



Computer Application And Management Information System **MB 402**

UNIT V – **Management Information System (MIS)**

✉: bobbyban29@gmail.com

☎: 95 76 71 28 45

Shamit Sarkhel, Guest Faculty

Department of Applied Economics & Commerce

April 15, 2020

Decision Support System

Period : 04 (1hr.)



DSS - Definition

- The term, decision support system refers to
 - *A class of systems, which support the process of decision making. The emphasis is on support rather than on automation of decisions. It allows the decision maker to retrieve data and test alternative solutions during the process of problem solving.*
- DSS can also be defined as
 - *A set of well integrated, user friendly, computer based tools that combine data with various decision making models — qualitative and quantitative — to solve semi-structured and unstructured problems.*



DSS - characteristics

- It must assist the decision maker in the decision making process.
- It should be capable to solve semi structured and unstructured problems.
- It must support decision makers at all levels, especially at the tactical and strategic levels.
- It should be capable to adapt into general purpose models, have simulation capabilities and other analytical tools required by the decision maker.
- It must be interactive, user friendly system that can be used by the decision maker with little or no assistance from an MIS professional.



DSS - characteristics

- It should be readily adapted to meet the information requirements for any decision environment.
- It must provide the mechanisms to enable a rapid response to a decision makers request for information.
- It should have the capability to interface with the corporate database.
- It must be flexible to be executed independent of pre-established production schedule.
- It must be flexible enough to accommodate a variety of management styles.
- It must facilitate communication between different levels of decision making.



DSS - Types

- **Status Inquiry systems** : The number of decisions in the operational management and some at the middle management are such that they are based on one or two aspect of a decision making situation. It does not require any elaborate computations, analysis, choice etc., for decision making. If the status is known, the decision is automatic, i.e., status and solution has a unique relation.
- **Data analysis systems** : These decision systems are based on comparative analysis and makes use of a formula or an algorithm. But, these processes are not structured and therefore, may vary. The cash flow analysis, inventory analysis and the personnel inventory systems are examples of this type of analysis system. The use of simple data processing tools and business rules are required to develop this system.



DSS - Types

- **Information analysis system** : In this system, the data is analysed and the information reports are generated. The reports might be having some exceptions as a feature. The decision makers use these reports for assessment of the situation for decision making. The sales analysis, accounts receivables system, market research analysis are examples of such systems.
- **Accounting Systems** : These systems are not necessarily required for decision making but they are desirable to keep track of the major aspects of the business or a function. The content of these systems is more of data processing, which leads to formal reporting, with exceptions if necessary, These systems account, items such as cash, inventory, personnel and so on, and relate it to norms developed by the management for control and decision making.



DSS - Types

- **Model based systems** : These system are simulation models or optimization models for decision making. These decisions, generally are one time and infrequent, and provide general guidelines for operation or management. The product decision, mix decision, material mix, job scheduling rules, resource or asset or facilities planning systems are the examples.



DSS - Components

- **Database Management Systems** : To solve a problem, the necessary data may come from internal or external databases. In an organisation, internal data are generated by systems such as Transaction Processing System and MIS; whereas, external data come from a variety of sources such as newspapers, online data services, other databases such as financial, marketing, manufacturing, human resource etc. Some examples of external data are government regulations, tax codes, census figures, competitors, market shares, economic indicators, interest rates, and inflation. The data in the DSS database are managed by the DBMS, which facilitates compilation of data, manipulation of data, data generation, data updating, data maintenance and dissemination of data.



DSS - Components

- **Model Management Systems** : Model management system stores and accesses models that managers use to make decisions.
- Such models are used for designing a manufacturing facility, analysing the financial health of an organisation, forecasting demand for a product or service and determining the quality of a particular batch of products.
- Although most models are quantitative, decision makers use qualitative models also to make decisions.
- The model builder, a component of many model bases, provides a structured framework for developing models by helping decision makers identify the variables and the interrelationships among the variables in the model.



DSS - Components

- A model builder creates, identifies, processes, stores, updates, and maintains different decision making models and ensures that these models are consistently applied when decisions are made. The model builder also contains a model dictionary for consistency in the definitions and uses of models. Some models that decision makers use to make decisions are: statistical models, production models, marketing models, human resource models, financial and accounting models, and strategic models. These models are extensively used in different functional areas of a business.



DSS - Components

- **Support Tools** : Support tools like *graphical user interfaces with online help & pull down menus, other user interfaces, graphical analysis, error correction or debugging mechanisms*, facilitate the user interactions with the system. Interfaces are an important support tool especially in the case of a DSS. Better the interface, the greater will be the chances of system being accepted by the user. Although managers recognise the power and potential of DSS, the main problem to its adoption is a lack of people with training in computer technologies. In such an environment, good interfaces are key to the success of the system.



DSS - Functions

- **Model building** : This allows decision makers to identify the most appropriate model for solving the problem on hand. It takes into account input variables, interrelationships among the variables, problem assumptions and constraints. For example, a marketing manager of a television manufacturing company is charged with the responsibility of developing a sales forecasting model for colour TV sets. A model builder uses a structured framework to identify variables like demand, cost and profit, analyse the relationships among these variables, identify the assumptions, if any (e.g., assume the prices of raw materials will increase by 5% over the forecasting period), and identify the constraints like the production capacity of the plant. All this information is then integrated by a system into a decision making model, which can be updated and modified whenever required.



DSS - Functions

- 'What-if' analysis : It is the process of assessing the impact of changes to model variables, the values of the variables, or the interrelationships among variables.
- This helps managers to be proactive, rather than reactive, in their decision making. This analysis is critical for semi-structured and unstructured problems because the data necessary to make such decisions are often either not available or incomplete.
- Hence, managers normally use their intuition and judgment in predicting the long-term implications of their decisions. Managers can prepare themselves to face a dynamic business environment by developing a group of scenarios (best-case scenario, worst-case scenario and realistic scenario).



DSS - Functions

- **Goal seeking** : It is the process of determining the input values required to achieve a certain goal. For example, house buyers determine the monthly payment they can afford (for example, Rs. 5,000) and calculate the number of such payments required to pay the desired house.
- **Risk analysis** : It is a function of DSS that allows managers to assess the risks associated with various alternatives. Decisions can be classified as low risk, medium risk, and high risk. A DSS is particularly useful in medium risk and high risk environments.



DSS - Functions

- **Graphical analysis** : This helps managers to quickly understand large volumes of data and visualize the impacts of various courses of action.
- S L Jarvenpaa and G W Dickson studied the relative advantages and disadvantages of tabular and graphic output. They recommended the use of graphs when:
 - Seeking a quick summary of data,
 - Detecting trends over time,
 - Comparing points and patterns at different variables,
 - Forecasting activities and
 - Seeking relatively simple impressions from a vast amount of information.
- The researchers suggested that a tabular presentation be used when it is necessary to read individual data values.