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MANAGEMENT INFORMATION SYSTEM

INTRODUCTION

Management information system (MIS) refers to a computer-based system that provides managers with the tools to organize evaluate and efficiently manage departments within an organization. *MIS is a planned system of collecting, storing and disseminating data in the form of information needed to carry out the functions of management*. Goals of an MIS are to implement the organizational structure and dynamics of the enterprise for the purpose of managing the organization in a better way and capturing the potential of the information system for competitive advantage.

The Management Information System (MIS) is one of the five major Computer Based Information system. Its purpose is to meet the general information needs of all the managers in the firm or in some organisational sub unit of the firm. Sub units can be based on functional areas or management levels.

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

Behavioural influences are always important to the performance of information system, but they are especially crucial to such organisational information systems as the MIS. Managers and 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 place and functioning as intended, it can help managers and other users both inside and outside the firm identify and understand problem.

What is an 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 organisations had accumulated huge volumes of data and 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 specialists, and those specialists had no real experience in guiding the implementation through the steps of the system life cycle. Accomplishments came slowly-by trial and error.

- The firms had one point in their favor during those hard times: In performing data processing tasks the computer was applied in exactly the same way as the key driven and punched-card machines had been. The Accounting Information System (AIS) tasks were well defined and

affected primarily the firm's accounting departments Computer implementation consisted essentially of transforming the older routines into a computer form.

DEFINITION OF MIS

1. "A formal method of collecting timely information in a presentable form in order to facilitate effective decision making and implementation, in order to carryout organisational operations for the purpose of achieving the organisational goals". —Walter I. Kennevan

2. "An MIS is a system designed to provide selected decision oriented information needed by management to plan, control and evaluate the activities of the corporation. It is designed within a framework that emphasizes profit planning, performance planning and control at all levels. It contemplates the ultimate integration of required business information, sub systems both financial and non-financial

within the company". —Management Information System Committee of the Financial Executive Institute.

3. According to Gordon B. Davis and Margrethe H. Olson management information system is "an integrated, user machine system for providing information to support operations, management and decision-making functions in an organisation. The system utilizes computer hard ware and software; manual procedures; models for analysis, planning, control and decision-making; and a database".

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EVOLUTION OF MIS

Management Information Systems has been displaying considerable diversity during the evolution in the past decades. It comes such a big demand and challenge to draw an overarching picture of the evolutionary development of MIS. By systematically investigating the existing literature and research in MIS, especially by analyzing and modelling the MIS concepts, one can identify the crises and challenges which the traditional MIS has faced. After World War II, the reigning paradigm of product-oriented mass production had reached its peak. Examples of management systems at that time are linear assembly lines, organizational hierarchies of command, product quality control and mass consumption. At the end of the 1980s, business process reengineering focused on the radical redesign of the production process through the reintegration of task, labor and knowledge. As a result, lean, flexible and streamlined production processes were created, capable of fast response and internet-based integration necessary for the upcoming phase of supply chains - business to-business— as well as demand chains — business-to-customer

In the above three stages of evolution of Management Systems, the competitive advantage was derived almost exclusively from the internal resources of the firm. At the end of the 1980s, a radical fourth shift has occurred, that is the competitive advantage became increasingly derived from the external resources of the firm through the extended networks of suppliers and customers.

CHARETERISTICS OF MIS

1. **Management oriented**

MIS is designed from top to bottom. This does not mean that the system will be geared to providing information directly to top management rather the system development starts from an appraisal of management needs and

overall business objectives. This implies that the system is designed around the need felt by the management at different levels for information. Thus, the focus of the system is to satisfy the information needs of management.

2. **Management directed**

Management is involved in the designing process of MIS and also in its continuous review and up g[r]adation to develop a good qualitative system. The system is structured as per directions factored by [ma]nagement. This helps in minimizing the gap between expectations of management form the system and the actual system.

3. Integrated

MIS is an integrated system. It is integrated with all operational and functional activities of management. The reason for having an integrated system is that information in the managerial context for decision-making may be required from different areas from within the organization. If MIS remains a collection of isolated systems and each satisfying a small objective, then the integrated information need of managers will not be fulfilled. In order to provide a complete picture of the scenario, complete information is needed which only an integrated system can provide.

4. Common data flows

Through MIS the data being stored into the system, retrieved from the system, disseminated within the system or processed by the system can be handled in an integrated manner through common data flows. The integrated approach towards data management will result in avoiding duplication of data, data redundancy and will help to simplify operations.

5. Strategic planning

MIS cannot be designed overnight. It requires very high degree of planning which goes into creating an effective organization. The reason for such planning is to ensure that the MIS being built not only to satisfy the present information needs of the managers but can also serve the organization for the future.

6. Sub-system concept

Even though MIS is viewed as a single entity, it must be broken down into manageable number of subsystems. The breakdown of management information system into meaningful subsystems set the stage for prioritized implementation. The subsystem analysis is essential for applying boundaries to the problem enabling the designer to focus on manageable entities that can be assigned and computerized by selected system.

7. Computerized

Though MIS can be implemented without using a computer, the use of computers enhances the effectiveness of the system. That is why, today, MIS is a user machine system

8. Data base

The data is the key element that holds the functional system together each system requires access to a master file or data covering inventory, personnel, vendors, customers, general ledger, work in progress and so on. If the data is stored efficiently and with common usages in mind one master file can provide the data needed by multiple users of the functional system. It seems logical to gather data once properly validate it and place it on a central storage device that can be accessed by all.

10. Distributed data processing

The majority of the companies implementing management information system have a network of sale office, distribution channel, manufacturing plants, division, subdivision and so on. Some these entities are operated in a completely independent fashion and this necessitates distributed data processing Distributed data processing can be thought of as the delivery system, placing information in the hands those who need it when they need it.

11 Information as a resource

Information is a valuable resource particularly in the management control and strategic planning areas. Information resource stands above the physical resources because efficient utilization of physical resources depends much on information resources.

ROLE AND IMPORTANCE OF MIS

Role, characteristics and goal of an efficient MIS in an organisation can be summarised in the following statements.

(1) Information primarily geared to assist managerial decisional process and control.

(2) Information communication based on relevancy with respect to diverse needs of management at different levels.

(3) Timelines of information (delayed information may be contrived or obsolete decision making process)

(4) Information flow based on system approach linking diverse activities of diverse departments within an organisation to exchange

information. This approach obliterates data redundancy and inculcates efficient and cost effective usage of data storage.

(5) Flexibility in information system to incorporate future requirements of management on need basis.

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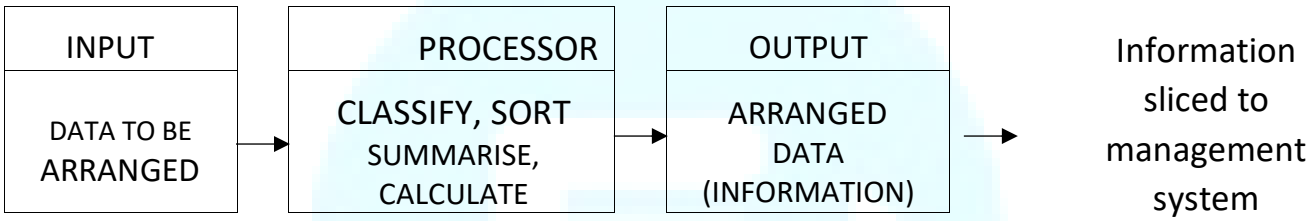
5 COMPONENTS OF MIS

We identify the components of MIS by describing the system as a processor. Any system is a processor. We would define the system process by identification of our inputs and transformation of our inputs to outputs. The typical example of a system as a processor, is data processing system. Here the raw data is processed. The processes include classification, sorting, calculating and summarising of data. These processes lead to generation of useful information. A computerised MIS processes information. In this case, the processes consist of computation and skillful stylisation of management reports. These processes yield paramount decisions for all levels of management for operational, tactical and strategic control as well as planning. The functional relationship between input and output of a process is used to design and evaluate feedback systems.



Process

The total process of a system is the net contribution of many individual processes in the MIS design. This is accomplished by ongoing activities in converting inputs to outputs. For example, we consider a typical marketing information system. The fundamental inputs and outputs could be perceived as follows.

Inputs

- Sales in units by each salesman for a period (say month wise)
- Estimated sales in units of competitors corresponding to above.
- Economic conditions and trends.

Outputs

- Sales by product (month wise and till date)
- Sales by salesman (month wise and till date)
- Sales by region, salesman and product (month wise and year till date)

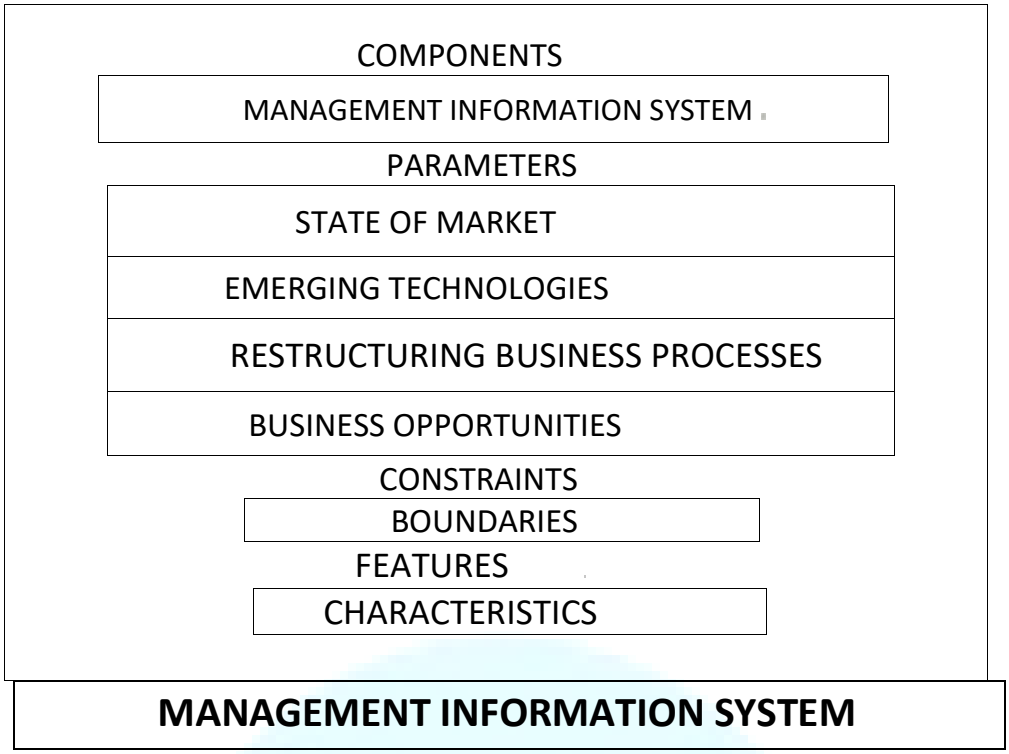
- Sales trend analysis

Sales forecasts

For conversion of outputs from inputs it is imperative to classify, transform, aggregate and analyses input quantities to yield desired output variables. This enables the current information at any specific point of time. It is pertinent to note that the event of competitor's strategies of business promotion ordains for correction in the sales forecast. Similarly emergence of new technologies, re-structuring of sales staff or discovery of new market spaces result in constant variations in sales forecast reports. These quantities which determine the state of the system are called the parameters of MIS. We identify procedure manuals, telecom and computing devices as common components of our cohesive system. The decision to the extent of manual and computer based system design depends upon the cost constraints and effective implementation of our system. The structure of system is identificable through the functional relationship among the users and the computing devices.

Boundaries

Any system is identified by certain limiting factors which encompass its Components, processes and interrelationships. These limiting factors are termed as boundaries of the system. Effective interfaces can be built amongst various systems by identification of their boundaries. For example, a teller of accounts in bank is a system which encompasses activities of withdrawals, deposits and related activities affecting the customer's bank balance. This system excludes other banking activities like mortgage foreclosures, trust activities, loan disbursements, leasing etc. It is interesting to note that an interface is possible by allowing a customer who has a mortgage and also a saving account in the same bank to pay its mortgage premium through the saving accounts automatically. Everything outside the boundary of a system is called its environment. Flows from environment into the system are called inputs. Flows from inside the boundary of a system into environment are called outputs. All elements within the boundary contribute to the specific goals of the system.



ESSENTIALS OF MIS

Management Information System is the vital subsystem to equip an organisation for its effective operation. Therefore, every organisation needs a sound system for the smooth flow of information to the right level of management at the right time and in the right form or content so that

management can evolve right decisions. A good MIS should have the following essentials:

1. **Relevance**

The information which a manager receives from an MIS should be relevant to the decisions that he has to make. An effective MIS takes data that originates in the areas of primary and secondary activities of the organisation and organizes it into a form that are meaningful for evolving right decisions. To take an example, if a manager has to make pricing decisions MIS may take sales data from the past fixed number of years, and display sales volume and profit projections for various pricing scenarios.

2. **Accuracy**

A key measure of the effectiveness of an MIS is the accuracy and reliability of its information. The correctness of the data it uses and the calculations it applies decide the effectiveness of the information. The sources of the data will also determine the reliability of information.

3. **Usefulness**

The information which a manager obtains from an MIS may be relevant and accurate, but it is useful only if it helps him with the particular decisions he has to make. To take an example, if a manager has to make decisions on staff reductions, information regarding the resultant cost savings is relevant, but information on the performance of the existing employees is more useful. Hence, MIS should produce useful information and make it easily accessible.

4. **Timeliness**

MIS output must be up to date. Management has to make decisions about the future of the organization based on data from the present, even when evaluating trends. The more recent the data the more these decisions

will reflect present reality and correctly anticipate their effects on the company.

5. **Completeness**

An effective MIS presents all the most relevant and useful information for a particular decision. If some information is not available due to any reason, it results a gap so that a comprehensive decision cannot be evolved. Management can either add the missing data or make the appropriate decisions aware of the missing information. An incomplete or partial presentation of information can lead to decisions that don't have the anticipated result.

OBJECTIVES OF MIS

The following are the objectives of a management information system:

1. MIS is very useful for efficient and effective planning and control functions of the management. Management is the art of getting things done through others. MIS will be instrumental in getting the things done by providing quick and timely information to the management.
2. Reports give an idea about the performance of men, materials, machinery, money and management. Reports throw light on the utilization of resources employed in the organization.
3. MIS is helpful in controlling costs by giving information about idle time, labour turnover, wastages and losses and surplus capacity.
4. By making comparison of actual performance with the standard and budgeted performance, variances are brought to the notice of the management by MIS which can be corrected by taking remedial steps.
5. MIS brings to the notice of the management the strength (i.e., strong points) of the organization, to take advantage of the opportunities available.

6. MIS reports on production statistics regarding rejection, defective and spoilage and their effect on costs and quality of the products.

FUNCTIONS OF MIS

1. **Capturing Data**

It covers capturing contextual data, or operational information that will contribute in the process O[f] decision making from various internal and external sources of organization

2. **Processing Data**

The captured data is processed into information needed for planning, organizing, coordinating, directing and controlling functionalities at strategic, tactical and operational level. Processing data means: I. Making calculations with the data.

II. Sorting data.
III. Classifying data and
IV. Summarizing data

3. **Information Storage**

Information or processed data need to be stored for future use.

4. **Information Retrieval**

The system should be able to retrieve information from the storage as and when required by various users.

5. **Information Propagation**

Information or the finished product of the MIS should be circulated to its users periodically using the organizational network.

NEED FOR MIS

Information processing beyond doubt is the dominant industry of the present century. The needs for MIS in an organization can be justified from the following points:

1.Increasing impact of information processing for organizational decision making.

2. Dependency of services sector including banking, financial organization, health care, entertainment, tourism and travel, education and numerous others on information.
3. Changing employment scene world over, shifting base from manual agricultural to machine-based manufacturing and other industry related jobs.
4. Information revolution and the overall development scenario.
5. Growth of IT industry and its strategic importance.
6. Strong growth of information services fueled by increasing competition and reduced product life cycle.
7. Need for sustainable development and quality life.
8. Improvement in communication and transportation brought in by use of information processing.
9. Use of information processing in reduction of energy consumption, reduction in pollution and a better ecological balance in future.
10. Use of information processing in land record managements, legal delivery system, educational institutions, natural resource planning, customer relation management and so on.