INTRODUCTION

The Management Information System consists of five elements, viz. Input, Analysis and Processing, Storage and Retrieval, Output, and Information flow. The input is to be fed into the system in the form of raw or semi-processed data. The usual carriers of inputs in a normally operated system are reports, correspondence, minutes of discussions and meetings, published documents and books, reports etc. For an electronic system, the input data has to be connected into form which could be read by a computer. For this purpose, it is usually transferred to disks, tapes, etc.

Analysis and processing is done to convert new data into desired information. The analysis covers a number of ways such as abstracting, compiling, classifying, calculating, relating, interpreting, and so on. Depending upon the volume of data to be handled and availability of time, the analysis could be effected manually, mechanically or electronically. However, it requires special mention here that whatever be the mode of analysis, the basic steps are same. The only advantage of a more sophisticated processing system such as Electronic Data Processing (EDP) is to handle a much larger quantity of data within a short time. At this stage, data can be adequately simulated in the form of models which could provide a rational basis for decision-making.

The storage and retrieval is meant for keeping the data or information for future use. To calculate the trends or to make forecasting, considerable amount of historical or past data may be required. Unless there is a proper system of storage, such data cannot be traced out when required. Similarly, a large portion of the processed information may not be required immediately, but needs to be kept for future use. Therefore, a scientific storage and retrieval system is needed to classify, codify and store information in such a manner that it can be taken out at any future date quickly without much effort. The traditional and conventional storage system is the filing system. Improved forms such as computer tapes and disks, microfilm, etc. are also available which facilitate a quick storage and retrieval of such a large quantity of data and information in a more compact form. The storage and retrieval to be considered is not only of the data extracted from reports and papers, but also of the documents themselves such as progress reports, project reports, correspondence and published materials.

The information flow statement is concerned with the flow of input into the systems, output information to the user and flow of data to and from storage systems and within the data processing systems. It involves the determination of communication channels and their efficient working with minimum time and distortion. Generally, the information flow procedures cover the receipt and despatch of correspondence, reports and other materials, their transmission to different joints and their handling during the movement from one point to another.

The development of Management Information System in an organisation would necessarily cover the following components:

- System requirements mainly dealing with the identification of information needs at each level.
- Design of MIS consisting of input, processing and analysis, output, storage and retrieval and flow of information.
- Implementation of the system's organisational requirements and follow-up

In many of the business concerns, the executives often feel handicapped because of the non-availability of information

which they need for decision-making. The reason for this is that the data generated and stored in these undertakings is not exactly determined on the basis of correct information requirements in each user level. As a result, it seems, there is a good amount of data which is necessary and at the same time there are likely to be gaps which directly affect the work at the user level.

There is also considerable time lag in obtaining the required information with the result that by the time it reaches the user, it is not more than historical information. This hinders a scientific decision-making by the user.

The MIS has two major roles to play in a business organisation, i.e. first, to impel the executives to take action and, second, to provide factual basis for taking such an action. An ideal MIS can provide information that possesses the following characteristics:

Need based: By need-based it is meant that the information available directly relates the key variables in a problem situation and it affects implicit directions for decision-making. The decision-making process thus becomes highly scientific and there is no place for guesswork.

Accuracy: The Manager of an organisation has to constantly size up situations to find out what the problem is. He has to draw up a plan by defining the objectives and visualising the job that needs to be done. He has thus to set up an administrative organisation with a view to obtaining the desired results. Availability of accurate information assists him in all these areas.

Conciseness: Conciseness or availability of any required information is necessary to avoid waste of time by seeking classification and processing the raw information.

Reliability: Reliability is cited to be one of the major characteristics of the information required for decision-making. Otherwise, there is every chance of misleading conclusions and wrong policy-making.

Relevance: To draw out rational conclusions from the available information is of utmost importance. It would be wrong to interpolate subjective factors to infer conclusions that would be acceptable to the organisation. In this regard, emphasis can be laid upon to facilitate relevant information to the decision-making process of the managers concerned.

Consistency: Like a stone which causes a ripple, resulting in a series of ripples, inconsistent information leads to further inconsistency. Every manager in an organisation is interested in a continuous flow of information concerning his needs and this can be facilitated under an ideal MIS.

Economy: An information set-up could be made economical in the sense that it could facilitate the desired information with minimum cost involvement.

Flexibility: The information set-up could be made flexible to accommodate changing needs. With this change of personnel, the information requirements can also be changed. Besides, changes in activities, problems and opportunities may also tempt to change the information requirements. The information set-up could be designed in quite a flexible manner so as to incorporate the changes.

Exception-oriented: The exception-oriented information set up is based on the Principle of Management By Exception. According to this, attention of the management is focused on those areas that deviate from the normal or desired course. Thus, if the performance is according to the target and anticipation (or within the permissible limits of deviation), it need not be highlighted or reported to higher levels. To develop an exception oriented information system, it is necessary to classify the information into three-vital, essential and desirable.

Predictive ability: The managers have to predict the likely events of the organisation and in that sense they have to take decisions and action before the events actually take place. An ideal information set-up can lead to output information relating to forecasts, anticipation and estimates.

The development of MIS in any organisation would necessarily cover the following components:

- System requirements
- Design of MIS
- Implementation of the system.

Since the MIS has to be based on the precise information requirements of the user level, it follows that the basic step would be to identify those requirements. The function and the type of decision to be taken at each level are different and as such the information requirements should be determined level-wise.

The first step in identifying information needs could be the analysis of existing information coming to the top level. The different modes by which the information may be needed at the top level are progress reports, correspondence, published materials, verbal and communication through telephones, meetings, on-the-spot visits, etc. Of these various sources to information, progress report is the only source which can be structured and designed in advance. It would be desirable to analyse the information coming through reports and inter-office communication which can be easily examined. An analysis of all these materials would indicate any duplication or multiplication of information or data being communicated in different formats. If all such duplication or multiplication are removed, the remaining information would represent the information needs on the basis of existing working of the concerned organisational level.

The next step would be to clearly list down the functions and the type of decisions being made by this level, based on the past experience. Here, not only the monitoring and control functions are to be concerned, but also the other functions of management, namely, the planning and execution, are to be considered. In other words, all the functions of that level, whether they relate to planning and policy-making or repulsion, or control, or execution of certain policies, would need to be taken into consideration in determining the information needs.

The third step would be to clearly list down the function and the type of decision to be made at each executive level. An analysis of these functions and decisions with respect to first approximate information needs, identified in the first step would help in clearly listing out the second approximate requirements for the information needs, which could help in discharging the functions effectively.

The fourth step would be to make a selective analysis of these information needs putting them into three groups, namely (a) essential, (b) desirable, and (c) operational, on the basis of the dependence on the executive level concerned, on these items for decision-making, availability and cost. This analysis helps in isolating those items of information which are considered more important. While designing the system one could ensure that the senior and top levels get only (a), middle levels (a) and (b), and low levels all the three (a), (b) and (c) groups of information,

While designing the information requirements, it is generally helpful to pose the following questions and determine their answers which could be used later to list out information requirements.

- What are the functions, activities and decisions specific to the particular level for which MIS is to be designed?
- What information is needed for these activities and when?
- What information has been used, not used and not available though needed in the past?
- Who can provide the information needed?
- Which is the best way of getting it and for what?
- How frequently information is needed?
- How accurate should it be?
- Who else should receive the information and when?
- Should information be used and then destroyed or preserved?

Having developed the information needs, the next step would be the design of the five components of MIS, namely, output, input, processing and analysis, storage and retrieval and flow of information. Since the cream of the system is the output, the starting point for designing the MIS would be the output derived form the system.

Both for presenting information in inputs as well as in outputs some points should be kept in view so as to meet the system characteristics mentioned earlier. They are :

- The information presented should be reliable, accurate, concise, inter consistent and timely.
- Exception or deviation should be highlighted as these are the ones which lead to action.
- Predictable information in the format of forecast and projection for future should be given so that action could be initiated well before the problems become acute.
- Use of graphs and charts in the reports should be encouraged as these would improve the presentation of information, grasp and understanding by the user and leave a lasting impact.

An appropriate system for a storage or retrieval of documents, namely reports, correspondence, etc. should also be arranged. It is found in many business units that most of the papers and records are stored for long duration and occupy a very large space. Whenever any information is to be extracted or any documents is required, the big volume of these papers comes in the way of quick retrieval of each. Thus the very purpose of keeping the papers for long-term use in the conventional filing systems gets defeated. The use of modern technique for microfilming of important papers can be considered.

This would help in releasing much of the space used for storage of records as well as make the storage and retrieval most effective, efficient and useful.

Use of a faster communication facility is also recommended for developing the needs and type of information. More use of telex, telegram, wireless, microwave communication, etc. may be encouraged. The system of recording the receipt and the dispatch, though essential, requires a review so as to minimise the time taken at each stage.

Considerable delays occur in moving paper from one level to another. The efficiency norms indicating the maximum time limit for which the file or a document can be retained at each level should also be indicated.

Lastly, in setting up procedures for proper flow, feedback in the form of acknowledgement, decision recording, etc. should be made obligatory.

The involvement of all the organisation levels in design, development and implementation of MIS is essential for ensuring its effective and proper use. A greater stress on training and orientation of execution at different levels would be needed for this purpose. In fact, with proper training, it should be possible for executives to improve their own information system which will ultimately benefit them. MIS should not be treated as something meant for some outside agency or imposed from outside but it is primarily to meet the organisation's own requirements. While implementing the system design, it should be necessary to have a pilot test for a few work areas before introducing the system in full.

The system design should be made flexible so that with changing environment, needs and personnel in various functional areas, the system could be suitably modified. So also, to obtain information at the required time, one should not be spending too much resources when considered in the context of alternatives available. It is noted that in all cases it leads to either economy or exercise cost. For each situation, it will have to be determined and a basic feasibility study for introduction of computerisation needs to be undertaken.

To conclude, it may be stated that the concept of MIS is now better known and recognised and there have been attempts from time to time to improve the system. 21st century shall witness a bigger thrust on MIS improvement, with the increasing dependence on fact and information rather than joint interaction and judgement, for decision-making in business units.

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