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IMPLEMENTATION OF MIS

Successful Information Resource Management (IRM) calls for the implementation of information systems, besides their development. Implementation of information system is an organizational change process, where the organizational processes and procedures undergo a change as a result of the connection with the information system. It is the culmination of the design processes, where the system designer acts as the change agent to the end-users. Successful implementation of MIS requires user participation or user involvement, to improve the system quality and thereby increasing the user commitment to the system. Implementation of MIS includes the detailed design of the process, its validation, and thorough checking.

Organizational aspects of system Implementation

System implementation refers to the ongoing process of preparing the organization for incorporating the new system and for introducing it in such a way as to ensure its successful use. There are mainly four stages in the implementation of MIS in an organization, such as: installing the new system, cutting off the old system, phasing in the new system, and ensuring parallel operation of the existing and current systems. Step-by-step procedures for implementation of MIS include support, test and control of MIS, where the general and detailed system description, procedures for operation,

forms and database required, new organization structure, required equipment and facilities etc. are specified.

The major steps involved in system implementation are:

1. Planning the Implementation Procedures

It is the first step in implementation procedure and requires identification of implementation tasks, establishment of relationships among these tasks, establishment of schedule, preparation of cost schedules, and establishment of reporting and control system.

(i) Identification of implementation tasks: The major implementation tasks are: Planning of implementation activities, acquiring and laying out facilities and offices, organizing the personal for implementation, developing procedures for installation and testing, developing training programs for operating personnel, completing the system's software, acquiring required hardware, generating files, designing forms, testing the entire system, completing cut over to the new system, documenting the system, evaluating the MIS, and providing system maintenance.

The implementation plan should specify the subtasks for each of these major tasks, to help the organizational managers to assign specific responsibilities to various individuals in the organization.

(ii) Establishing relationships among tasks: System implementation involves a number of tasks in it, each of which can again be divided into various other subtasks. If these tasks and subtasks are not correlated, it is very difficult to carry out the tasks. Thus, for the better and systematic performance of these tasks, it is essential to establish a relationship across these tasks, on the basis of which the organization can schedule these activities and complete the entire system implementation process in time. Relationships can be established with the help of Gantt chart, network diagram, etc. A network diagram and a Gantt chart representing the relationship among tasks in MIS implementation are given below:

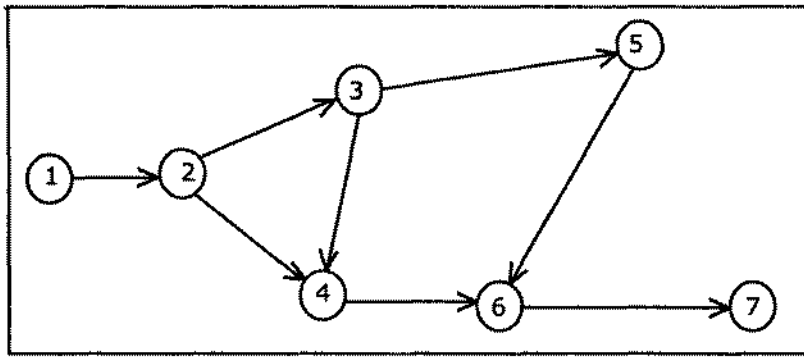

Fig. 13.1: Network Diagram

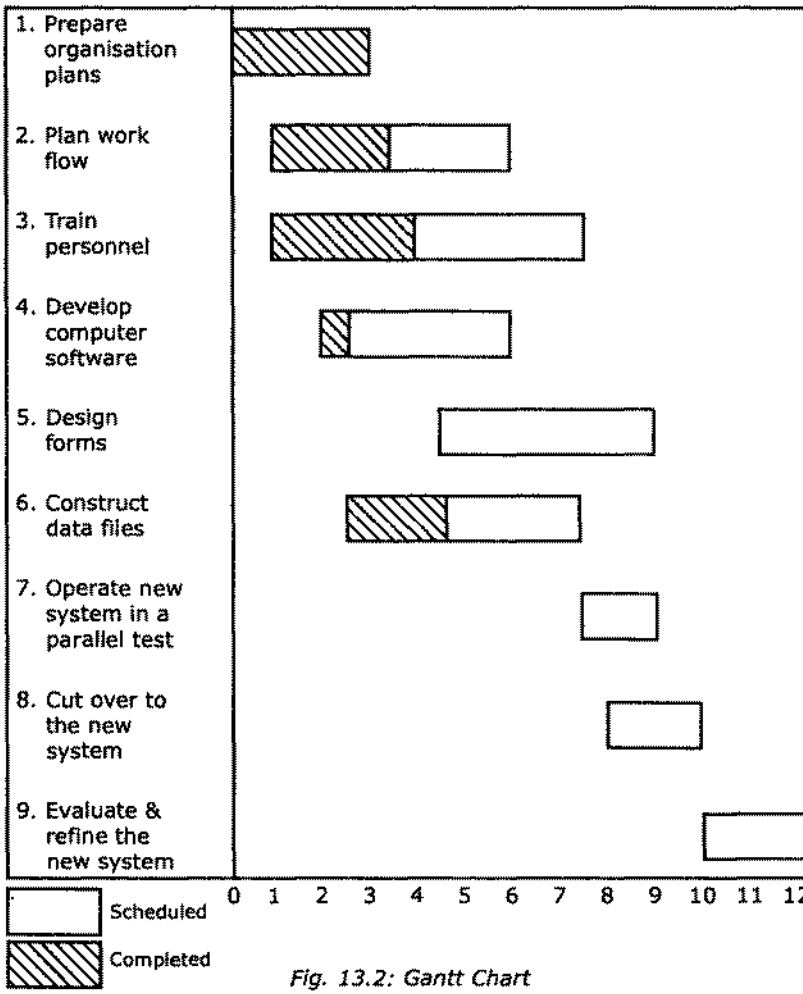

Fig. 13.2: Gantt Chart

(iii) Establishing a schedule: A time schedule is prepared by the system designers by estimating the time between events in the network. From this schedule the critical path (longest path) is identified and the completion date is specified, which ensures the timely completion of the work by managers.

(iv) Preparing a cost schedule: consisting of tasks and time details. After preparing the time schedule, the next step is the preparation of a cost schedule, on the basis of budgeted expenditures and funds, so that the total cost for completing the project can be determined in advance.

(v) Establishing a reporting and control system: It involves the reporting of the work in progress (monthly , weekly or even day to day), reflecting the cost, time and technical progress of the activities. Such a reporting system helps to control the unnecessary activities that cause delay in performance and huge expenditure in operation.

2. Acquiring Floor Space and Planning Space Layouts

Implementation of a new system by replacing the existing one requires additional and new facilities such as new office, computer room, etc., and necessitates adequate floor space and space layout. The project manager must prepare the space layout to determine the future requirements, and also an estimate of cost. Space planning should consider the space to be consumed by the people, equipment movement of people, and equipment in the process. The number and kinds of exits storage areas, safety factors, working conditions, etc., are also considered before implementation.

3. Organization for Implementation

The project manager is responsible for organizing and guiding the implementation tasks and is assigned with the entire MIS development, implementation and maintenance. Besides delegating the responsibilities to the line managers, the MIS manager must ensure that the line functional personnel have an active part in the implementation process.

4. Developing Procedures for Implementation

It is the duty of the project leader to arrange the key personnel in the project to prepare a detailed procedure for

system implementation, specifying the system segment to be tested, the period during which the testing is conducted the testing of the operational problems, the persons responsible for performing the tests, the ways, in which the tests will be conducted, and the persons responsible for evaluating the test results. He has to approve the system segment or to recommend the system modification.

5. Training Operating Personnel

The next step in system implementation is the development of a program to train the operating personnel in the organization in the new tasks assigned to them. Intensive training should be given to the first-line supervisors to make them acquainted with the new MIS and to enable them to operate it in the future. Training should also provided to the professional support personnel (like production planners, accounting personnel, etc.) who provide inputs to the MIS, in order to analyze them to direct others in their jobs. Moreover, training should be provided to the operational personnel, like computer operators, clerks, file maintenance personnel, etc.

6. Computer-related Acquisition

It refers to the acquisition of computer peripherals and management of automation, communication and display of MIS design. It involves the acquisition of hardware, software, personnel and materials. These acquisitions should be stated at the design stage. The selection of computer and the design of the computer system is a complex task. Since the design should match the architecture available with the vendors. After the design and CPU have been selected, the next step is to decide whether to buy or lease the equipment, on the basis of capital expenditure analysis, and other factors like prestige, usage, venders options and replacement schedule.

Selection of software package is the critical task in this stage. A number of packages are available in the market. The organization can either purchase one of them or develop a package internally to meet the system needs. For the development of software, the system designer used detailed MIS design and test cases, files, etc., as inputs. During the processing stage, the functions to be performed are: the detailed software application design, coding of application, testing of completed software package, and documentation

of the software. The outputs obtained in the process are correctly operating programs and documentation for users.

Human resources also need to be acquired to suit the needs of the new system. Jobs should be restricted at higher levels by introducing automation in handling routine procedures, and trained personnel should be appointed to carry out the work smoothly. The organizational system designer must prepare a chart reflecting the planning scheme regarding the personnel and their numbers, in terms of skills required, sources from which they are obtained, etc.

The material acquisition includes acquisition of forms and manuals for the MIS. Computer supplies such as cards, tapes, printout paper, etc., should be checked to place the order in due time.

7. Developing Forms for Data Collection and Information Dissemination

It refers to the preparation of data collection and information dissemination formats. Such formats are required for inputs ,outputs and also for transmission of data. The managers responsible for each of these activities require the specialists in the field to prepare forms for each activity, and after the preparation, the entire package is handed over to the manager for implementation in the system.

8. Developing Files

System files are designed in the detailed design phase. In the implementation stage, data must be obtained and recorded in the files to test the functioning of the system. This requires a checklist data, format of data, format of storage form, remarks regarding the time during which the data have been stored, etc. A procedure for the updating of data must be prepared. A procedure for obtaining data from the environment should also be developed. Forms are also prepared for the analyses and storage of data in the computer.

9. Testing System

The implemented system and its subsystem as re-tested to ensure that they function according to the procedure and specifications developed, enable the system to achieve its objectives, and contribute to the efficiency of the organization. The tests include components tests, subsystem tests, and total system acceptance test. Components include old or new

equipment, new forms, new software package, new data collection methods, new work procedure and new reporting formats. In the component test, the components of a system are individually tested for their accuracy, range of inputs, frequency of inputs, operating conditions, human factor reliability, etc. Subsystem testing involves verification of multiple inputs, complex logical systems, interaction of humans and equipment, interfaces of systems and timing aspects of subsystems.

10. Cut Over

It refers to the replacement of old components with new ones or the old system with a new system, and involves physical transfer of files, rearrangement of office furniture, movement of people and workstations, etc. Even though the components and subsystem are tested, sometimes problems arise in subsystems owing to the lack of training on the part of the operating personnel. Since they are placed in a new environment of procedures, techniques, processes and co-workers, it is quite natural to have some confusion and certain problems, which are technically called 'bugs'. Thus, it is essential to solve these' bugs' and to smoothen the operation of the system. Another important problem is that some employees are reluctant to adopt change and hence use old procedures in their work and keep secret files and perform old procedures side by side with the new. Such lack of confidence in the new system and reluctance to accept change are to be detected and ruled out.

The method used to overcome these kinds of bugs in the operation of the new system is called 'debugging'. It involves improvement in programs, change in formats, transfer of employees to appropriate jobs in the system, etc.

11. Documenting the System

Documentation of MIS refers to the development of written reports, describing the purpose, scope, information flow components, and operating procedures regarding the system. It helps the system in the replacement of subsystems, interfacing with other systems, training the new operating personnel, and also in the evaluation and upgrading of the system. Documentation of a computer based information system involves the documentation of software development programs, files, input and output formats, and the codes used.

Master files should also be documented for entering, processing and retrieving data.

12. Evaluation of MIS

After documentation, the information system needs to be evaluated on the basis of the system performance. MIS evaluation includes evaluation of each step in the system design and its contribution to the total system. MIS evaluation should be made by the customer as well as by the system designer. Moreover, financial experts should evaluate the system in terms of its actual and planned cost design, implementation and operation, and it should facilitate the identification of cost savings and increased profits owing to the introduction of MIS. While making an evaluation, the system designer must consider the system integrity, operating integrity, internal integrity, and procedural integrity of the system.

13. Operation and Maintenance

If the operation of the system is very good and if it seems to be operating without any problem, then it becomes an information processing production function, requiring the approval by the user as well as the approval of the system operation and maintenance groups that the system meets the required standard for its maintenance. After the documentation, if any changes are introduced in the system, it is referred to as maintenance of the system. Maintenance may be either repairs or enhancements. Repairs are needed for incomplete and incorrect coding, which renders the system defective, and enhancement refers to the improvements made on the existing system. Normally, repairs are needed in the initial period of operation, while the later maintenance activities are described as enhancement activities.

The maintenance of MIS is closely related to the control of MIS. It is an ongoing activity that keeps the information system at the highest levels of effectiveness and efficiency, within the cost constraints, and is directed towards reduction in errors due to design, environmental changes and improvement in the scope and services of the system. The maintenance activities may be emergency maintenance, routine maintenance, requests for special reports, and system improvements. Maintenance may be applied to changes in policy statements, changes in reports received by a new

manager, changes in forms, changes in operating systems, changes in procedures, changes in hardware and its configuration, software modification or additions, system controls and security needs, and changes in inputs from the environment.

The responsibility for system maintenance should be assigned to the supervisor and a team of system analysts, programmers, forms specialists, and computer experts. The maintenance activity is initiated by error reports, users, change request, reports from maintenance team members or from company management. Detailed planning is required for system maintenance, which involves four important steps, such as: logging of all written requests for system change, assigning priorities to the request on the basis of urgency, benefits time and resources required, etc., preparing annual and short-range plans, and finally documenting the maintenance adopted.

The important threats to system maintenance can be summarized as: lack of maintenance plan, lack of resources for maintenance, lack of interest and commitment on the part of system management, lack of user understanding and co-operation, inadequacy of documentation, and lack of qualified personnel.

14. Post-Audit

It is a part of system development cycle and includes the review of the system after its operation for a specific period (normally one year). Post audit refers to the review of the operation, cost and benefits, application, etc. of the MIS, by an audit term consisting of users, development, maintenance and operating personnel, who make recommendations for dropping repairing or enhancing the system applications and provide suggestions for improvement in the system.

Auditors are independent evaluators, either independent or internal. Independent auditors are external auditors who certify the fairness of financial statements on the basis of evidence obtained and checked by them. They can rely on the internal control system prevailing in the organization. If auditing is conducted with the help of computer systems the process of evaluation of the system includes the initial assessment of the role of computer in data processing and

also in the preparation of financial records, review of internal control in computer data processing, compliance tests of controls, and evaluation of the reliance on EDP control and decision. Such evaluation provides evidence for making judgments about the financial statements of the organizational system.

Internal auditors are employees of the organization, usually assigned with the task of reporting to the managers about the accuracy and fairness of books of accounts maintained by the organization. They frequently test the EDP system in the organization and speak about the appropriateness of the software package used. They also participate in post-audit by making evaluations of applications and testing of security and back-up procedures.

The post-audit evaluation of MIS includes technical, operational and economic evaluations. The important methods of assessing the system are: observation of the relevance of the system to specified tasks, determination of user willingness to pay for system capabilities, determination of logs of voluntary system usage, and measures of user information satisfaction. Auditors can have an important role in the control and quality maintenance of an information system, and can also perform advisory services to the management regarding the information system.

Conclusion

Implementation of MIS is a process of organizational change where the system passes through stages such as unfreezing-which increases the receptivity of the organization to change, moving – which follows a selected course of action, and freezing – which compels an equilibrium in the organization after change. For the successful implementation of an MIS, special attention should be given to the commitment to changes and to ascertain that the project is well defined and plans are well specified. An important approach to system implementation is the socio technical approach, where systems are implemented only after a thorough diagnosis of the organizational setting in which the system will be used. Understanding of the structure of relationship between users and designers is critical to the implementation of an MIS. Design and implementation of MIS are closely related to each other.

Exercise

Short Answer Questions

1. What do you mean by system implementation?
2. Write short note on post-audit.
3. Explain planning in relation to implementation procedures.
4. What are the tools for establishing relationships among tasks in system implementation.
5. Explain testing of the system.

Essay Questions

1. Explain the steps involved in system implementation.
2. Discuss the organizational aspects in system implementation.
3. Explain in detail , the concept of post audit and its significance in system implementation.