

DSS is an aid to Decision Making & Support for Intelligence

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Abstract— Decision making is an important process that is required by each and every organization to perform its activities efficiently and effectively. Decision making and problem solving are ongoing processes of evaluating situations. The process of decision making consist of three phases i.e. Intelligence, Design and Choice. The intelligence phase of decision making process consists of problem finding activities related to required information/raw data calling for decisions. Analysis and choice cannot proceed until the problem has been identified and formulated. The existence of an opportunity initiates the design and choice phases of decision making. This paper is an attempt to highlights the study of DSS is an aid to decision making and support for intelligence.

Key words—DSS, Decision making, Problem solving, DSS model.

I. INTRODUCTION

A Decision Support System (DSS) is an interactive, flexible, and adaptable computer based information system that utilizes decision rules, models, and model base coupled with a comprehensive database and the decision maker's own insights, leading to specific, implementable decisions in solving problems that would not be amenable to management science models. Thus, a DSS supports complex decision making and increases its effectiveness.[6] Decision Support Systems are widely used for- (1) Handle large amounts of data like database searches, (2) Obtain and process data from different sources including internal and external data stored on mainframe systems and networks, (3) Provide report and presentation flexibility to suit the decision maker's needs, (4) Have both textual and graphical orientation like charts, trend lines, tables and more, (5) Perform complex, sophisticated analysis and comparisons using advanced software packages, (6) Support optimization, satisfying, and heuristic approaches giving the decision maker a great deal of flexibility in solving simple and complex problems, and (7) Perform "what-if" and goal-seeking analysis. [14][15]

II. OBJECTIVE

The researcher has proposed the study on 'DSS is an aid to Decision Making & Support for Intelligence' with respect to Birla Corporation Limited. The selected organization is of a

large scale in terms of size, area and manpower requirement. After preliminary study it was felt to develop the information system for various functionalities specifically maintaining attendance by computerized methods and generating reports for top level management and middle level management.[1]

III. CONCEPT AND MEANING OF DSS

Decision support system (DSS) has been emerged as an important element of computerized information system. The DSS can be used for a variety of purpose. Some of these are as follows: (1) to deal with problematic decision making solutions, (2) to improve the effectiveness of decision making and (3) to assist and not replace human decision makers.[6]

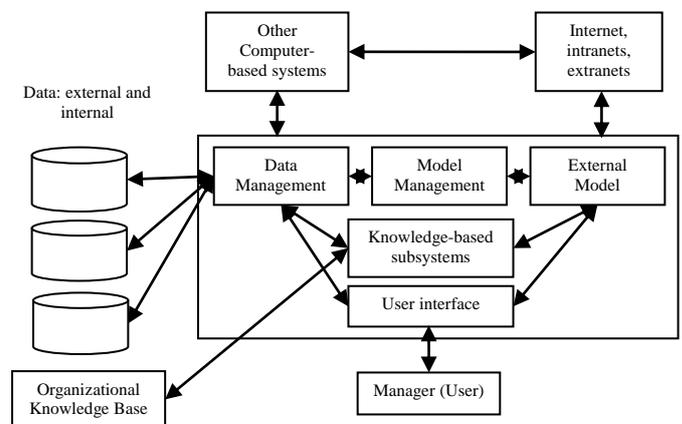


Fig.1. A Schematic view of DSS

A DSS application can be composed of following subsystems:

Data Management subsystem: The database management subsystem includes a database, which contains relevant data for the situation and is managed by software called the database management system (DBMS). The database management subsystem can be interconnected with the corporate data warehouse, a repository for corporate relevant decision-making data. [6]

Model Management subsystem: The model base gives decision makers access to a variety of models and assist them in decision making. The model base can include the model base management software (MBMS) that coordinates the use of models in a DSS. This component can be connected to external storage of data. [6]

Knowledge-based Management subsystem: This subsystem can support any of the other subsystem or act as an independent component. It provides intelligence to augment the decision maker's own. It can be interconnected with the organization's knowledge repository, which is called the organizational knowledge base. [6]

User Interface subsystem: The user interface, also called the dialog management facility, it allows users to interact with the DSS to obtain information. The user interface requires two capabilities; the action language that tells the DSS what is required and passes the data to the DSS and the presentation language that transfers and presents the user results. The DSS generator acts as a buffer between the user and the other DSS components, interacting with the database, the model base and the user interface. [6]

1. Prototype method
2. Life cycle approach

In the prototype method, initial methods are developed first. Once implemented, the system is refined and modified as per new specifications. This iterative process is followed till the system is accepted by the user. In life cycle approach, the DSS development is carried out through different phases. The phases are: Feasibility study, Analysis, Design, Implementation and Review. The choice of DSS design is decided on the basis of nature of the system and its applications. Thus the DSS is developed over time as the business increases. [3][4][5]

The following chart shows how DSS can be developed in an organization.

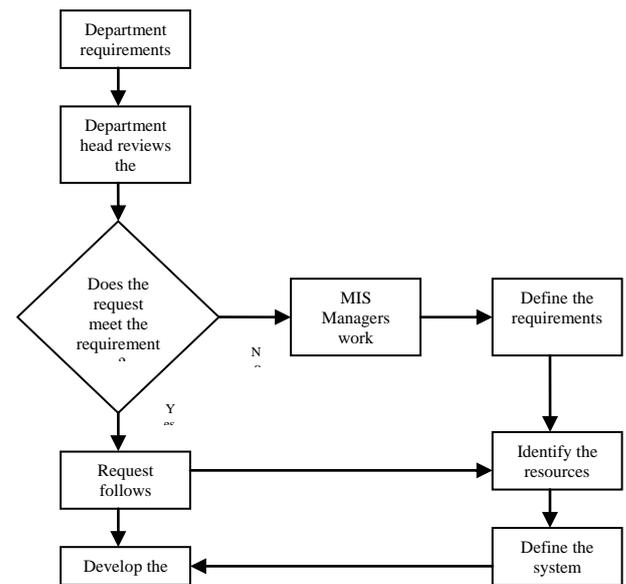


Fig. 2: DSS development model

TABLE I. INFORMATION REQUIREMENTS OF VARIOUS LEVELS OF MANAGEMENT

Characteristics	Operational control	Management control	Strategic planning
Source	Largely Internal	→	External
Scope	Well defined, narrow	→	Very wide
Level of aggregation	Detailed	→	Aggregate
Time horizon	Historical	→	Future
Currency	Highly current	→	Quite old
Required accuracy	High	→	Low
Frequency of use	Very frequent	→	Infrequent

IV. DEVELOPMENT OF DSS

The development process of DSS relates with the long-term business plans of the organizations. DSS requires resources like capital, time and capacity. The end result is information in the form of reports. Most of the organizations do not recognize information as a resource. They see information as a routine necessity. As an organization grows, the information also increases manifold. The DSS plans are developed concurrent to the business plans. An organization of any size deals with numerous pieces of information. [7]

Decision Support System (DSS) may be developed using following ways:

V. DECISION MAKING AND PROBLEM SOLVING PROCESS

A Problem occurs when a system does not meet its established goals or does not work as planned [10] [11]. Problem solving may also deal with identifying new opportunities. Problem solving is the most critical activity a business organization undertakes. Problem solving begins with decision making [2] [12].

The Decision making process starts with the intelligence phase, where, potential problems and /or opportunities are identified and defined. In the design stage, alternative solutions to the problem are developed. In the choice stage, a course of action is selected. In the implementation stage, action is taken to put the solution into effect. In the monitoring stage, the implementation of the solution is evaluated to determine if the anticipated results were achieved and modify the process. [4][5][8][13]

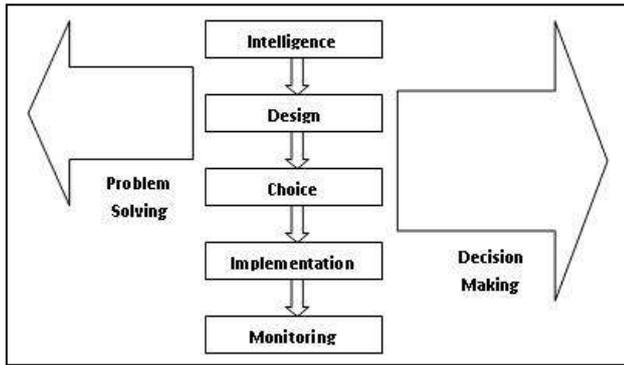


Fig. 3: Decision Making & Problem Solving Process

VI. DESIGNING DSS FOR PFAS

The main objective of Provident Fund Accounting System (PFAS) is to ensure that the provident fund of an employee is calculated properly or not? This system allows the top manager to access the proper information at proper time.



Fig. 4: Designing DSS for PFAS

An efficient employee Provident Fund Accounting System (PFAS) makes for a smoother-running organization. The PFAS can contribute to an organization's overall harmony and efficiency. [1] This automated system saves time for managers and employees, improving their productivity. By eliminating manual record keeping, it reduces errors, avoiding disputes. The researcher has studied the Provident Fund Accounting System mainly generates the report like checklist, ledger, payroll, loan application and cash voucher list etc.[1]

A decision is basically resource allocation process that is irreversible except that a fresh decision may reverse it or it may overrule the earlier one. A decision is a reasoned choice among alternatives. The decision maker having authority over the resources being allocated makes a decision. The decision can be of various types like simple decision in which there is only

one decision is to be made with many alternatives, decision may be goal oriented; decision may be strategic or tactical. The decision capacity involves intelligence, design, choice and implementation of decision maker.[6][12][15]

VII. CONCLUSION

The paper entitled 'DSS is an aid to Decision making and support for Intelligence' gives an impact on the important function of top management. The DSS developed specifically helps top managers to keep the correct record of Provident Fund of the employees working in the organization. The studied system has several advantages like searching of particular information became faster, Worker's individual information is stored separately, Generation of various reports made review process easy, well-defined authorization and security levels etc.

VIII. ACKNOWLEDGMENT

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