

DECISION SUPPORT SYSTEM IS A TOOL FOR MAKING BETTER DECISIONS IN THE ORGANIZATION

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Abstract

Information plays a major role in any organization. The value of information depends on its application and use. The success of an organization largely depends on the quality of the information that it generates. The information is used as raw material for decision making. The use of Computer Based Information System (CBIS) makes the process very effective and efficient when the large amounts of data are involved. Though there are several types of information systems are in existence which support decision making, the decision support system is one of them. This paper is an attempt to highlights the decision support system as a tool for making the better decisions in the organization.

Keywords: DSS; Decision Making; Problem Solving; DSS Model.

1. Introduction

Decision Supports Systems (DSS) are computer-based information systems designed in such a way that help managers to select one of the many alternative solutions to a problem. It is possible to automate some of the decision making processes in a large, computer-based DSS which is sophisticated and analyze huge amount of information fast. It helps corporate to increase market share, reduce costs, increase profitability and enhance quality. The nature of problem itself plays the main role in a process of decision making. A DSS is an interactive computer based information system with an organized collection of models, people, procedures, software, databases, telecommunication, and devices, which helps decision makers to solve unstructured or semi-structured business problems.

2. Problem Statement

The researcher has proposed the study on 'Decision Support System is a tool for making better decisions in the organization' 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 a DSS Model for various functionalities specifically maintaining attendance by computerized methods and generating reports for top level management and middle level management. The existing system of recording the attendance in the organization had following drawbacks:

1. Storing each employee's individual detailed information requires much documentation and keeping of these documents is another tedious work.
2. Reporting of old attendance details of a particular worker is too much difficult in existing system.
3. Any calculation mistake in existing system could lead to erroneous result.
4. There are not well-defined authorizations and security levels in the current FoxPro based system.
5. There are no facilities of full database backups and there is always panic situation of data loss.

3. Concept and Meaning of DSS

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.

3.1. Characteristics of DSS

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
7. Perform "what-if" and goal-seeking analysis

3.2. Capabilities of DSS

1. Support for problem-solving phases including the intelligence, design, choice, implementation and monitoring
2. Support for different decision frequencies that range from one-of-a-kind (i.e., merging with another company) to repetitive (i.e., how much inventory to purchase this week)
3. One-of-a-kind decisions are handled by an ad hoc DSS
4. Repetitive decisions are handled by institutional DSS
5. Support for different problem structures ranging from high structured and programmed to unstructured and non-programmed
6. Support for various decision-making levels including operational-level decisions, tactical-level decisions and strategic decisions

3.3. Components of Decision Support System

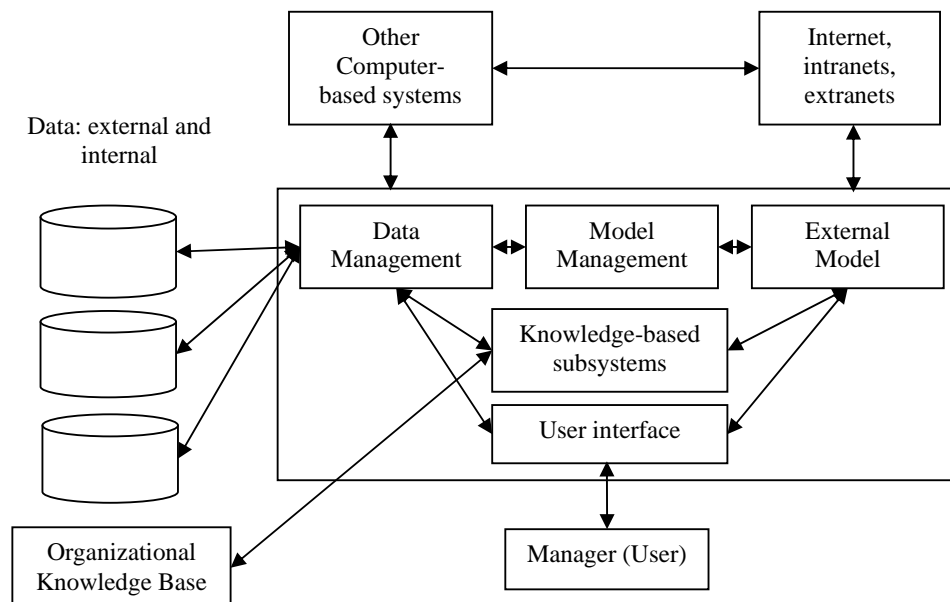


Figure 1: A Schematic view of DSS

A DSS application can be composed of following subsystems:

1. **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.
2. **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.
3. **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.
4. **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.

3.4. Decision Making and Problem Solving Process

A Problem occurs when a system does not meet its established goals or does not work as planned. 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.

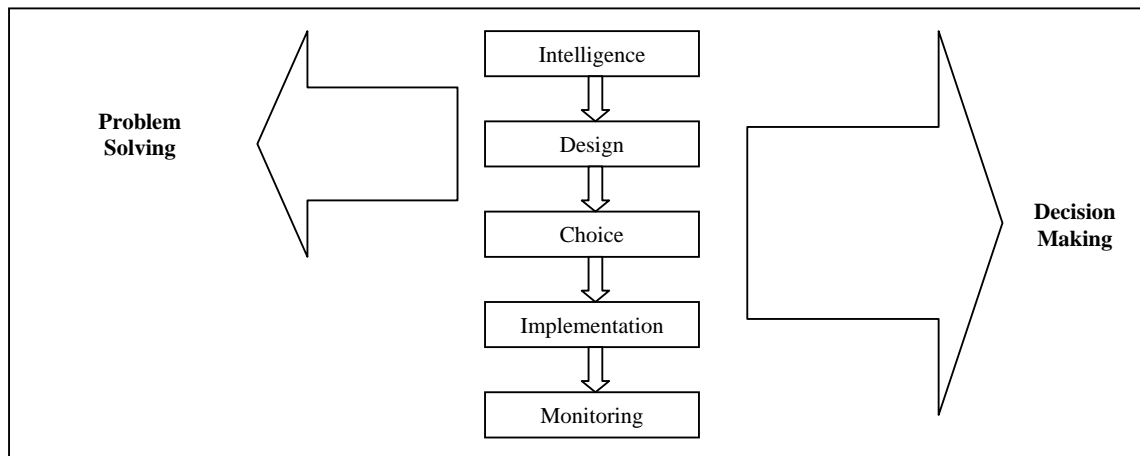


Figure 2: Decision Making and Problem Solving Process

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. Design and 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]

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

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: Intelligence, Design, Choice, Implementation and Monitoring. The choice of DSS design is decided on the basis of nature of the system and its applications.

A. Designing of DSS for Attendance Capturing & Recording System

The main objective of Attendance Recording System (ARS) is to ensure that the attendance (i.e. presence or absence) of employees is accurately recorded and reported for computation of payable days, overtime hours, festival allowances and payable ESI contributions etc.

B. Responsibilities

Following are the responsibilities assigned at various levels in the organization-

1. Employing Activity's Responsibilities
2. Approving official's Responsibility
3. Timekeeping Responsibilities

Employing Activity's Responsibilities: Time keepers shall ensure that:

1. Worker's shift punch times are according to shifts allotted by corresponding department HOD.
2. The recording and approval of time and attendance are performed timely and accurately as required by worker's allotted shift.
3. All required supporting documentation is available for audit purpose.
4. Procedural guidance manual is clear and adequate to ensure that time keeping are correctly performed.
5. All corrections and adjustments are in accordance with corresponding department list provided by department HOD.

Approving official's Responsibility:

1. Normally, timekeeping responsibilities shall be assigned to individuals who are aware of employee's attendance and absence each day.
2. Timekeeper shall ensure that exceptions to the worker's normal tour of duty are recorded in a timely and accurate manner.
3. An alternate timekeeper shall be appointed to maintain time and attendance during the absence of the primary timekeeper.

Timekeeping Responsibilities:

1. Timekeeping is a critical function, which may be performed by the individual employee, Timekeeper, department's HOD, or a combination of these individuals. The timekeeping function requires the accurate and timely recording of time and attendance data and the maintenance of related documentation.
2. Timely and accurate recording of all exceptions to the employee's normal tour of duty.

An efficient employee Attendance Recording system makes for a smoother-running organization. The ARS can contribute to an organization's overall harmony and efficiency. This automated system saves time for managers and employees, improving their productivity. By eliminating manual record keeping, it reduces errors, avoiding disputes. ARS integrates a company's accrual policies and consistent awarding of employee attendance. The primary goals of ARS are to:

1. Establish an efficient workflow process for attendance authorization.
2. Integrate time and leave data with HR, payroll and ERP systems, or to APIs for electronic processing.
3. Ensure accurate and consistent implementation of pay and leave policies.
4. Quickly and simply request leave or other scheduled absences.
5. Receive automatic notification of leave balances, as well as available vacation and personal time, sick days and other leave benefits.

C. Decision Making at Top Level

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.

The DSS designed in the study for Attendance Capturing & Recording for Birla Corporation Limited mainly generates the reports like Daily Attendance, Monthly Attendance, and Sick Report etc. on which the top management by receiving these reports analyses and the decisions regarding shifting the priority of the job, observing the performance and corrective measures are taken.

D. DSS Designed for Attendance Capturing & Recording System

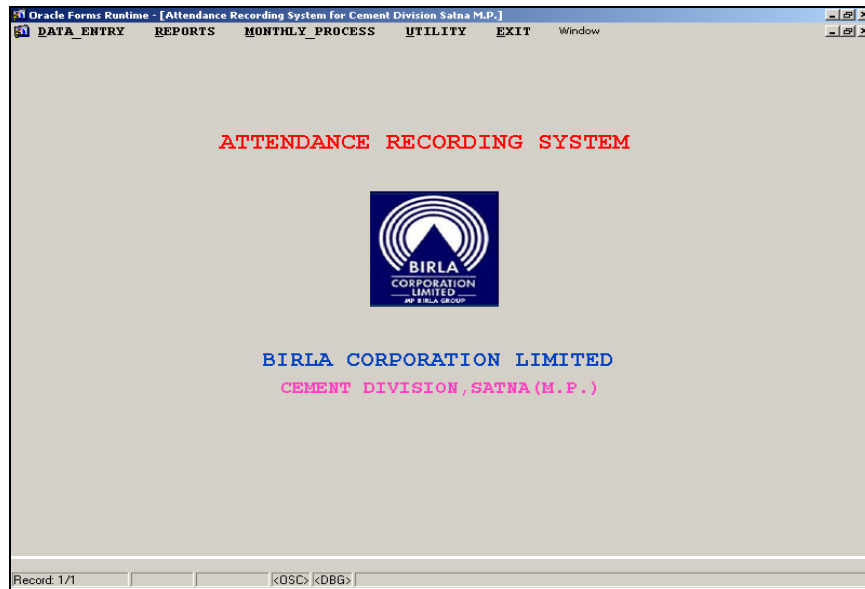


Figure 3: DSS designed for Attendance Capturing & Recording System

PAYROLLCARD_NO	EMPLOYEE'S NO	EMPLOYEE'S NAME	SHIFT	IN	LUNCH OUT	LUNCH IN	OUT	HOURS WORKED	STATUS	OVER TIME
MOULDING										
36056	6041	ANIRUDH SINGH	B	13:58			21:59	8.01 P		0.01
36034	9399	JAGANATH KUSHWAHA	B	13:58			21:58	8.00 P		0.00
36061	6075	JANG BAHADUR YADAV	B	13:39			21:58	8.19 P		0.19
36110	6063	JAGDISH PD. SHUKLA	B	13:46			21:58	8.12 P		0.12
36177	6085	BAIDYANATH SINGH	B	13:48			21:58	8.10 P		0.10
36080	9315	KRIPAL SINGH	D	07:49	12:59	14:22	17:29	8.17 P		0.17
36073	9289	MONINDRA NATH	H	09:49			17:57	8.08 P		0.08
36074	6050	SARAD KUMAR SINHA	H	09:53			17:58	8.05 P		0.05
36076	8200	RAMESHWAR MISHRA	H	09:53			17:57	8.04 P		0.04
36079	5805	KAMLA PATI SINGH	H	09:54			17:58	8.04 P		0.04
36094	6067	RAMDEO YADAV	H	09:55			17:58	8.03 P		0.03
36102	6307	NARAYANAN K	H	09:50			17:58	8.08 P		0.08
36059	6074	PRATAP SINGH	H	09:54			17:57	8.03 P		0.03
36072	8509	BINOD KUMAR JHA						0.00 A		0.00
36054	5917	RAJENDRA KR.TIWARI						0.00 A		0.00
Total Worker 32										
SAND PLANT										
36243	5763	OM PRAKASH SINGH	A	05:54			13:59	8.05 P		0.05
36250	6121	GAURI SHANKAR SINGH	A	05:48			14:00	8.12 P		0.12
36264	6463	BARAN SINGH	A	05:54			13:57	8.02 P		0.02

Figure 4: Daily Attendance Report

E. Reporting from the Designed DSS

The reports which are used by top management are generated from the above MIS like Monthly Attendance, Card Replacement, Sick Report, and Monthly Voucher Correction which are submitted to HR Manager and he takes proper decisions related with Attendance Capturing & Recording. The proposed system has following advantages:

1. Worker's individual information is stored separately.
2. Searching of particular information became faster.

3. Generation of various reports made review process easy.
4. Due to user friendly interface the matter became easy to understand.
5. Password oriented system increased security of data.
6. There are facilities of full database backup and central control of user.
7. Well-defined authorization and security levels.
8. The developed system is on-line.
9. Economical.

5. Conclusion

The paper entitled 'Decision Support System is a tool for making better decisions in the Organization' gives an impact on the important function of top management. It is also used to generate the reports with the help of advanced technology having maximum characteristics of good information by which the decisions are to be taken related with the functionality of management decisions. The DSS developed specifically helps HR managers to keep the control on working of the staff at various levels. The system has been tested for above module in Birla Corporation Ltd. The Reports generated are as per the format by which it will help top management to take decision concerned with human resource in attendance recording and capturing which is one of the basic needs of any organization. Decision Support System is required for managerial report generation specialized tools; software and procedures are used to develop DSS in the organizations.

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References

- [1] Annual Report of Birla Corporation Limited.
- [2] Arora A., *Management Information Systems*, Himalaya Publishing House, Mumbai.
- [3] Banerjee, U. K., & Sachdeva, R. K. (1995). *Management Information System: A new frame work*. New Delhi: Vikas Publishing House.
- [4] Davis, G.B., & Olson, M. H. (1985). *Management Information Systems: Conceptual foundations, structure, and development*. New York: McGraw-Hill.
- [5] Dr. Milind Oka (2009), *Management Information Systems Text and Cases* (16th ed.), Everest Publishing House, Pune.
- [6] Efraim Turban, Jay E. Aronson (2003). *Decision Support Systems and Intelligent Systems*, 6th edition. Pearson Education, New Delhi.
- [7] Gupta R. C., *Management Information Systems*, CBS Publishers & Distributers, New Delhi.
- [8] Indrajit Chatterjee (2010), *Management Information Systems*, Prentice Hall of India, New Delhi.
- [9] Jawadekar, W. S. 1998, *Management Information System*, Tata McGraw Hill Publishing Company Ltd. New Delhi.
- [10] Lordon K. L., *Management Information System*, Prentice Hall of India, New Delhi.
- [11] Lucas, H. C., Jr. (1990), *Information systems concepts for management*. New York: McGraw-Hill.
- [12] McLeod, R., Jr. (1995). *Management information systems: A study of computer-based information systems* (6th ed.). New Delhi: Prentice Hall of India.
- [13] Murthy C. S. V., *Management Information Systems*, Himalaya Publishing House, Mumbai.
- [14] Ravi Kumar Jain, *Decision Support System*, ICFAI University Press.
- [15] V.S. Janakiraman, K. Sarukesi, *Decision Support Systems*, Prentice Hall of India, New Delhi.
- [16] Waman S Jawadekar (2007), *Management Information Systems Text and Cases* (3rd ed.), Tata McGraw Hill Publishing Company Ltd., New Delhi.