UNIT V:

Decision structure- Decision Support Trends- DSS Components- Using DSS- What-if analysis- sensitivity analysis- Goal Seeking Analysis- Optimization Analysis- Executive Information Systems- Enterprise portals and decision support- knowledge management systems.

5.Decision Support System:

Introduction

Decision support systems (DSS) are interactive software-based systems intended to help managers in decision-making by accessing large volumes of information generated from various related information systems involved in organizational business processes, such as office automation system, transaction processing system, etc.

DSS uses the summary information, exceptions, patterns, and trends using the analytical models. A decision support system helps in decision-making but does not necessarily give a decision itself. The decision makers compile useful information from raw data, documents, personal knowledge, and/or business models to identify and solve problems and make decisions.

Programmed and Non-programmed Decisions

There are two types of decisions - programmed and non-programmed decisions.

Programmed decisions are basically automated processes, general routine work, where:

>   These decisions have been taken several times.

>   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 and non-addressed situations, so:

>   It would be a new decision.

>   There will not be any rules to follow.

>   These decisions are made based on the available information.

>   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.

Attributes of a DSS

Adaptability and flexibility

High level of Interactivity

Ease of use

Efficiency and effectiveness

Complete control by decision-makers

Ease of development

Extendibility

Support for modeling and analysis

Support for data access

Standalone, integrated, and Web-based

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.

Benefits of DSS

Improves efficiency and speed of decision-making activities.

Increases the control, competitiveness and capability of futuristic decision-making of the organization.

Facilitates interpersonal communication.

Encourages learning or training.

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.

5.1.Decision Structure:

Decision making is a daily activity for any human being. There is no exception about that. When it comes to business organizations, decision making is a habit and a process as well.

Effective and successful decisions make profit to the company and unsuccessful ones make losses. Therefore, corporate decision making process is the most critical process in any organization.

In the decision making process, we choose one course of action from a few possible alternatives. In the process of decision making, we may use many tools, techniques and perceptions.

In addition, we may make our own private decisions or may prefer a collective decision.

Usually, decision making is hard. Majority of corporate decisions involve some level of dissatisfaction or conflict with another party.

Let's have a look at the decision making process in detail.

Steps of Decision Making Process

Following are the important steps of the decision making process. Each step may be supported by different tools and techniques.
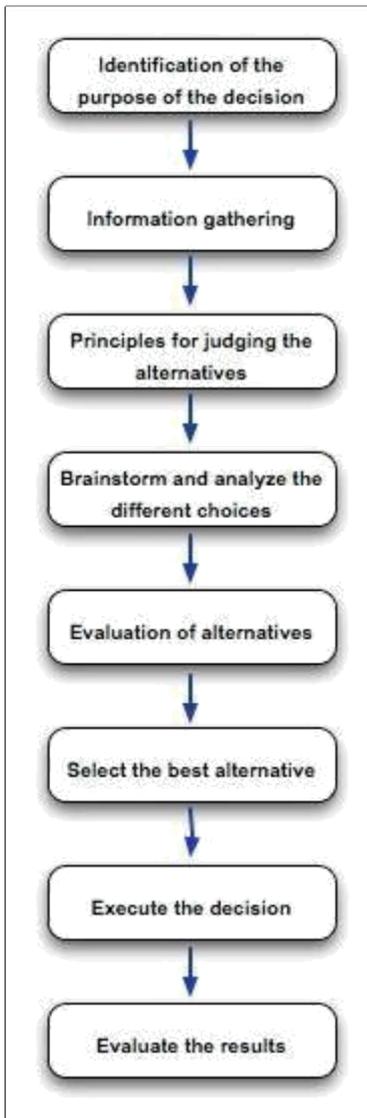
Step 1: Identification of the purpose of the decision

In this step, the problem is thoroughly analysed. There are a couple of questions one should ask when it comes to identifying the purpose of the decision.

What exactly is the problem?

Why the problem should be solved?

Who are the affected parties of the problem?

Does the problem have a deadline or a specific time-line?

Step 2: Information gathering

A problem of an organization will have many stakeholders. In addition, there can be dozens of factors involved and affected by the problem.

In the process of solving the problem, you will have to gather as much as information related to the factors and stakeholders involved in the problem. For the process of information gathering, tools such as 'Check Sheets' can be effectively used.

Step 3: Principles for judging the alternatives

In this step, the baseline criteria for judging the alternatives should be set up. When it comes to defining the criteria, organizational goals as well as the corporate culture should be taken into consideration.

As an example, profit is one of the main concerns in every decision making process. Companies usually do not make decisions that reduce profits, unless it is an exceptional case. Likewise, baseline principles should be identified related to the problem in hand.

Step 4: Brainstorm and analyse the different choices

For this step, brainstorming to list down all the ideas is the best option. Before the idea generation step, it is vital to understand the causes of the problem and prioritization of causes.

For this, you can make use of Cause-and-Effect diagrams and Pareto Chart tool. Cause-and-Effect diagram helps you to identify all possible causes of the problem and Pareto chart helps you to prioritize and identify the causes with highest effect.

Then, you can move on generating all possible solutions (alternatives) for the problem in hand.

Step 5: Evaluation of alternatives

Use your judgement principles and decision-making criteria to evaluate each alternative. In this step, experience and effectiveness of the judgement principles come into play. You need to compare each alternative for their positives and negatives.

Step 6: Select the best alternative

Once you go through from Step 1 to Step 5, this step is easy. In addition, the selection of the best alternative is an informed decision since you have already followed a methodology to derive and select the best alternative.

Step 7: Execute the decision

Convert your decision into a plan or a sequence of activities. Execute your plan by yourself or with the help of subordinates.

Step 8: Evaluate the results

Evaluate the outcome of your decision. See whether there is anything you should learn and then correct in future decision making. This is one of the best practices that will improve your decision-making skills.

Conclusion

When it comes to making decisions, one should always weigh the positive and negative business consequences and should favour the positive outcomes.

This avoids the possible losses to the organization and keeps the company running with a sustained growth. Sometimes, avoiding decision making seems easier; especially, when you get into a lot of confrontation after making the tough decision.

But, making the decisions and accepting its consequences is the only way to stay in control of your corporate life and time.

5.2.Decision Support Trends:

The quality of decision-making process is affected by the quality of information used in the process. Trends in data processing for decision support show that business users need analytical applications which incorporate a variety of data analysis techniques incorporating task-specific knowledge, i.e. that are business task-oriented. Such business analytics applications must be vertically connected across the organization, their information is desired to be in a visually acceptable form, even through wireless devices. The analysis functions have to be integrated into the information system, and integrated into the action and result measurements.

5.3.Components of Decision Support Systems
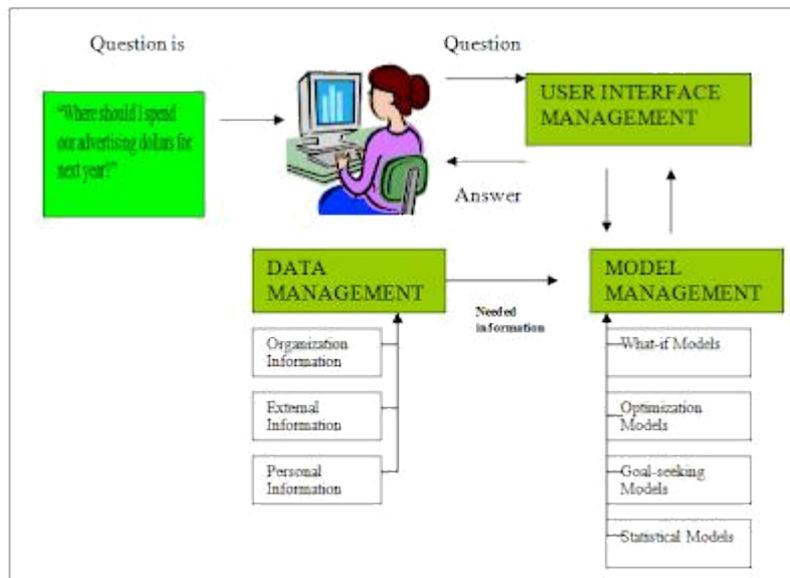
Decision support systems vary greatly in application and complexity, but they all share specific features. A typical **Decision support systems**has four components: data management, model management, knowledge management and user interface management.

Data Management Component

The data management component performs the function of storing and maintaining the information that you want your **Decision Support System** to use. The data management component, therefore, consists of both the Decision Support System information and the Decision Support System database management system. The information you use in your **Decision Support System** comes from one or more of three sources:

Organizational information

we may want to use virtually any information available in the organization for your Decision Support System. What you use, of course, depends on what you need and whether it is available. You can design your Decision Support System to access this information directly from your company's database and data warehouse. However, specific information is often copied to the Decision Support System database to save time in searching through the organization's database and data warehouses.

External information:

some decisions require input from external sources of information. Various branches of federal government, Dow Jones, Compustat data, and the internet, to mention just a few, can provide additional information for the use with a Decision Support System.

Personal information:

we can incorporate your own insights and experience your personal information into your Decision Support System. You can design your Decision Support System so that you enter this personal information only as needed, or you can keep the information in a personal database that is accessible by the Decision Support System.

Model Management Component:

The model management component consists of both the Decision Support System models and the Decision Support System model management system. A model is a representation of some event, fact, or situation. As it is not always practical, or wise, to experiment with reality, people build models and use them for experimentation. Models can take various forms.

Businesses use models to represent variables and their relationships. For example, you would use a statistical model called analysis of variance to determine whether newspaper, TV, and billboard advertizing are equally effective in increasing sales.

Decision Support Systems help in various decision-making situations by utilizing models that allow you to analyze information in many different ways. The models you use in a Decision Support System depend on the decision you are making and, consequently, the kind of analysis you require. For example, you would use what-if analysis to see what effect the change of one or more variables will have on other variables, or optimization to find the most profitable solution given operating restrictions and limited resources. Spreadsheet software such as excel can be used as a Decision Support System for what-if analysis.

The model management system stores and maintains the Decision Support System's models. Its function of managing models is similar to that of a database management system. The model management component can not select the best model for you to use for a particular problem that requires your expertise but it can help you create and manipulate models quickly and easily.

User Interface Management Component

The user interface management component allows you to communicate with the Decision Support System. It consists of the user interface management system. This is the component that allows you to combine your know-how with the storage and processing capabilities of the computer.

The user interface is the part of the system you see through it when enter information, commands, and models. This is the only component of the system with which you have direct contract. If you have a Decision Support System with a poorly designed user interface, if it is too rigid or too cumbersome to use, you simply won't use it no matter what its capabilities. The best user interface uses your terminology and methods and is flexible, consistent, simple, and adaptable.

For an example of the components of a Decision Support System, let's consider the Decision Support System that Land's End has tens of millions of names in its customer database. It sells a wide range of women's, men's, and children's clothing, as well various household wares. To match the right customer with the catalog, land's end has identified 20 different specialty target markets. Customers in these target markets receive catalogs of merchandise that they are likely to buy, saving Lands' End the expense of sending catalogs of all products to all 20 million customers. To predict customer demand, lands' end needs to continuously monitor buying trends. And to meet that demand, lands' end must accurately forecast sales levels. To accomplish theses goals, it uses a Decision Support System which performs three tasks:

-Data management: The Decision Support System stores customer and product information. In addition to this organizational information, Lands' End also needs external information, such as demographic information and industry and style trend information.

-Model management: The Decision Support System has to have models to analyze the information. The models create new information that decision makers need to plan product lines and inventory levels. For example, Lands' End uses a statistical model called regression analysis to determine trends in customer buying patterns and forecasting models to predict sales levels.

-**User interface management:** A user interface enables Lands' End decision makers to access information and to specify the models they want to use to create the information they need.

Knowledge Management Component

The knowledge management component, like that in an expert system, provides information about the relationship among data that is too complex for a database to represent. It consists of rules that can constrain possible solution as well as alternative solutions and methods for evaluating them.

For example, when analyzing the impact of a price reduction, a Decision Support System should signal if the forecasted volume of activity exceeds the volume that the projected staff can service. Such signaling requires the Decision Support System to incorporate some rules-of-thumb about an appropriate ratio of staff to sales volume. Such rules-of-thumb, also known as heuristics, make up the knowledge base.

5.4.Using Decision Support Systems:

Using a decision support system involves an interactive **analytical modelling** process. Typically, a manager uses a DSS software package at his workstation to make inquires, responses and to issue commands. This differs from the demand responses of information reporting systems, since managers are not demanding prespecified information. Rather, they are exploring possible alternatives. They do not have to specify their information needs in advance. Instead they use the DSS to find the information they need to help them make a decision.

Using a DSS involves four basic types of analytical modelling activities:

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 variables.

Sensitivity Analysis: - Is a special case of what-if analysis. Typically, the value of only one variable is changed repeatedly, and the resulting changes on other variables are observed. So sensitivity analysis is really a case of what-if analysis involving repeated changes to only one variable at a time. Typically, sensitivity analysis is used when decision makers are uncertain about the assumptions made in estimating the value of certain key variables.

Goal Seeking Analysis: - Reverses the direction of the analysis done in what-if and analysis. Instead of observing how changes in a variable affect other variables, goal seeking analysis sets a target value for a variable and then repeatedly changes other variables until the target value is achieved.

Optimization Analysis: - Is a more complex extension of goal seeking analysis. Instead of setting a specific target value for a variable, the goal is to find the optimum value for one or more target variables, given certain constraints. Then one or more other variables are changed repeatedly, subject to the specified constraints, until the best values for the target variables are discovered.

5.5.Executive Information Systems:

       Executive information systems (EIS) are information systems that combine many of the features of information reporting systems and decision support systems. EIS focus on meeting the strategic information needs of top management. The goal of EIS is to provide top management with immediate and easy access to information about a firm's critical success factors (CSFs), that is, key factors that are critical to accomplishing the organizations strategic objectives.

Features of Executive Information System
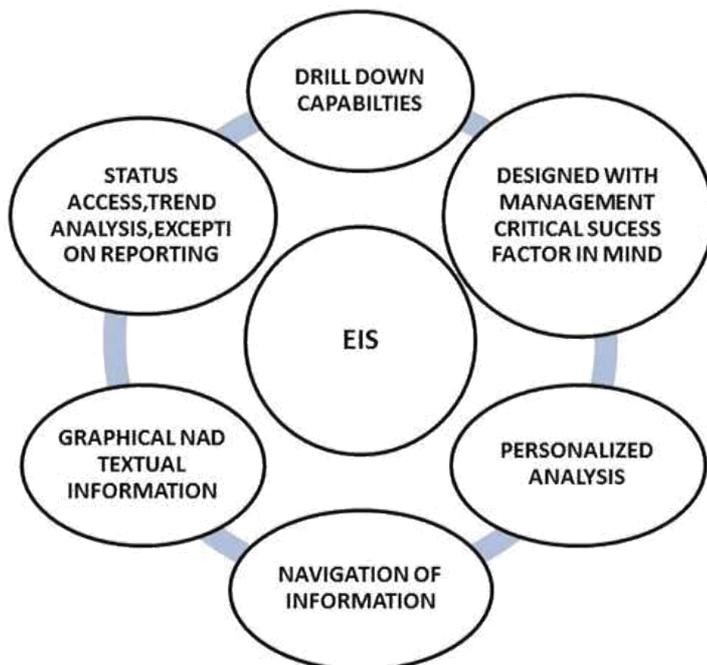
Rational for EIS:

Top executives get the information they need from many resources. These include, letters, memos, periodicals, and reports produced manually or by computer systems. Other major sources of executive information are meetings, telephone calls, and social activities. Thus, much of a top executive's information comes from noncomputer sources. Computer-generated information has not played a major role in meeting many top executives' information needs. EIS were developed to meet the need that MIS was not meeting.

5.6.Enterprise portal and decision support:

Enterprise Portals

An enterprise portal provides an organization's employees, customers and partners with a single Web-based point for interacting with each other and with applications, processes, documents and other information. An enterprise portal serves up personalized applications based on users' individual roles, locations, preferences or other factors. By delivering customized, constantly updated and highly relevant content via a familiar Web browser, enterprise portals can provide valuable support for business process management (BPM) and other organizational improvement efforts.

Once information has been classified, orchestrated and stored, business users need to be able to access this information in a seamless manner through Enterprise Portals.

We takes the concept of Enterprise Portals beyond the intranet and internet information access. Our framework provides organizations with the same environment that can be deployed on a classic computer or mobile device, while maintaining content, data access and integrity at the same standards.

Portal Strategy and architecture

Portal Development

Visual identity creativity

Application consolidation into Enterprise Portals

Deployment Strategy

Content and workflow Management

Self-Service framework for Enterprise Applications

5.7.Knowledge management system:

What is Knowledge?

Personalized information

State of knowing and understanding

An object to be stored and manipulated

A process of applying expertise

A condition of access to information

Potential to influence action

Sources of Knowledge of an Organization

Intranet

Data warehouses and knowledge repositories

Decision support tools

Groupware for supporting collaboration

Networks of knowledge workers

Internal expertise

Definition of KMS

A knowledge management system comprises a range of practices used in an organization to identify, create, represent, distribute, and enable adoption to insight and experience. Such insights and experience comprise knowledge, either embodied in individual or embedded in organizational processes and practices.

Purpose of KMS

Improved performance

Competitive advantage

Innovation

Sharing of knowledge

Integration

Continuous improvement

by: o Driving strategy

o Starting new lines of business

o   Solving problems faster

o   Developing professional skills

o   Recruit and retain talent

Activities in Knowledge Management

Start with the business problem and the business value to be delivered first.

Identify what kind of strategy to pursue to deliver this value and address the KM problem.

Think about the system required from a people and process point of view.

Finally, think about what kind of technical infrastructure are required to support the people and processes.

Implement system and processes with appropriate change management and iterative staged

release. Level of Knowledge Management

Enterprise Intelligence

Information creation,sharing and management

Document management