

MIS – A Thriving Technology Towards Advancement Of Organizational Efficiency

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ABSTRACT

Information is a corporate resource, as important as the capital, labour, know-how etc. & is being used for decision making. Its quality, therefore, required to be very high. Low quality information would adversely effect the organizational performance as it affects decision – making. The quality of information is the result of the quality of the input data, processing design, system design, system & procedures, which generate such a data & the management of the data processing function. With the growth of organizations functionally and geographically, they are increasingly depending on organized information systems for management planning & control. Information system in an organization is like the nervous system in the human body that integrates the various components of the organization into a single whole. During the last two to three decades, information systems have undergone rapid developments.

1. INTRODUCTION

The MIS (Management Information System) is one of the five major CBIS subsystems. Its purpose is to meet the general information needs of all the managers in the firm or in some organizational subunit of the firm. Subunits can be based on functional areas or management levels.

MIS provides information to the users in the form of reports & outputs from simulations by mathematical models. The report & model output can be provided in a tabular or graphic form.

Behavioural influences are always important to the performance of information systems, but they are specially crucial to such organizational information systems as the MIS. Managers & information specialists can establish programs designed to transform the negative effects of the behavioural influences into positive results.

MIS reflects an attitude by the executives that they want to make the

computer available to all of the firm's problem solvers. When the MIS is in the place & functioning as intended, it can help managers & other users both inside & outside the firm identify & understand problems.

2. HISTORY OF MIS

By the mid-1960s, most large firms had finally overcome the pains of implementing their first computer systems. It had been a difficult task, for those organizations had accumulated huge volumes of data & much effort was required to put the data in a form that was acceptable to the computers. Computer literacy within the firms was limited to a handful of information specialist & those specialists had no real experience in guiding the implementation through the steps of the system life cycle. Accomplishments came slowly – by trail & error.

The firms had one point in their favour during those hard times : In performing data processing tasks the computer was applied in exactly the same

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way as the key-Driven & purchased-card machines had been the Accounting Information System (AIS) tasks were well defined & affected primarily the firm's accounting departments. Computer implementation consisted essentially of transforming the older routines into a computer form.

3. EFFORTS OF MIS IN ANCIENT DAYS

With the AISs up & running, both the firms' information specialists & the computer manufactures wanted to keep the computer activity moving, so they sought new application areas. It did not take them long to realize that the informational output of the AISs left much to be desired. For many years the technology-the key-driven & punched-card machines-had been incapable of providing management with information. When it first became clear that the computer could fill that gap, it looked as if the task would be easy.

The firms that attempted to introduce the first MISs learned otherwise. The big barrier turned out to be the managers. As a group they knew nothing about the computer. They knew their jobs, & they had developed approaches to solve problems, but they had not given much formal thought to the role of information in their activities. As a result, it was difficult for the manages to articulate exactly what they needed from the MIS.

This situation was frustrating to the information specialists. Since they knew little about management, they did not know what questions to ask. The information specialists decided that the only solution was for them to design & implement systems to produce information that they thought the managers needed. This was done, but in many cases the information specialists had guessed wrong, and their systems were not used.

Overtime, as managers learned about the computer, they became aware of the underlying logic of the processes that they followed in solving problems, & they were able to describe their information needs. Information specialists, in turn, learned the basics of management & how to work with manages in designing information systems. The MISs was redesigned so that they more closely fit managers' needs, & the MIS eventually became established as a major computer application area.

4. ABOUT MIS

Management Information Systems (MIS) as a computer based system that makes information available to users with similar needs. The users usually compose a formal organizational entity-the firm or a subsidiary subunit. The information describes the firm or one of its major systems in terms of what has happened in the past, what is happening now, & what is likely to happen in the future. The information is made available in the form of periodic reports, special reports, & outputs of mathematical simulations. Both managers & non-managers use the information output as they make decisions to solve the firm's problems.

5. AN MIS MODEL

Our MIS model can be illustrated with the help of the following fig. The database contains the data provided by the AIS. In addition, both data & information are entered from the environment. Software that produces periodic & special reports, as well as mathematical models that simulate various aspects of the firm's operations use the database contents. Persons who are responsible for solving the firm's problems use the software outputs. Note that some of the problem solvers can exist within the firm's environment. The environment becomes involved when the firm bands

together with such other organizations as suppliers to form an Inter-organizational Information System (IOS). In that case, the MIS supplies information to the other members of the IOS.

6. DEVELOPMENT OF MIS

The development of MIS calls for determining the strategy of development. The plan consists of various systems & subsystems. The development strategy determines where to begin & in what sequence the development can take place with the sole objective of assuring the information support.

The choice of the system or the subsystem depends on its position in the total MIS plan, the size of the system, the user's understanding of the system & the complexity & its interface with the other systems. The designer first develops systems independently & starts integrating them with other systems, enlarging the system scope & meeting the varying information needs.

Determining the position of the system in the MIS is easy. The real problem

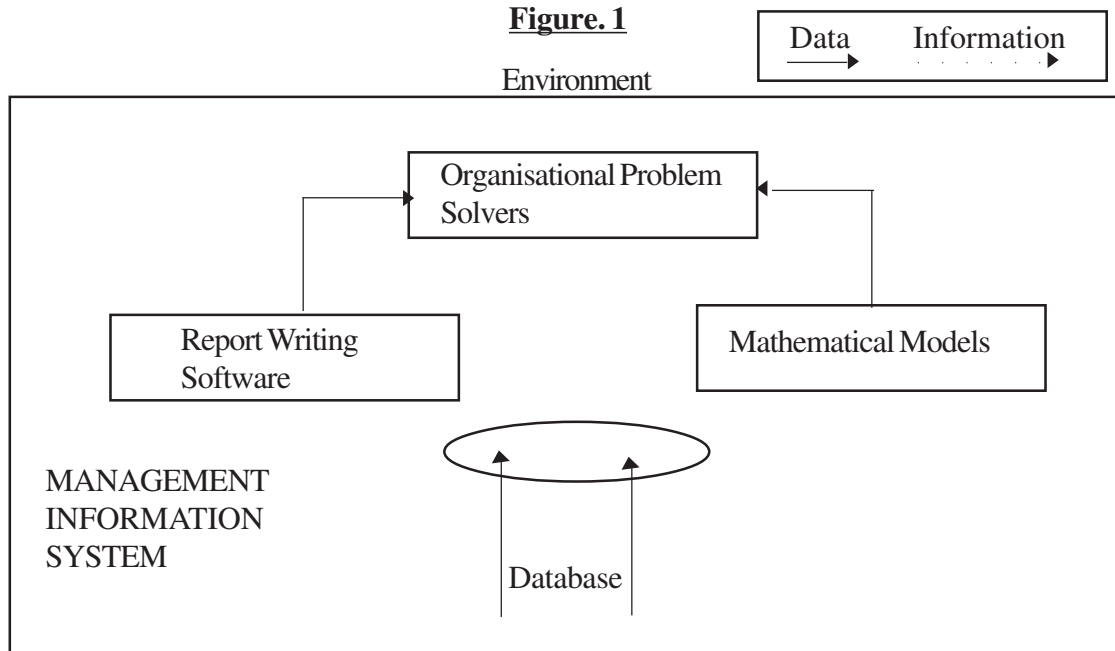
is the degree of structure & formalization in the system & procedures which determine the timing & duration of development of the system. Higher the degree of structuredness & formalization, greater is the stabilization of the rules, the procedures, decision-making & the understanding of the overall business activity. Here, it is observed that the user's & the designer's interaction is smooth & each other's needs are clearly understood & respected mutually. The development becomes a methodical approach with certainty in inputs process & outputs.

a. Prototype Approach

When the system is complex, the development strategy is prototyping of the system. Prototyping is a process of progressively ascertaining the information needs, developing methodology, trying it out on a smaller scale with respect to the data & the complexity, ensuring that it satisfies the needs of the users, & assess the problems of development & implementation.

This process therefore identifies the problem areas, inadequacies in the

Figure. 1



prototype vis-à-vis fulfillment of the information needs. The designer then takes information needs, streamlining the operational systems & procedures & more user interaction. A typical process of the system development through prototyping is given in the fig.2.

Features of Prototype Approach

1. Open system with a high degree of uncertainty about the information needs.
2. Necessary to try out the ideas, application & efficiency of the information as a decision support.
3. Necessary to control the cost of the design & development before the scope of the system & its application is fully determined. Experimentation is necessary.
4. User of the system wants to tryout the system before he commits the specification & the information requirements.

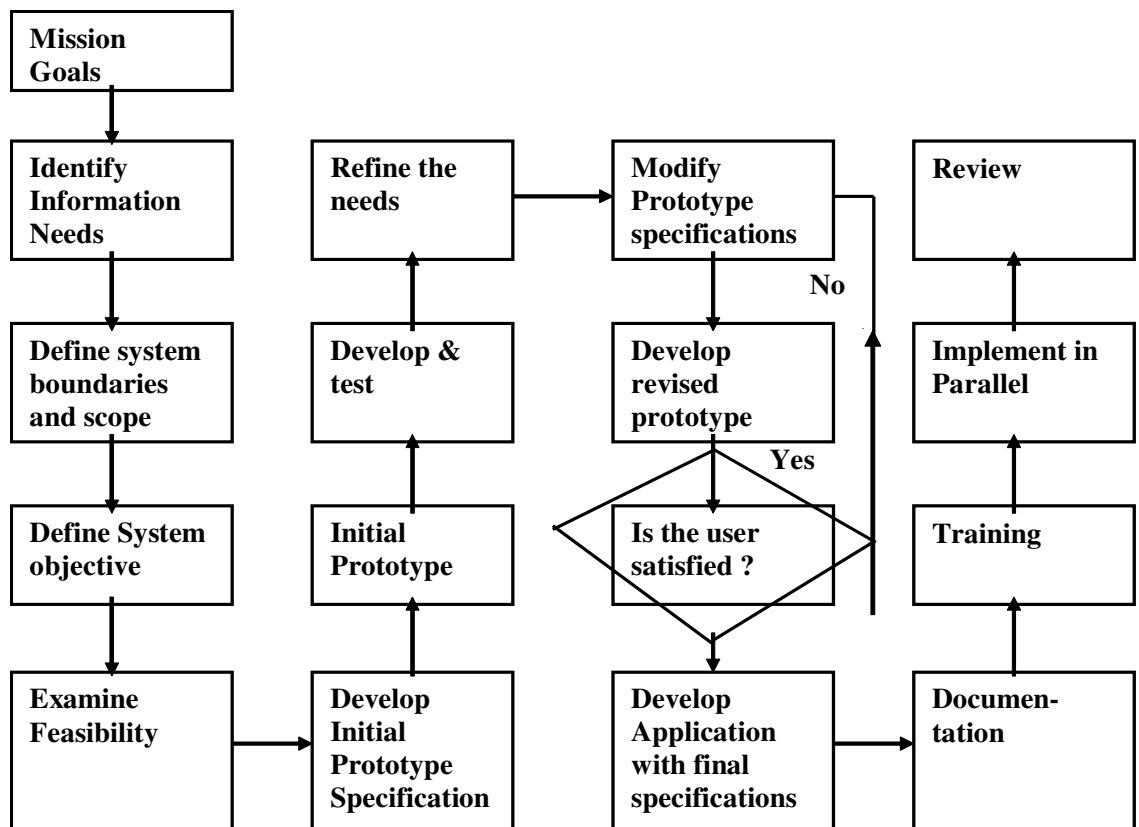
5. The system & application is highly custom oriented

b. Life Cycle Approach

There are many systems or subsystems in the MIS, which have a life cycle, that is, they have birth & death. Their emergence may be a sudden or may be a part of the business need, & they are very much structured & rule rule-based. They have hundred percent clarity of inputs & their sources, a definite set of outputs in terms of the contents and formats. These details more or less remain static from the day the system emerges & remains in that static mode for a long time. Minor modifications or changes do occur but they are not significant in terms of handling either by the designer or the user of the system. Such system, therefore, have a life & they can be developed in a systematic manner, &

Figure : 2

INFORMATION SYSTEM DEVELOPMENT MODEL: PROTOTYPE APPROACH



can be reviewed after a year or two, for significant modifications, if any. These systems have a fairly long duration of survival & they contribute in a big way as sources of data to the corporate MIS.

Features of life cycle approach

1. Closed systems with little or no uncertainty about the information needs. The system remains valid for a long time with no significant change. The design would remain stable.
2. No need to try out the application of the information as it is already proven.
3. Scope of the design & the application is fully determined with clarity & experimentation is not necessary.
4. The user is confident & confirms the

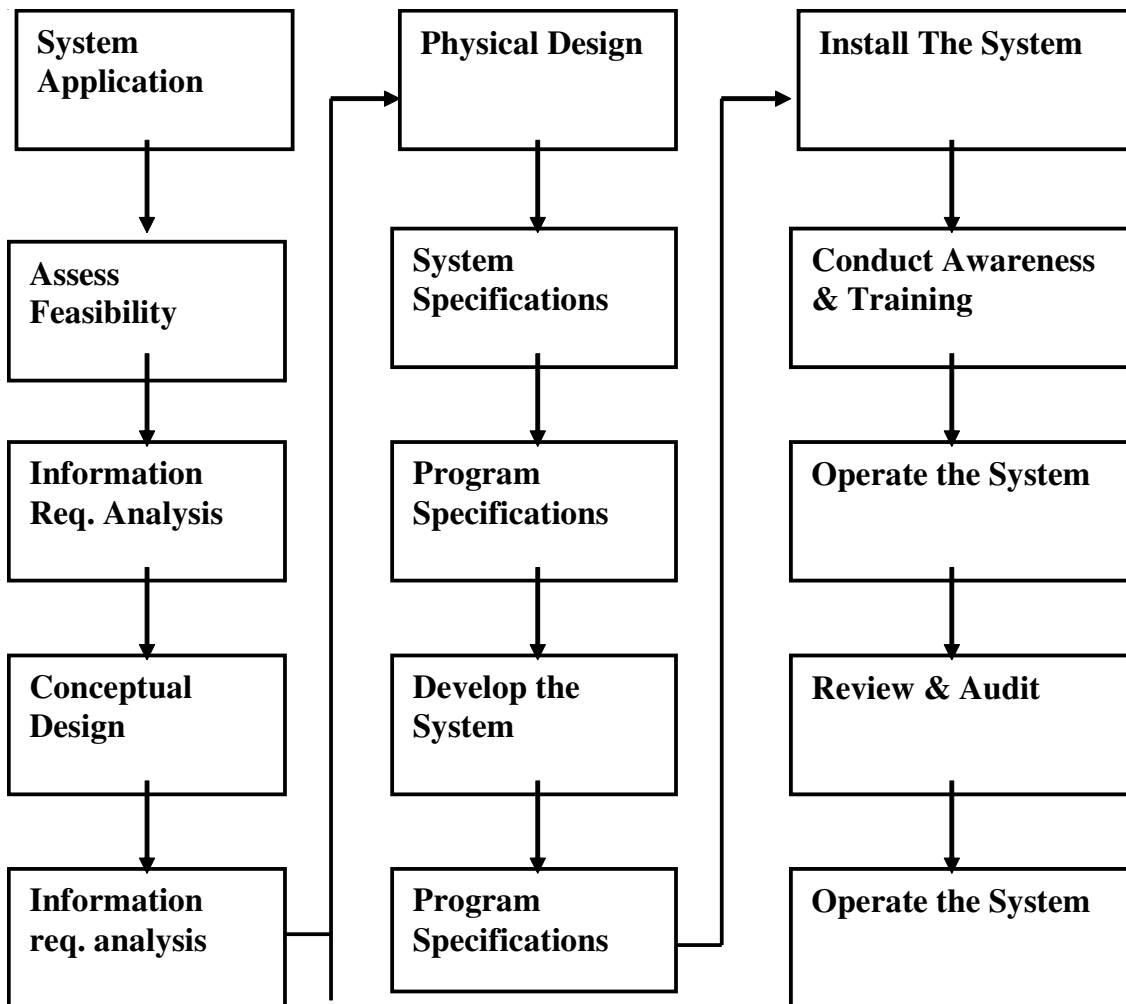
- specifications & the information needs.
- 5. The system & application is universal & governed by the principles & practices.

7. IMPLEMENTATION OF THE MANAGEMENT INFORMATION SYSTEM

The implementation of the system is a management process. It brings about organizational change; it affects people & changes their work style. The process evokes a behavior response, which could be either favorable or unfavourable depending upon the strategy of the system implementation.

In the process of implementation, the system designer acts as a change agent

Figure 3 : LIFE CYCLE APPROACH TO THE DEVELOPMENT OF MIS



or a catalyst. For a successful implementation he has to handle the human factors carefully.

The user of the system has a certain fear complex when a certain cultural work change is occurring. The first & the foremost fear is about the security to the person if the change over from the old to new is not a smooth one. Care has to be taken to assure the user that such fears are baseless & the responsibility, therefore, rests with the designer.

The second fear is about the role played by the person in the organization & how the change affects him. On many occasions, the role may reduce his importance in the organization, the work design may make the new job impersonal, & a fear complex may get reinforced that the career prospects may be affected.

There are certain guidelines for the systems designer for successful implementation of the system. The system designer should:

1. Not question beyond a limit the information need of the user.
2. Not forget that his role is to offer a service & not to demand terms.
3. Remember that the system design is for the use of the user & it is not the designer's prerogative to dictate the design features.
4. Not mix up technical needs with the information needs. He should try to develop suitable design with appropriate technology to meet the information needs. The designer should not recommend modifications of the needs, unless technically feasible.
5. Impress upon the user the global nature of the system design which is required to meet the current & prospective information need.
6. Not challenge the application of the information in decision – making. It is the sole right of the user to use the information the way he thinks proper.

7. Impress upon the user that the quality of information depends on the quality of input which he provides.
8. Impress upon the user that he is one of the users in the organization & that the information is a corporate resource & he is expected to contribute to the development of MIS.
9. Ensure that the user makes commitment to all the requirements of the system design specifications. Ensures that he appreciates that his commitments contribute largely to the quality of the information & successful implementation of the system.
10. Ensure that the overall system effort has the management's acceptance.
11. Enlist the user's participation from time to time, so that he is emotionally involved in the process of development.
12. Realize that through serving the user, he is his best guide on the complex path of development.
13. Not expect perfect understanding & knowledge from the user as he may the user of a non-computerized system. Hence, the designer should be prepared to change the system specifications or even the design during the course of development.
14. Impress upon the user that the change, which is easily possible in manual system, is not that easy in the computer system as it calls for changes in the programs.
15. Impress upon the user that perfects information is non-existent; his role therefore still has an importance in the organization.
16. Ensure that the problems in the organization are resolved first before the system is taken for development.
17. Conduct periodical user meetings on systems where you get the opportunity to know the ongoing difficulties of the users.
18. Train the user in computer appreciation & systems analysis, as his perception of the computerized information system will fall short of the designer's expectation.

Implementation of the MIS in an

organization is a process where organizational transformation takes place. This change can occur in a number of ways.

The significant problem in this task is the resistance to change. The resistance can occur due to three reasons. viz., the factors internal to the users of information, the factors inherent in the design of the system & the factors arising out of the interaction between the system & its users. The problem of resistance can be handled through education, persuasion & participation. This itself can be achieved by improving the human factors & providing incentives to the users & eliminating the organizational problems before implementing the system.

8. MIS : THE FACTORS OF SUCCESS AND FAILURES

Many organizations use MIS successfully, others do not. Though the hardware & software is the latest & has appropriate technology, its use is more for the collection & storage of data & its elementary processing. There are some factors, which make the MIS a success & some others, which make it a failure. These factors can be summarized as follows :

Factors contributing to success

If a MIS is to be a success then it should have all the features listed as follows

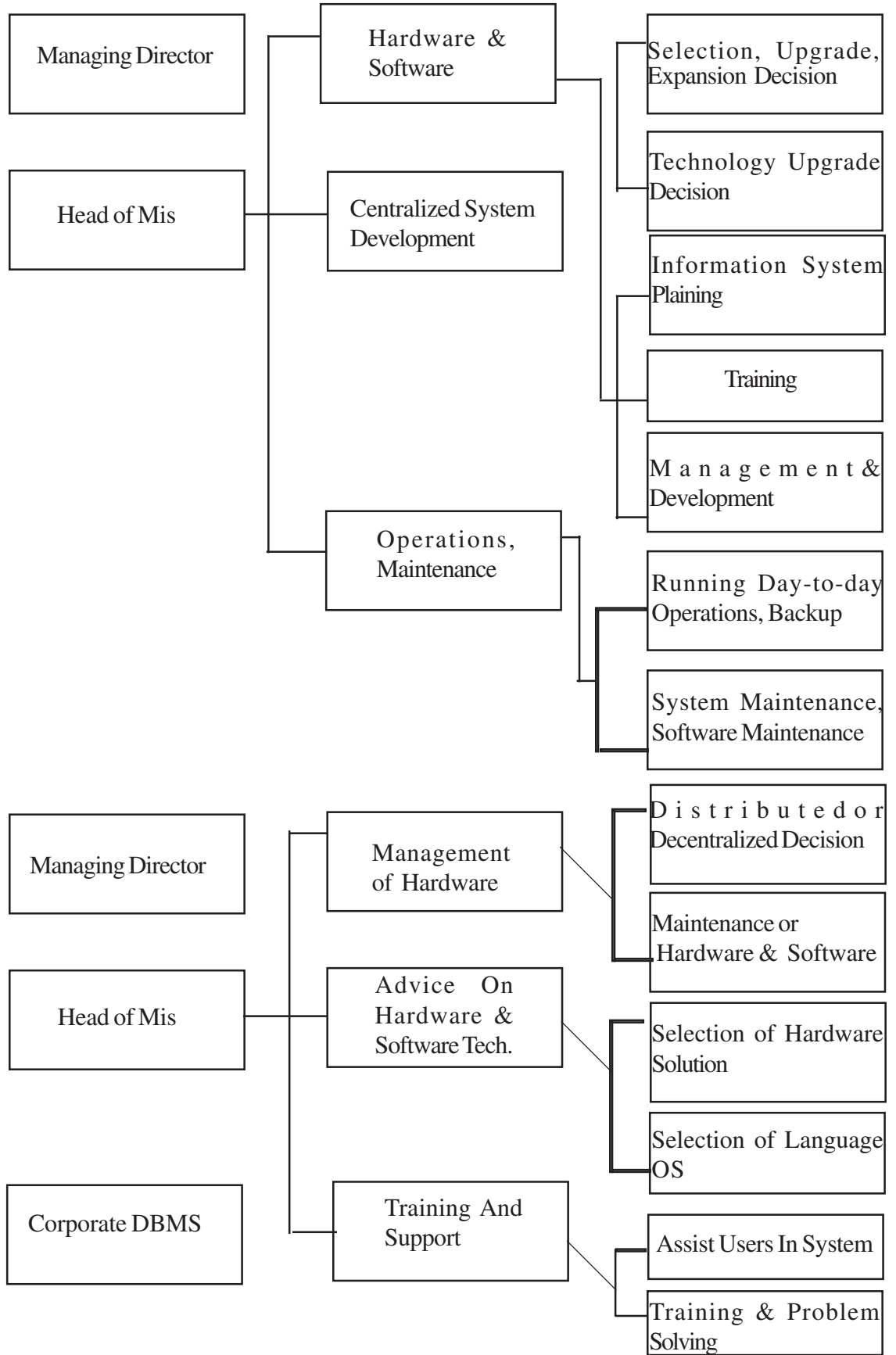
1. The MIS is integrated into the managerial functions. It sets clear objective to ensure that the MIS focuses on the major issues of the business. Also adequate development. Resources are provided & the human & organizational barriers to progress are removed.
2. An appropriate information processing technology required to meet the data processing & analysis needs of the users of the MIS is selected.
3. The MIS is oriented, defined &

- designed in terms of the user's requirements
- and its operational viability is ensured.
4. The MIS is kept under continuous surveillance, so that its open system design is modified according to the changing information needs.
5. MIS focuses on the results & goals & highlights the factors & reasons for non-achievement.
6. MIS is not allowed to end up into an information generation mill avoiding the noise in the information & the communication system.
7. The MIS recognizes that a manager is a human being & therefore, the systems must consider all the human behavioural factors in the process of the management.
8. The MIS recognizes that the different information needs for different objectives must be met with. The globalization of information in isolation from the different objectives leads to too much information & its non-use.
9. The MIS is easy to operate & therefore, the design of the MIS has such features, which make up a user-friendly design.

Decentralized Organization of MIS

- Information is considered as a resource for a division, a department, and group of individuals or in other words, it is considered specific to the business function. The head of the MIS provides support to the users of the information in their task of development. The major responsibility is the data management & the technology.
1. MIS recognizes that the information needs become obsolete & new needs emerge. The MIS design, therefore, has a basic potential capacity to quickly meet new needs of information.
 2. The MIS concentrates on developing the information support to manager critical success factors. It concentrates on the mission critical applications serving the needs of the top management.

Centralized Organization Of Mis



9. FACTORS CONTRIBUTING TO FAILURES

Many a times MIS is a failure. The common factors, which are responsible for this are listed as follows.

1. The MIS is conceived as a data processing & not as an information processing system.
2. The MIS does not provide that information which is needed by the managers but it tends to provide the information generally the function calls for. The MIS then becomes an impersonal system.
3. Underestimating the complexity in the business systems & not recognizing it in the MIS design leads to problems in the successful implementation.
4. Adequate attention is not given to the quality control aspects of the inputs, the process & the outputs leading to insufficient checks & controls in the MIS.
5. The MIS is developed without streamlining the transaction processing systems in the organizations.
6. Lack of training & appreciation that the users of the information & the generators of the data are different, & they have to play an important responsible role in the MIS.
7. The MIS does not met certain critical & key factors of its users such as a response to the query on the database, an inability to get the processing done in a particular manner lack of user-friendly system & the dependence on the system personnel.
8. A belief that the computerized MIS can solve all the management problems of planning & control of the business.
9. Lack of administrative discipline in following the standardized systems & procedures, wrong coding & deviating from the system specifications result in incomplete & incorrect information.
10. The MIS does not give perfect information to all the users in the organization. Any attempt towards such a

goal will be unsuccessful because every user has a human ingenuity, bias, certain assumptions not known to the designer. The MIS cannot make up these by providing perfect information.

10. COMPARISON WITH MIS AND WITHOUT MIS

Manual Reporting System

In Manual Reporting system, this flow is in the form of periodical progress reports from the lower levels in the organization to the higher levels & the communication of decisions from the higher to the lower levels. The reports received from the operational levels are consolidated & summarized at each higher level. The main purpose of these reports is to ensure accountability & work productivity. Often, targets of work are assigned to the operational staff & the report highlights the comparison of actual performance with the assigned targets. In this way it may also provide the basis for measurement of performance of the operational staff.

Periodical reports are generally unsuitable for any decision – making by the management. Firstly, because the decisions are just not made on a periodical basis except those of a routine nature viz., payments of salaries, making purchase orders, sending reminders to debtors etc. Secondly, the process of recording data, communication, consolidation & filtration along with the periodicity, which may be of the order of a fortnight or a month, creates a wide time lag in the availability of information. The information so obtained does not represent the current status of operations in the organization but at a point of time in the past. Finally, the decision models based on the information viz., the techniques of Operations research & Cost – benefit Analysis etc., involve so much of computation that they are just not feasible

within the timeframe of the majority of decisions. In the circumstances decisions are generally based on intuition & general awareness of the operations of the organization. The periodical reports are at best used to study the long-term trends & supplement general awareness.

Database System

A database is a collection of interrelated data which are independent of application programs & which can serve many application, present & future. A well-designed database represents the inherent properties of data rather than just the properties required for a specific application. A common & controlled approach is used in adding new data & modifying & retrieving existing data. The database system strives to eliminate the problems of data redundancy, inconsistency, & lack of integrity inherent in the file system. It strives to provide data independence i.e. independence from application programs. Changes in the organization of data within the database may be brought about without changing the application programs.

A user of database may not be concerned with all the types of data items and may not see the complete logical structure in scheme. However, the subschema are not separately stored for different users but are only a selected view of the scheme provided by the database system software.

Database system provides an integrated view of data, which is particularly useful for higher levels of management. It can handle unplanned queries, provides a logical view of data, which is consistent with the physical reality & eliminates the frequent needs of changes in the organization of data. Dynamic restructuring of database is possible as new types of

data & new applications are added
independent of existing application programs.

Advantages of database systems demanded further centralization of data. Economics of scale in data storage also favoured centralization of data. This could mean that a large corporation should have a large central computer with voluminous database at a central location. At the same time, the need for real time facility & on-line access to the computer demanded that there would be a terminal in each department & each site location connected to the central computer. Such a system made heavy demands on the communication network.

11. CONCLUSION

The above is an account of some of the strategic issues, which have bedeviled introduction of computer – aided decision – making in the forms of corporate MIS in many organizations in INDIA & ABROAD. Some general principles have been used to illustrate the situation n& a number of Indian examples have been cited by way of deriving learning lessons. It is vital to keep reviewing the situation so that such strategic issues are not lost sight of in the country's current emphasis on computerization. It is important to avoid frustration before one aims at achieving the elation on successful computerization.

A number of public & private sector organizations such as BHEL, Hindustan Zinc Ltd., NTPC, Bhadrachalam Paper Board, etc., have started a process of systematic programme of training & user education. It is imperative that such education begins at the top level for computer appreciation; at the middle management for specific computer applications in their own domains; & at the working level for direct involvement in input

& output quality control. It is good to see the bulk of Indian organizations going through such in elaborate process of computer initiation, as there is no shortcut to it.

Much work is currently being done in U.S.A. & elsewhere in the development of commercially viable distributed database software. Much of it will operate with machines from one manufacturer that the

· tightly integrated in their design. It is,
· however, very important that international
· standards be developed for interconnecting
· databases of different manufacturers over
· networks that are truly multinational. Work
· is going on to create such standards in
· CODASYL, ANSI (American National
· Standards Institution), and ISO
· (international Standards Organization) and
· various other organizations.
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