INFORMATION MANAGEMENT AND COMPUTER APPLICATIONS

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BLOCK 1 COMPUTERS IN MANAGEMENT

This block attempts to give you an understanding of a computer and its diverse applications in management.

First unit introduces you to the role of computer-aided decision-making in management of an organisation through proper handling of information system, and its advantages and limitations.

Unit 2 discusses the evolution of computers and then its components i.e., Hardware and Software. It also gives an idea about the classification of computers.

Unit 3 deals with phenomenal growth of micro-computers. It is followed by an explanation of a typical micro-computer, its hardware and the most common personal computer applications. Major types of software used for management applications are then described.

Fourth and the last unit of this block begins with a description of the basic concept of a Spreadsheet. It then discusses features of a specific Spreadsheet package called LOTUS 1-2-3 and how problems can be solved/modelled using this software package. The capability of modelling and sensitivity analysis are exemplified through an illustration. The major features are listed and a few important ones are explained. Some advantages of using Spreadsheet package are then highlighted.

UNIT 1 ROLE OF COMPUTERS IN MANAGEMENT

Objectives

After going through this unit you should be able to:

* appreciate the significance of computerisation for efficient management decision-making at the corporate level ·

* understand the role of Computer-aided decision-making in management of an organisation and advantages and limitations thereof.

Structure

1.1 INTRODUCTION

Prof. H. A. Simon views the computer as the fourth great breakthrough in history to aid man in his thinking process and decision-making ability. The first was the invention of writing which gave man a memory in performing mental tasks. The remaining two events prior to the computer were the devising of the Arabic number system with its zero and positional notation. and the invention of analytic geometry and calculus, which permitted the solution of complex problems in scientific theory. Now the electronic digital computers combine the advantages and attributes of all these breakthroughs and make them available for decision-making and management of organisations.

1.2 NEED OF INFORMATION HANDLING

Management Information System (MIS) can be defined. according to Joel E Ross. as a communication process wherein information (input) is recorded. stored. processed and retrieved for decisions (output) regarding the managerial process of planning, organising and controlling. If we now define decision-making as the process of selecting from among alternatives a course of action to achieve an objective. the link between information and decisions becomes clear. Indeed. decision-making and information processing are so inter-dependent that they become inseparable. if not identical, in practice.

Computerised MIS cannot technically make a decision but it can yield processed data and follow instructions to the extent of its capacity. For example, the computer can be properly

instructed to compare inventory levels with programmed decis...n-rules on re-order level and re-order quantity, and generate purchase requisition, purchase enquiry and purchase order. This can resemble an automatic control of purchase documents, as being done for TISCO (Tata Iron and Steel Co. Ltd.) over a long period.

The modern role of MIS for managerial decision-making in a complex organisation has been compared to that of a military commander. Commanders often adopt a strategy built by direct observation of partial situations. This is the style used by the managers who track operations by periodic communications with remote sales depots, plant divisions and other offices. For instance, the central marketing organisation of the Steel Authority of India Limited (SAIL) has to keep track of around 50 sales depots spread all over India for marketing decision-making.

1.3 LEVELS OF INFORMATION HANDLING

In a modern complex organisation, the levels of information handling can be divided as decision support system, management information system, transaction processing system, and office (and other) automation system.

At the apex, the top level managers may need decision support system (DSS). This would be an inter-active system that provides the user-manager with easy access to decision-making models and data in order to support semi-structured and non-structured decision-making tasks. Inputs for DSS can be some processed data, and mostly management-originated data along with some unique models. The DSS would involve queries and responses, operations research models, and simulation. The output from DSS would be special reports to resolve difficult questions and replies to management queries.

At the middle management level (if there exists one), MIS would deal with an organised set of procedures to provide information for middle managers to support their operations and decision-making within the organisation. At this level, inputs for MIS would be both processed and raw-data and some management-originated data, along with pre-programmed models. The MIS process would involve report generation data management, simple models and statistical methods. The outputs from MIS would be filtered and screened for semi-routine decisions and replies to simple management queries.

At the shop-floor management level, transaction processing system (TPS) is a computer-based system that would capture, classify, store, maintain, update and retrieve simple transaction data for record keeping and for feeding MIS and DSS. The TPS would have transaction data as inputs. The processing for TPS would involve classification, codification, sorting, merging, adding, deleting and updating. Outputs for TPS would be detailed reports relating to routine decisions and processed data.

At the clerical level, office and other automation control system can be in operation. Office automation system (OAS) is simple in an automated office having multiple functions, where the integrated and computer-aided system allows many office activities to be performed with electronic equipment. The OAS would have inputs such as appointments, documents, addresses, etc. The OAS processing would be scheduling word-processor, data storage and retrieval. Outputs from OAS would be schedules, memoranda, bulk mail and administrative reports.

Here we would mainly be concerned with MIS at the corporate level.

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Activity A

Prepare a brief report on the extent of Decision Support, Transaction Processing and Office Automation Systems, prevailing in your organisation, in context of the description given above.

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1.4 ADVANTAGES OF COMPUTERISATION

The advantages associated with computer-based managerial decision-making can be the following: (1) response time is greatly reduced; (2) very large data are stored for information and decision-making; (3) accuracy of information is considerably improved, thereby improving the quality of the decision; (4) problems are handled more easily by using various operation research models; (5) the cost involved in the decision-making process is reduced; (6) more secrecy is observed as compared to manual file system; (7) ability to take quick decision improves considerably as the time for retrieval of information is very fast; (8) paper work is reduced to the minimum as all the information is stored in the computer itself; (9) lots of information are stored for future reference; (10) chances of leakage of classified information are reduced; (11) accuracy in manipulation is increased very much; and (12) time spent in various decision-making activities is reduced to a minimum.

Emanating from the above, the following benefits for a commercial organisation can be attributed to computerisation: (1) the availability of accurate forecasts within 1 per cent of net income; (2) the preparation of short-term profit plans and long-term projection; (3) the provision of pre-plan information in budget preparation; (4) the calculation of variances between budgeted and actual results; (5) the triggering of revised forecasts if not proceeding in accordance with plans; (6) the early warning system for monitoring activities and the signalling of necessary reactive plans; (7) the indication of income and cash flow by following alternate investment strategies; (8) the assistance to the planning of new facilities and a host of special strides; and (9) the accomplishment of the preceding items at a great speed.

While TPS has been in use over several decades, OAS is coming into practice only now in a number of organisations. The TPS has brought its own benefits for speedy execution, accurate performance and quite often confidential handling. Such benefits will become evident if one considers a couple of very common TPS applications.

The first is examination result processing which the bulk of Indian universities are doing on computer today, either with inhouse systems or with hired service bureaus. The massive nature of such processing can be visualised by looking at one State alone, namely, U.P., where 13 lakh candidates go through high school stream and 6 lakhs through the intermediate stream in any single year. The processing and publication of their results in time would not have been possible