard to quantify benefits and to justify implementation of an EIS.
- Executives may encounter information overload.
- System may become slow, large, and hard to manage.
- Difficult to keep current data.
- May lead to less reliable and insecure data.
- Small companies may encounter excessive costs for implementation.

Section-B

1. Decision support systems (DSS).

Meaning:

The term DSS refers to a class of systems, which supports the process of making decisions. The Emphasis is on "support" rather than on automation of decision. DSS allow the decision maker to retrieve data and test alternative solutions during the process of problem solving.

Definition:

According to Scott Morton, "DSS as interactive computer based systems, which help decision makers utilize data and model to solve unstructured problems".

Examples of DSS:

- Group DSS
- Computer support Co-operative work
- Logistics systems
- Financial planning system

Characteristics of decision support systems:

- **Provide rapid access to information:** some DSS provides fast the dashboard of a car or truck are used to see how the vehicle is running.

- **Handle large amount of data from different sources:** advanced database management systems and data warehouses have allowed decision makers to search for information with a DSS even when some data resides in different databases on different computer systems or network.
- **Provide report and presentation flexibility:** managers can get the information they want presented in a format that suits their needs. Produce text, tables, line drawings, pie charts, trend lines, and more.
- **Support drill down analysis:** a manager can get more levels of detail when needed by drilling down through data.
- **Perform complex, sophisticated analysis and comparisons using advanced software packages:** marketing research surveys.

2. Classification of DSS and steps in constructing a DSS:-

Classification of DSS:

- **File drawer systems:** these allow immediate access to data item. They are basically online mechanized versions of manual filing systems.
- **Data analysis systems:** these allow the manipulation of data by means of either analysis operations tailored to the task or setting or general analysis operations.
- **Analysis information systems:** these provide access to a series of data base and small models.
- **Accounting models:** these calculate the consequences of planned actions on the basis of accounting definitions. They typically generate estimates of income, balance sheets, etc., based on variation in input values to the definitional formulas.
- **Representational models:** these estimate the consequences of action on the basis of models that represents some non-definitional characteristics of the systems such as probabilities of occurrence.
- **Optimization models:** these provide guidelines for action by generating the optimal solution consistent with a series of constraints.
- **Suggestion models:** these compute a specific suggested decision for a fairly structured and repetitive decision.

Steps in constructing a DSS:

- Choosing the project or problem to be solved.
- Selecting hardware and software.
- Data acquisition and management.
- Model subsystem acquisition and management.
- Dialogue subsystem and its management.
- Knowledge component.
- Packaging.
- Testing, evaluation and improvement.
- User training.
- Documentation and maintenance.
- Adaptation.

3. Advantages and Disadvantages of DSS:-

Advantages:

- **Improving personal efficiency:** many DSS do not do anything. A person could not do himself or herself. People prepared budgets for centuries before spreadsheet software came in to use. DSS help them do it faster and with less change of error.
- **Improving problem solving:** a DSS can make it possible for a person or a group to solve problem faster or better, than they could without it.
- **Facilitating communications:** after found that DSS facilitating interpersonal communication in several ways. In addition technology developments that have occurred since his or her research have opened up for DSS to provide this benefit.
- **Promoting learning or training:** using a DSS can also help people learned more about using computers and about software package that are in the DSS although this is seldom a specific objective of developing the DSS it can be valuable by project.
- **Increasing organisational control:** some DSS can also control information about an individual's decision to his or her managers.

Disadvantages:

- **Limited storage capability:** due to its small memories and limited storage capabilities, DSS has definite computational constraints.
- **Slow:** it is slow compared to the speed of large mainframes.
- **Limited information sharing:** most DSSs are designed for individual use but they can be designed so that several computers can be linked for limited information sharing.
- **Difficult:** it is difficult to know interdependencies of functions provided by system.
- **Require extensive knowledge:** there are applications that require extensive knowledge of specific problem domain or technical knowledge.
- **Translation problems:** users have to deal with several databases and model each with different data models and resulting translation problems.
- **Confliction:** users may have to work on several decision scenarios at same time. As a consequence they have to keep track of what they done for each of them.

4. Executive information system (EIS) and its characteristics.

Meaning:

ESI are information systems that combine many of the features of MIS and DSS. When they were first developed their focus was on meeting the strategic information needs of top management. In some cases and EIS also called executive support system.

Definition:

According to Matthews and Shoe Bridge, "EIS is a computer based information delivery and communication system designed to support the needs of top executives".

Characteristics of EIS:

The main characteristics of EIS are as follows:

- **Drill down capabilities**: This capacity of an EIS allows the executives look for details on any specific information. Each level of detail that is accessed by the user may involve submenus if the system is menu driven.

- **Designed with management critical success factors in mind**: every organisation has certain critical factors that are important for achieving the organisational goals.
- **Status access, trend analysis, and exception reporting**: this feature allows executives to access the current executives to examine. The timing and relevance of information is very important.
- **Personalized analysis**: This capability of an EIS allows executives to use built in functions to analyze problematic situations.
- **Navigation of information**: This feature allows the executives to access large amounts of data in a quick and efficient manner.

5. EIS critical success factors.

- **A committed and informed executive sponsor**: a top level executive, preferable the CEO should serve as the executive sponser of the EIS by encouraging its implementation.
- **An operating sponsor**: the executive sponcer will most likely be too busy to devote much time to implementation.
- **An appropriate information services staff**: information specialist should be available who understand not only the information technology but also how the executive will use the system.
- **Appropriate information technology`**: EIS implements should not get carried away and incorporate unnecessary hardware and software.
- **Data management**: it is not sufficient to simply display the data or information. the executive should have some idea of how current the data is.the analysis can be accomplished by drill down by following up with data managers or both.
- **A clear link to business objectives**: most successful EIS are designed to solve specific problems or meet needs that can be addressed with information technology.
- **Management of organisational resistance**: when an executive resists the EIS efforts should be taken to gain support. A good strategy is to identify a single problem that the executive faces and then quickly implement an EIS using prototyping to address that problem.

- **Management of the spread and evolution of the system**: experience has shown that when upper level management begins receiving information from the EIS lower level managers want to receive the same output.