FORMAL INFORMATION SYSTEMS FOR MANAGEMENT SUPPORT

An organizational approach to take some of the luck out of getting the right information for decision making — for making individual knowledge explicit and sharing it across the organization — is to develop formal information systems to support managers.

Computer systems that can store and manipulate information provide a structured and accessible support for management decision making.

Here are descriptions of three kinds of systems in common use: management information systems (MIS), decision support systems (DSS) and executive support systems (ESS).

1. **Management information systems (MIS)**

Supports management decisions by providing information in the form of reports and responses to queries to managers at different levels within an organization.

The MIS database that provides the information to the manager comes from both inside and outside the organization, much of it from the data stored in transaction processing systems.

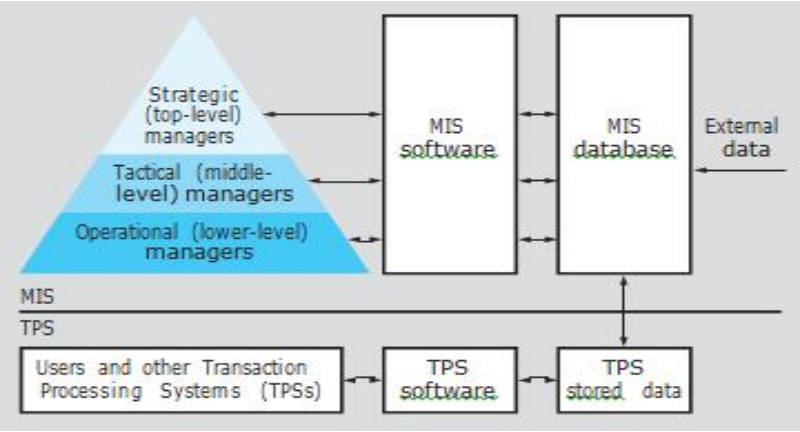

Figure 7. Structure of an MIS

Source: Nickerson (2001)

2. **Decision support systems (DSS)**

Helps managers by analyzing data from a database and providing them with the results, often in the form of statistical calculations or mathematical models.

It is used most often for decisions at tactical and strategic levels. The main system components are the DSS database that contains the data, and the model base which contains the mathematical models and statistical calculation routines that are used to analyze data from the database.

Decision support systems are often used in situations where decisions are unstructured or semi–structured, and are good for working through 'what if' scenarios to calculate the effects of different decisions on outcomes.

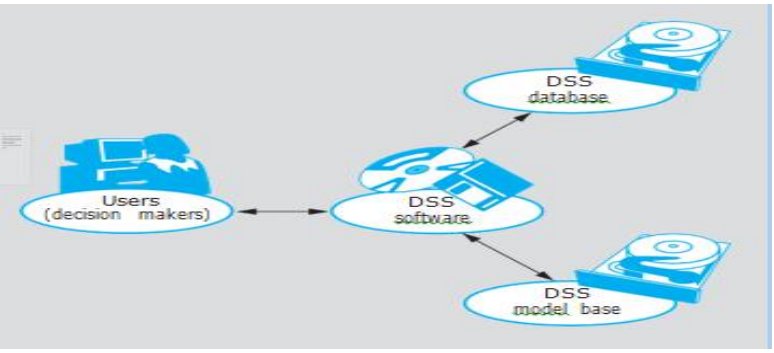

Figure 8. Structure of a DSS

Source: Nickerson (2001)

3. **Executive support systems (ESS)**

Also known as executive information systems, these are designed to support strategic business decisions. Although strategic decisions usually involve summarized information, there is often a need for a specific level of detail to pinpoint a particular problem.

For example, executives in an organization that is thinking of

selling off a failing subsidiary might want to try to discover where its failure lies: is it a particular market segment, a region, a product line? This will often require a drilling–down process to get from general information to highly specific data subsets.

The user of an ESS will typically need to access a wide variety of databases: internal, external, those created by the individual user and electronic mailboxes.

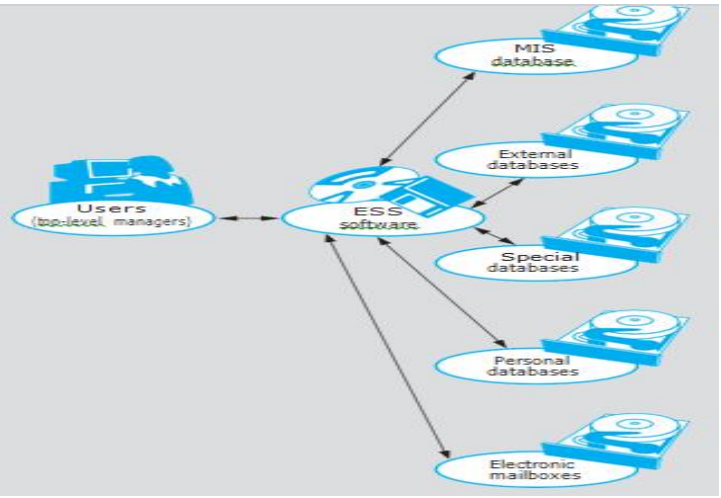

Figure 9. Structure of an ESS

Source: Nickerson (2001)

4. **Other systems**

Increasingly, managers are looking at more sophisticated methods such as:

- **expert systems** that mimic the way a human would analyze a situation and recommend a particular course of action
- **Knowledge management systems** that can organize, store and enable shared access to the collective knowledge of the organization.

The point to remember about all of these systems is that the quality of the output is only as good as the quality of the input.

- **USING THE WEB AS AN INFORMATION RESOURCE**

Here we provide some very practical guidance on finding the information you need, both to make informed decisions and to build up your own knowledge base in your chosen area.

It will not eliminate all the problems involved in finding Web–based material, but should give you some sharper tools to help you along the way.

- **SEARCH ENGINES**

Note that although the World Wide Web is technically only a part of the Internet, it is the one that is most familiar to most people, and the terms 'Web' and 'Internet' are used interchangeably.

The starting point for all Web searches is a **search engine** — quite literally, a force that responds to an information request by searching the Web for what it interprets as relevant material.

Search engines are also referred to here as **indexes** as they act like gigantic indexes to selected chunks of the Web. They take an input search word (**search term**) or phrase, and retrieve a set of results (**hits**) that relate to that term or phrase from the Web pages that they have identified, collected into a virtual database and indexed.

There are four basic types of search tool:

- ❖ Free text search engines
- ❖ Human–generated indexes
- ❖ Metasearch tools
- ❖ Natural language tools.
- ❖ Free Text Search Engines

Search engines retrieve a set of Web pages (hits) that match a

word or phrase input by the user. They do not search the entire Web — only those pages that exist in the index of the search engine.

Google (www.google.com) and Alta Vista (www.altavista.com) are currently the biggest with billions of pages each.

Since the indexing method is basically a free text search, the engine will retrieve every instance of the search term, whether it is relevant to your search or not.

This means that if you're a bird enthusiast looking for information on 'cranes', you will also retrieve references to heavy lifting gear, maybe crane flies and companies that have crane in their title.

On the other hand, these searches may not pick up useful **related terms**, so a search on 'boats' may not select references to 'yachts' or 'ships'.