MANAGEMENT INFORMATION SYSTEM

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ABSTRACT

The business application of Management Information System has expanded significantly over the years. Technology advances have increased both the availability and volume of information for managers and the decision makers for both planning and execution. Decision makers require information to assess and monitor performance at all levels of the organisation. The new role focused on developing business applications that provide end users with predefined management reports that would give decision makers the information they need for the execution. The information availability at a faster rate of computing gives the top executives an easy way to get the critical information. The available information is used for strategic planning, increased productivity, reducing service cycles, reducing product development cycles, reducing marketing life cycles, increasing the understanding of customer's needs, facilitating business and process re-engineering. The development of sound MIS is the result of effective implementation and enforcement of a culture system ownership.

Key Words: **Information System, Management Challenges, Transaction Processing, Executive information, Business Application, Computational Technology.**

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INTRODUCTION:

A management information system (MIS) provides information needed to manage organizations efficiently and effectively. It involves three primary resources: people, technology, and information. It is the study of people, technology, organizations and the relationships among them. MIS professionals help firms realize maximum benefit from investment in personnel, equipment, and business processes. It's a people oriented field with an emphasis on faster service through technology.

Initially in businesses and other organizations, internal reporting was done manually and only periodically, as a by-product of the accounting system and with some additional statistic(s), gave limited and delayed information on management performance. Data was organized manually according to the requirements and necessity of the organization. As computational technology developed, information began to be distinguished from data, and systems were developed to produce and organize abstractions, summaries, relationships and generalizations based on the data.

The senior /top management needs to know the process of the functioning of the company. However they should not be overburdened with too much operational and transactional data. The data should be processed into information i.e. analysis, summary, and exception reporting. The bottom line is that the information systems should enable them to implement, control, and monitor plans, strategies, tactics, new products, new business models or new business ventures. The reporting should be made periodically. They, should however be alerted immediately when significant events occur.

Information systems have become an integrated part of the business activities and the major business functions. Information systems and technology have become the vital components of successful business and organization. Information technology including internet based information system are playing vital and expanding roles in business

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This frame work outlines the major areas of information systems knowledge needed by business professionals for managing the entire concept of operations.
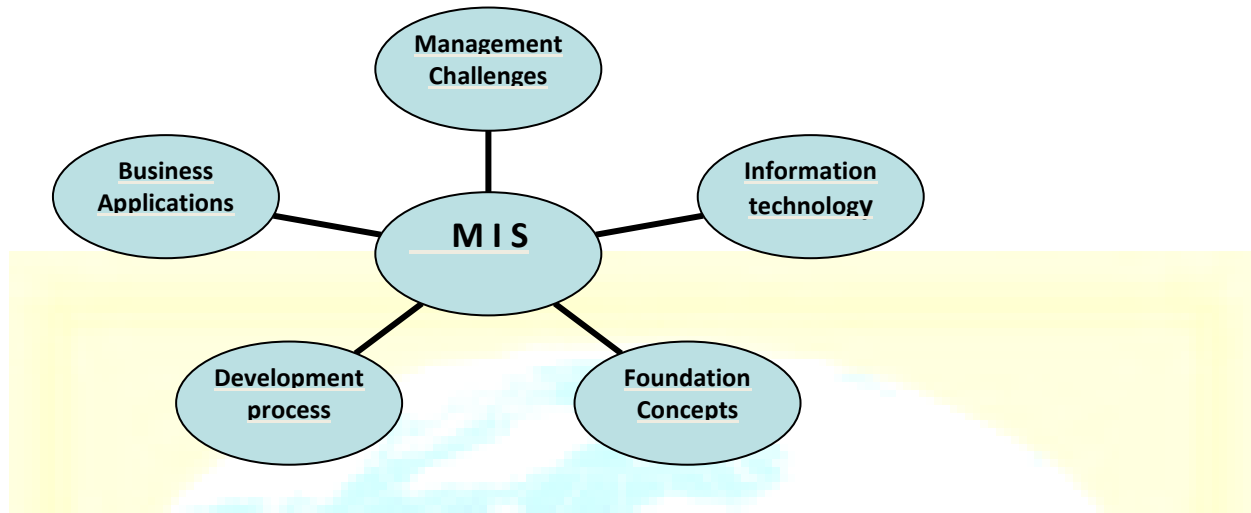
Management Challenges

The challenges are of effectively and ethically managing information technology at the end user enterprise and global levels of a business. The security challenges and security management issues in the use of information technology and the key methods business managers can use to manage the information systems function in a company with global business operations.

Information Technology

It includes major concepts of development and management issues in information technology which includes hardware, software, networks, data management and many internet based technologies.

Foundation Concepts

It includes basic information system concepts derived from general system theory or competitive strategy concepts used to develop business applications of information technology for competitive advantage.

Development Process

Several developmental methodologies including the systems development life cycle and prototyping approaches to business application development for business professionals and information specialists to plan, develop and implement information systems to meet business opportunities.

Business Applications

Different applications are being used in information system for the operation, management and the competitive advantage of business applications by information technology in functional area of business, such as marketing, manufacturing, accounting etc. for e-commerce application that most companies use to buy or sell products on the internet and the use of internet technology and systems to support decision making in business.

MEANING:

The term "Management Information System" is synonymous with computer-based systems. Used broadly, is seen as the system satisfying all the information needs of managers. A management information system is the series of processes and actions involved in capturing raw data, processing the data into usable information, and disseminating the information to users in the form needed.

Analyzing Management information system:

1. **Management**: Management covers the planning, directing, organizing, staffing, control and administration of the operations of a concern. The top management handles planning & directing; the middle management concentrates on organizing, staffing & controlling; and the lower management is concerned with actual administration.

2. **Information**: Information, in MIS, means the processed data that helps the management in planning, controlling and operations. Data means all the facts arising out of the

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operations of the concern. Data is processed i.e. recorded, summarized, compared and finally presented to the management in the form of MIS report.

3. **System**: Data is processed into information with the help of a system. A system is made up of inputs, processing, output and feedback or control.

Thus MIS means a system for processing data in order to give proper information to the management for performing its functions. All information systems use people, hardware, software, data and network resources to perform input, processing, output, storage and control activities that transforms data resources into information products.

Data (Input)	→	Management Information System	→	Information (Output)
Resource		**Information**		**Product**
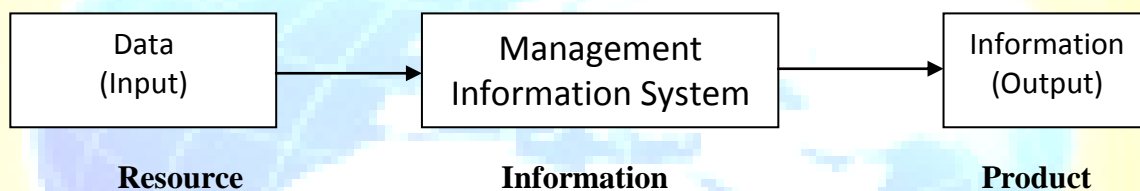
The fundamental role of MIS in business

Managing by the information systems provide an organization with support for business processes and operation, decision making and competitive advantages. The three fundamental roles of the business applications of information system which can perform for business enterprise are:

- **Support of business processes and operations :**

    The information systems supports the business process and operation at many POS, most retail stores now use computer based information systems to help their employees record, customer purchases, keep track record of inventory, pay employees, buy new merchandise

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and evaluate sales trends. All these operations would come to a halt without the support of such information systems.

- **Support of business decision making :**

    Information system help store managers and other business professionals make better decisions. This function not only supports the decision making of store managers, buyers and others but it also helps them look for ways to gain an advantage over retailers in the competition for customers.

- **Support for strategies for competitive advantage:**

Gaining strategic advantages over competitors requires the innovative applications of information technology. Uses of touch screen, kiosks linked to online shopping might attract new customers and build customer loyalty because of the ease of shopping and buying.

TYPES OF MANAGEMENT INFORMATION SYSTEM:

Most management information systems specialize in particular commercial and industrial sectors, aspects of the enterprise or management substructure.

- **Transaction Processing System:**

    Management information system (MIS), product fixed, regularly scheduled reports based on data extracted and summarized from the firm's underlying transaction processing systems to middle and operational level managers to identify and inform structured and semi-structured decision problems.

- **Decision Support System:**

    Decision support systems are computer program applications used by middle management to compile information from a wide range of sources to support problem solving and decision making.

- **Executive Information System:**

Executive information system is a reporting tool that provides quick access to summarized reports coming from all company levels and departments such as accounting, human resources and operations.

- **Marketing Information System:**

Marketing information system are MIS designed especially for managing the marketing aspects of the business.

- **Office Automation System:**

Office automation system support communication and productivity in the enterprise by automating workflow and eliminating bottlenecks. OAS may be implemented at any and all the level of management.

KEY PRINCIPLES:

Ten key principles to ensure successful and effective information management activities are:

1. Recognize (and manage) complexity
2. Focus on adoption
3. Deliver tangible and visible benefits
4. Prioritize according to business needs
5. Take a journey of a thou and steps
6. Provide strong leadership
7. Mitigate risks
8. Communicate extensively
9. Aim to deliver seamless user experience
10. Choose the first project carefully.

MISCONCEPTIONS OR MYTHS ABOUT MIS:

The study of management information system is about the use of computers. This statement is not true. MIS may or may not be computer based, computer is just a tool, just take any other machine. Installing a MIS depends largely on several factors such as, how critical is the response time required for getting information; how big is the organization, and how complex are the needs of the information processing.

More data in reports means more information for managers. This is a misapprehension. It is not the quantity of data, but its relevance, which is important to managers in process of decision-making. Data provided in reports should meet information requirements of managers. It is the form of data and its manner of presentation that is of importance to business managers. Unorganized mass of data creates confusion.

Accuracy in reporting is of vital importance. The popular belief is that accuracy in reporting should be of high order. At the operating level, it is true. Accuracy, however, is a relevant but not an absolute ideal. Higher levels of accuracy involve higher cost. At higher decision levels, great accuracy may not be required. The degree of accuracy is closely related to the decision problem. Higher management concerned with broad decisions on principles and objectives. A fairly correct presentation of relevant data often is adequate for top management decisions. For a decision on a new project proposal, top management is not interested in knowing the project cost in precise rupee terms.

PURPOSES:

- It should provide a basis to analyze warning signals that can originate both externally and internally; this is the main function of data base.
- It should automate routine operations thus avoiding human work in the processing tasks.
- It should assist management in making routine decisions.
- It should provide the information necessary to make non-routine decisions.

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- It should serve as a strategic weapon to gain competitive advantages.

ADVANTAGES:

The following are some of the benefits that can be attained for different types of management information systems.

- The company is able to highlight their strength and weaknesses due to the presence of revenue reports, employee performance records etc. The identification of these aspects can help the company to improve their business processes and operations.
- Giving an overall picture of the company and acting as a communication and planning tool.
- The availability of the customer data and feedback can help the company to align their business processes according to the needs of the customers. The effective management of customer data can help the company to perform direct marketing and promotion activities.
- Information is considered to be an important asset for any company in the modern competitive world. The consumer buying trends and behaviors can be predicted by the analysis of sales and revenue reports from each operating region of the company.

EXPLORING INFORMATION MANAGEMENT:

Information management encompasses all the system and processes within an organisation for the creation and use of corporate information.

In term of technology information management encompasses systems such as:

1. Web content management
2. Document management
3. Record management

4. Digital asset management

5. Learning management systems

6. Learning content management systems

7. Collaboration

8. Enterprise search

9. And many more….

APPLICATION OF MIS:

With computers being as ubiquitous as they are today, there's hardly any large business that does not rely extensively on their IT systems.

Strategy support:

While computers cannot create business strategies by themselves they can assist management in understanding the effects of their strategies, and help enable effective decision making.

MIS system can be used to transform data in information useful for decision making. Computers can provide financial statements and performance reports to assist in the planning, monitoring and implementation of strategy.

MIS systems provide a valuable function in that they can collate into coherent reports unmanageable volumes of data that would otherwise be broadly useless to decision makers. By studying these reports decision-makers can identify patterns and trends that would have remained unseen if the raw data were consulted manually.MIS systems can also use these raw data to run simulations-hypothetical scenarios that answer a range of what if questions regarding alterations in strategy.

Data processing:

Not only do MIS systems allow for the collation of vast amounts of business data, but they also provide a valuable time saving benefit to the workforce. Where in the past business information had to be manually processed for filing and analysis it can now be entered quickly and easily onto a computer by a data processor, allowing for faster decision making and quicker reflexes for the enterprise as a whole.

WHO ARE THE INFORMATION USERS?

- **MANAGERS**

  The idea of using the computer as a management information system was a break through because it recognized managers' need for problem solving information. While computersEmbracing the MIS concept made several firms develop applications specifically aimed at management support.

- **NON-MANAGERS**

  Non-managers and staff specialists also use the MIS output.

- **PERSONS & ORGANISATIONS IN THE FIRM'S ENVIRONMENT**

  Users outside the company benefit from the MIS as well. They can be customers receiving invoices, stockholders getting dividend checks, and the federal government checking tax reports.

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MANAGEMENT LEVELS:

Strategic Planning Levels:-

The strategic planning level involves managers at the top of the organizational hierarchy. The term strategic indicates the long-term impact of top managers' decisions on the entire organization. The term executive is often used to describe a manager on the strategic planning level.

Management Control Level:-

Middle-level managers include regional managers, product directors, and division heads. Their level is called "management control level" due to their responsibility of putting plans into action and ensuring the accomplishment of goals.

Operational Control Level:-

Lower level managers are persons responsible for carrying out the plans specified by managers of upper levels. Their level is called the "operational control level" because this is where the firms' operations occur.

MANAGEMENT BY OBJECTIVES (MBO):

While MIS systems are extremely useful in generating statistical reports and data analysis they can also be of use as a management by objectives tool.

MBO is a management process by which managers and subordinates agree upon a series of objectives for the subordinate to attempt to achieve within a set time frame. Objectives are set using the SMART ratio: that is, objectives should be **S**pecific, **M**easurable, **A**greed, **R**ealistic and **T**ime-Specific.

The aim of these objectives is to provide a set of key performance indicators by which an enterprise can judge the performance of an employee or project. The success of any MBO depends upon the continuous tracking of progress.

In tracking this performance it can be extremely useful to make use of MIS system. Since all SMART objectives are by definition measurable they can be tracked through the generation of management reports to be analyzed by decision-makers.

INFORMATIONS FOR DIFFERENT MANAGEMENT LEVELS:

Efficient management information system enables management to plan co-ordinate, organize and control. It provides information needed for strategic planning and for day to day operations. The various levels of management typically require the information they receive to be formatted in different ways. These different levels of management decision-making can be described as follows: strategic, tactical and operational. So the information could be:

- Operational Information – Largely internal, mainly historical, detailed information on a daily or weekly basis, often quantitative, high precision, narrow in scope for short term plan.
- Tactical Information - Internal and external sources, with concern on the current and future performance, aggregated (summarized), information on products, sales, investment profits etc. for medium term plan.

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- **Strategic Information** – Largely external, information on economic conditions, technological development, the actions of competitors, forward looking, qualitative; information is important; precision is unimportant, wide ranging, long term plan.

KNOWLEDGE MANAGEMENT:

- **Computer literacy**

    This knowledge includes an understanding of computer terminology, recognition of its strengths and weaknesses, an ability to use the computer etc…

- **Information literacy**

    A manager should also have information literacy which consists of understanding how to use information at each step of the problem solving process, where this information can be obtained from, and how to share information with others. Information literacy is not dependent on computer literacy. A manager can be information literate but computer illiterate.

An institution's MIS should be designed to achieve the following goals.

- Enhance communication among employees.
- Deliver complex material throughout the institution
- Provide an objective system for recording and aggregating information
- Reduce expenses related to labour intensive manual activities
- Support the organization's strategic goals and direction.

THE MANAGER AND SYSTEMS:

System Components

A system is a group of elements that are integrated with the common purpose of achieving an objective. Input resources are transformed into output resources. The resources flow from the

input element, through the transformation element, and to the output element. A control mechanism monitors the transformation process to ensure that the system meets its objectives. The control mechanism is connected to the resource flow by means of a feedback loop, which obtains information from the system output and makes it available to the control mechanism. The control mechanism compares the feedback signals to the objectives and directs signals to the input element when it is necessary to change the system operation.

ENTERPRISE APPLICATIONS:

Enterprise systems also known as enterprise resource planning (ERP) systems provide an organization with integrated software modules and a unified database which enables efficient planning managing, and controlling of all core business processes across multiple locations. Modules of ERP systems may include finance, accounting, marketing, human resources, production, inventory management and distribution.

Supply chain management (SCM) systems enable more efficient management of the supply chain by integrating the links in a supply chain. This may include suppliers, manufacturer, wholesalers, retailers and final customers.

Customer relationship management (CRM) systems help businesses manage relationships with potential and current customers and business partners across marketing, sales, and service.

Knowledge management system (KMS) helps organizations facilitate the collection, recording, organization, retrieval, and dissemination of knowledge. This may include documents, accounting records, and unrecorded procedures, practices and skills.

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ACCESSING VULENARABILITY TO MIS RISK:

To function effectively as an interacting, interrelate and interdependent feedback tool for management and staff, MIS must be useable. The five elements of a usable system are: timeliness, accuracy, consistency, completeness and relevance. The usefulness of MIS is hindered whenever one or more of these elements are compromised.

1. **Timeliness: -** A simplified prompt decision making of an institution's MIS should be capable of providing and distribution of current information to appropriate users. Information systems should be designed to expedite reporting of information. The system should be able to quickly collect and edit data, summarize results, and be able to adjust and correct errors promptly.

2. **Accuracy: -** A sound system of automated and manual internal controls must exist throughout all information system processing activities. Information should receive appropriate editing, balancing and internal control checks. A comprehensive internal and external audit program should be employed to ensure the adequacy of internal controls.

3. **Consistency: -** To be reliable, data should be processed and complied consistency and uniformity. Variations in the data collected and reported can distort information and trend analysis. In addition, because data collection and reporting processes will change over time, management must establish sound procedures to allow for systems changes. These procedures should be well defined and documented, clearly communicated to appropriate employees, and should include an effective monitoring system.

4. **Completeness: -** Decision made need complete and pertinent information in a summarized form. Reports should be designed to eliminate cultural and voluminous details, thereby avoiding "information overload".

5. **Relevance: -** Information provided to management must be relevant; information that is inappropriate, unnecessary or too detailed for effective decision making has no value. MIS must be appropriate to support the management level using it. The relevance and level of details provided through MIS systems directly correlate to what is needed by the board of directors, executive management, departmental or area middle-level managers etc. in the performance of their jobs

CONCLUSION:

Management information system is very helpful in today's technological world. This system can be used to transform data in information useful for decision making. Efficient management information system enables management to plan co-ordinate, organize and control. It provides information needed for strategic planning and for day to day operations. MIS professionals help firms realize maximum benefit from investment in personnel, equipment, and business processes. It's a people oriented field with an emphasis on service through technology.
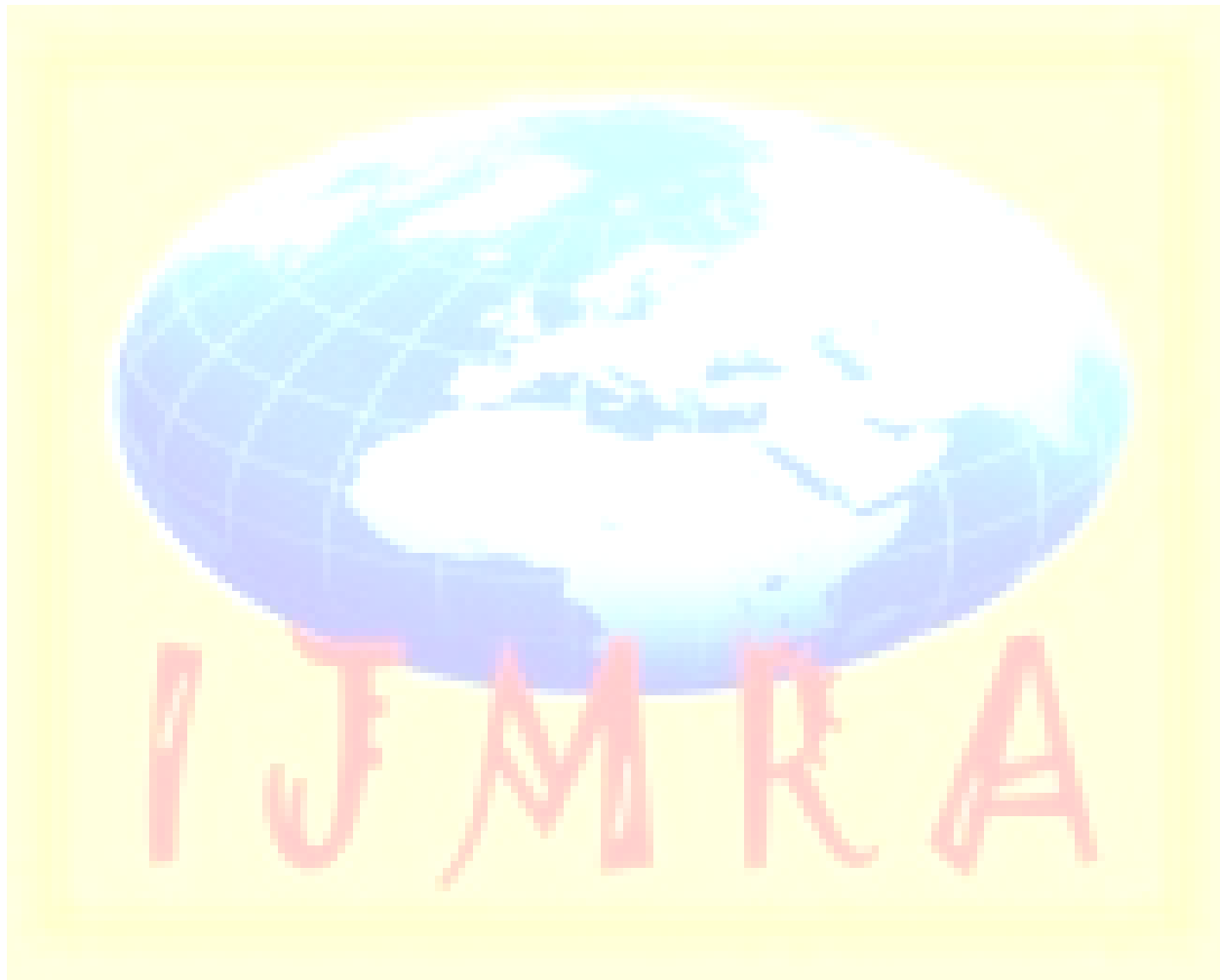
References:

1. www.occ.treas.gov/handbook.mis.pdf

2. O' Brien, J(1999). Management Information Systems – Managing information technology in the internetworked Enterprise. Boston : Irwin McGraw-Hill.

3. Loudon, Kenneth C.; Loudon, Jane P.(2009). Management information Systems: Manging the Digital firm (11ed.). Prentice Hall/CourseSmart.P.164

4. http://en.wikipedia.org/wiki/Transaction_processing_systems

5. Pant, S.,Hsu,C.,(1995), Strategic Information Systems Planning : A Review, Information Resources Management Association, International Conference, May 21-24, Atlanta

6. Laudon K. & Laudon J. (2010). Management Information Systems: Managing the digital firm (11th Ed.). Upper Saddle River, NJ: Pearson Prentice Hall.

7. George M Maracas, Ramesh Behl (2011). Management Information System (9th Edition) Tata Mc Graw Hill Education