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Decision Support System

Mrs. SatvirKaur
Assistant Professor In Commerce
Swami Ganga GiriJanta Girls College, Raekot

Abstract: DSS is an interactive, flexible and adaptable computer based information system, especially developedfor supporting the solution of a management problem for improved decision-making. It utilized data, provides an easy-to-use interface and allows for the decision maker's own insights. A DSS lets users sift through and analyze massive reams of data and compile information that can be used to solve problems and make better decisions.The benefits of decision support systems include more informed decision-making, timely problem solving and improved efficiency for dealing with problems with rapidly changing variables.

Keywords: Meaning of DSS, types of Decisions, classifications, benefits, components, types of DSS, workingprincipals of DSS.

I. Meaning of decision support system

Decision support systems (DSS) are interactive software-based systems intended to help managers in decision-making by combining data sophisticated analytical models and tools, and user- friendly software into single powerful system that can support semi-structure and unstructured decision making. The decision makers compile useful information from raw data, documents, personal knowledge, and/or business models to identify and solve problems and make decisions.

II. Types of Decision

There are two types of decisions - **programmed andnon-programmed decisions**.

Programmed decisions are basically automatedprocesses, general routine work, where:

i. These decisions have been taken several times.
ii. These decisions follow some guidelines or rules.

For example, selecting a reorder level for inventories, is a programmed decision.

Non-programmed decisions occur in unusual andnon-addressed situations, so:

i. It would be a new decision.
ii. There will not be any rules to follow.
iii. These decisions are made based on the available information.

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iv. These decisions are based on the manger's discretion, instinct, perception and judgment.

For example, investing in a new technology is a non-programmed decision.

Decision support systems generally involve non-programmed decisions. Therefore, there will be no exact report, content, or format for these systems. Reports are generated on the fly.

III. Characteristics of a DSS

- Support for decision-makers in semi-structured and unstructured problems.
- Support for managers at various managerial levels, ranging from top executive to line managers.
- Support for individuals and groups. Less structured problems often requires the involvement of several individuals from different departments and organization level.
- Support for interdependent or sequential decisions.
- Support for intelligence, design, choice, and implementation.
- Support for variety of decision processes and styles.
- DSSs are adaptive over time.

IV. Benefits of DSS

- Improves efficiency and speed of decision-making activities.

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- Increases the control, competitiveness and capability of futuristic decision-making of the organization.
- Since it is mostly used in non-programmed decisions, it reveals new approaches and sets up new evidences for an unusual decision.
- Helps automate managerial processes.

V. Components of a DSS

Following are the components of the Decision Support System:

1. **Database Management System (DBMS)**:DBMS maintains data. To solve a problem the necessary data may come from internal or external database. In an organization, internal data are generated by a system such as TPS and MIS. External data come from a variety of sources such as newspapers, online data services, databases (financial, marketing, human resources).it stores large quantities of data that are relevant to the class of problems for which the DSS has been designed and provides logical data structures with which users interact.

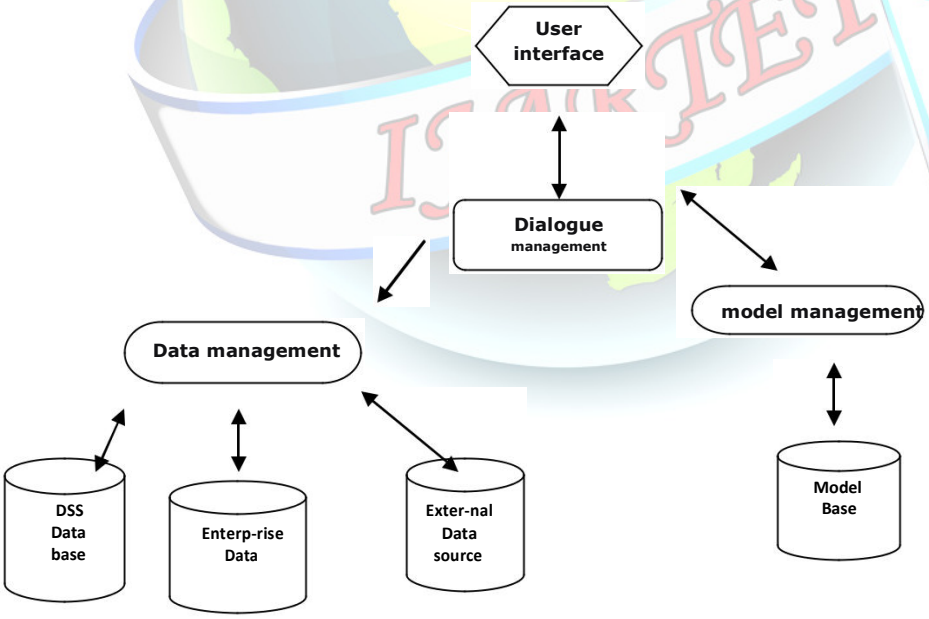

Fig.1. Components of DSS

- Facilitates interpersonal communication.
- Encourages learning or training.

2. **Model Base Management System (MBMS)**: It stores and accesses models thatmanagers use to make decisions. Such models are used for designing manufacturing facility, analyzing the financial health of an organization, forecasting demand of a product or service, etc. its main purpose to transform data form DBMS into information that is useful in decision making example: spread sheets, models, financial models, simulation.
3. **Dialogue management/ support tools (DGMS)** :

user interface with dialogue management component, which is a set of programs that manages the user interface and translates the user's request into commands for the other two components. Support tools like online help; pulls down menus, user interfaces, graphical analysis, error correction mechanism, facilitates the user interactions with the system.

VI. Classification of DSS

There are several ways to classify DSS. Hoi Apple and Whinstone classifies DSS as follows:

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1. **Text Oriented DSS:**
   It contains textually represented information that could have a bearing on decision. It allows documents to be Database plays a major role here; it contains organized and highly structured data.

3. **Spreadsheet Oriented DSS:**
   It contains information in spread sheets that allows create, view, modify procedural knowledge and also instructs the system to execute self-contained instructions. The most popular tool is Excel and Lotus 1-2-3.

4. **Solver Oriented DSS:**
   It is based on a solver, which is an algorithm or procedure written for performing certain calculations and particular program type.

5. **Rules Oriented DSS:**
   It follows certain procedures adopted as rules. Procedures are adopted in rules oriented DSS. Export system is the example.

6. **Compound DSS:**
   It is built by using two or more of the five structures explained above.

VII. Types of DSS

Following are some typical DSSs:

1. **Status Inquiry System:**
   It helps in taking operational, management level, or middle level management decisions, for example daily schedules of jobs to machines or machines to operators.

electronically created, revised and viewed as needed.

2. **Database Oriented DSS:**
2. **Data Analysis System:**
   It needs comparative analysis and makes use of formula or an algorithm, for example cash flow analysis, inventory analysis etc.

3. **Information Analysis System:**
   In this system data is analyzed and the information report is generated. For example, sales analysis, accounts receivable systems, market analysis etc.

4. **Accounting System:**
   It keeps track of accounting and finance related information, for example, final account, accounts receivables, accounts payables, etc. that keep track of the major aspects of the business.

5. **Model Based System:**
   Simulation models or optimization models used for decision-making are used infrequently and create general guidelines for operation or management.

6. **A DSS model working principle**
   Data from the organization, TPS and MIS application are input to the DSs software syatem models, along with data from the external sources and DSS model data. As started, the DSS may store and later reprocess its own model data as well. The user interact with the DSS online requests are made, model are created, or adjusted and data is manipulated. ,

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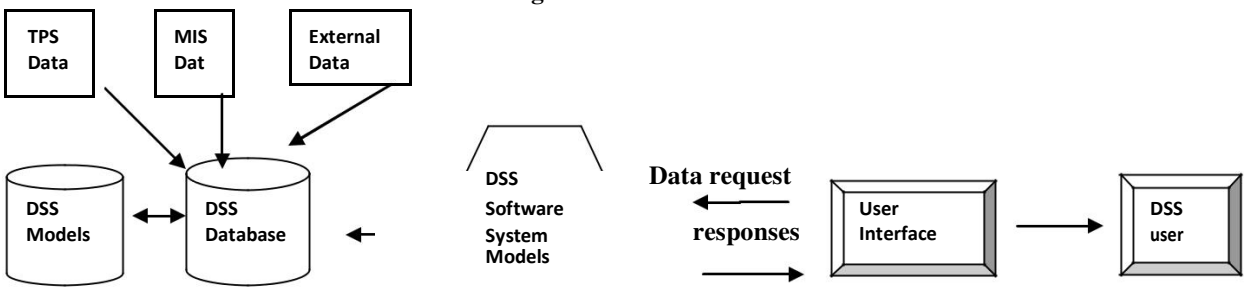
Fig.2. A Basic DSS Model



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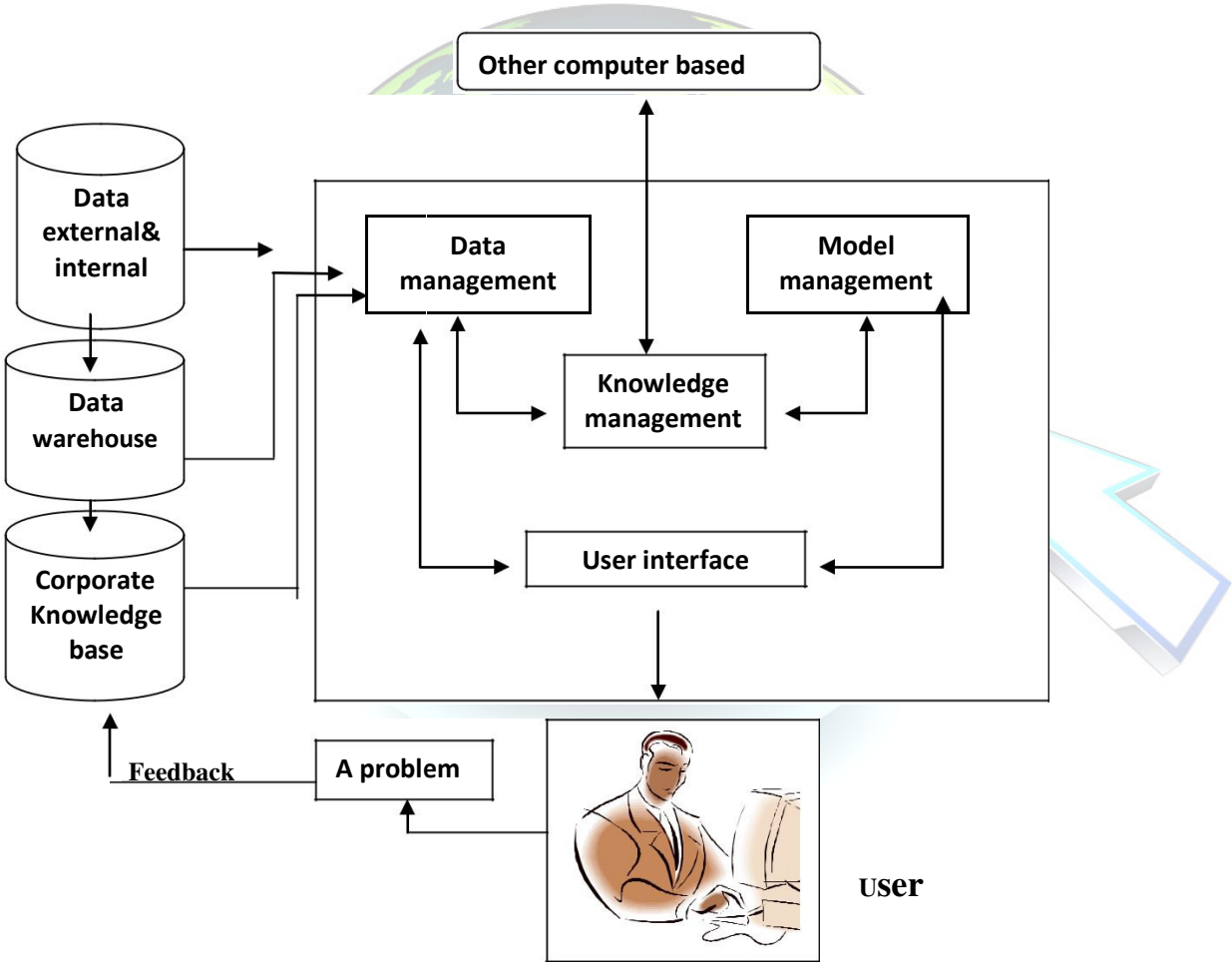
The outputs of the DSS program can be either text, structured reports or graphics. A variety of programs supported by DSS include spread sheet programs, personal database management system, model base management system, word processing packages, graphics generations, and other special purpose programs. DSS is better viewed as facilities having data and data manipulation tools than a formalized systems.

DSS is a coordinated collection of data, systems, tools and techniques with the necessary software and hardware through which an organization gathers and interprets relevant information from the business and the environment and then into information that can be Acted upon DSS's are a major category of managerial support systems. They are computer based information systems that provide interactive information.

VIII. How DSS works??



Fig,3

IX. Conclusion

Decision making is an important function of management. For quality of decision DSS help mangers to make decisions that are unique. DSS is effective information technology which helps to solve complex problems, DSS includes some of techniques and the DSS generators. So DSS represents a broad area and the scope of decision analysis.

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XII. Biography

Name: Mrs. SatvirKaur
Designation: Assistant professor
Department: Commerce
Qualification: M.com, B.ed, UGC (NET)