MANAGEMENT INFORMATION SYSTEMS

Revised CBCS & GS Syllabus

JAYANT OKE

NIRALI PRAKASHAN
ADVANCEMENT OF KNOWLEDGE

A Book Of

MANAGEMENT INFORMATION SYSTEMS

For
MBA Semester - II
As Per Revised Syllabus
Choice Based Credit System and Grading System

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Preface ...

It is indeed my pleasure and privilege to offer the new Edition of **'Management Information Systems'** to our beloved readers and students.

This edition has been structured and revised to incorporate all the changes as per the revised syllabus (effective from June 2013). The scope of the book has been enlarged to duly focus on the emerging trends, particularly in the context of increasing and intensifying global competition. There would be repeated references to "competitiveness", "competitive battlefield" and to MIS as facilitators towards gaining a competitive advantage to survive, succeed and prosper in today's dynamic and competitive corporate environment".

I have reason to believe that this book on "Management Information Systems" would stand proudly as perhaps the only book available, catering specifically to all the topics of MIS Syllabus as required by my student-friends.

I, take this opportunity to acknowledge the blessings and well-wishes of Dr. P. C. Shejwalkar and Shri. M. W. Abhyankar. I shall be failing in my duties if I do not express and put on record my sincere appreciation and gratitude for the constructive feedback, support, and encouragement by my students and other readers.

My appreciation and gratitude to my family Mrs. Anjali, my Home Minister and my kids, Anu, Amita, and Shraddha for, as usual, being with me 100 percent.

I also take this opportunity to acknowledge my thanks to my publisher M/s Nirali Prakashan and particularly to **Shri. Dineshbhai Furia, Shri. Jignesh Furia, Mrs. Nirja Sharma, Mr. Malik Shaikh, Mr. Ravindra Walodare and Mrs. Sarika Wagh** and their entire staff for their active co-operation.

I would look forward to and welcome the suggestions to further improve the contents of this book.

Pune **Jayant K. Oke**

Syllabus ...

1. Management Information Systems: (7 + 2)

Need, Purpose and Objectives - Data, Information, Knowledge – Types of Information Systems - Information as a Strategic Resource - Use of Information for Competitive Advantage.

Information Technology Infrastructure: Information Systems Architecture - Mainframe, Client Server, Web Based, Distributed, Grid, Cloud - Overview of Hardware, Software, Storage and Networking Devices – Networks Types - Topologies of Networks

2. Database Management Systems (7 + 2)

2.1 Data Base Management Systems: Concept – Relational Model Applications – DBMS Architecture

2.2 Systems Engineering Analysis and Design: Systems Concept - Systems Development Life Cycle - Assessing Enterprise Information Requirements - Alternative System Building Approaches - Prototyping - Rapid Development Tools - CASE Tools - Object Oriented Systems (Only introduction to these Tools and Techniques)

3. Decision Support Systems (7 + 2)

3.1 Decision Support Systems: Data Warehousing and Data Mining - Business Intelligence and Analytics - Group Decision Support Systems – Executive Information Systems - Executive Support Systems – Geographical Information Systems - Expert Systems and Knowledge Based Expert Systems - Artificial Intelligence

4. Digital Firm Perspective (7 + 2)

4.1 Digital firm Perspective: MIS Model for a Digital Firm - Organisation, Structure for Digital Firm – e-Business Models and Applications – Mobile computing, Call Centers, BPO

4.2 Management Issues in MIS: Information Security and Control - Quality Assurance - Ethical and Social Dimensions - Intellectual Property Rights as related to IT Services / IT Products

5. Applications of MIS (7 + 2)

5.1 Applications of MIS in functional areas as well as in the service sector should be covered with the help of minimum 5 case studies.

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Management Information Systems

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Learning Objectives

- Illustrate the need for MIS in the present competitive world
- Illustrate Business and Management complexities, necessitating MIS
- Understand definitions of MIS
- Understand MIS characteristics
- Illustrate the MIS concept
- Understand MIS as a facilitator of competitive strength and change

1.1 Introduction

Today, more than ever before in the history of mankind, we have an unquenchable thirst for information. The society has changed significantly from the Barbarian to the Agrarian Society, from Agrarian to the Industrial Society and from the Industrial Society to a society dominated by the Service Sector.

This structural transformation from agrarian to agro-industrial to industrial and then on to a service dominated/oriented economic system has brought about discernible changes in the way people think. People have witnessed the Industrial Revolution, the advent of Automobile and introduction of Telephones. Today, we are all living, not in an Agrarian or Industrial Society, but in an Information Society. In fact, we generally refer to the present times as the IT Age or Information Era. Underneath, this is a tacit acceptance of the fact that not since the advent of the automobile and the introduction of the telephone has an invention, had such wide-spread impact on our society as computer, which has ushered in the Information Era.

If personal/individual life has had so much impact due to information, it has had profound impact on Business Organisations.

We are living in an era characterised by Globalisation and Liberalisation. Far reaching changes across borders are sweeping nations and we are all getting engulfed in a boundaryless "Global Village". But this emerging scene also necessitates people to develop the ability of "Thinking Globally and Acting Locally", which is now also being referred to as "Globalisation". Business operations have become and are going to become, more and more complex, and competitive.

The increased complexities could be broadly categorised into Business Complexities and Management Complexities.

The increased Business Complexities could be attributed to:

1. Technological Revolution
2. Research and Development
3. Changes in Product/Shortening Product Life Cycle
4. Explosion of Information

The increased Management Complexities could be attributed to:

(1) Management Science Technologies

(2) Decision making Imperatives

(3) Onset of Computers

(4) Information Feedback System

These complexities have, in turn, necessitated:

- Strategic Planning
- Setting of Objectives (measurable parameters)
- Devising Operational Plans
- Obtaining/Processing/Storing, Retrieving and using information for decision making.

Hence, information is today seen, accepted and recognised, as an invaluable source to ensure effective and efficient decision making thereby ensuring optimality of results leading to survival, success, and prosperity of the Business Organisation.

Information is a **Resource** because:

- *It is scarce*
- *It has a cost*
- *It has alternative uses*
- *There is an opportunity cost factor involved if one does not process information*

It must, however, be remembered that unlike other resources, which can be used only once, information could be used again and again. It is also non-tangible. A decision maker must keep these aspects in mind.

Many a times, we really do not have the information we want and then there is a dilemma. The dilemma is beautifully expressed in the following words, generally referred to as **Fingale's Law of Information**:

"The information we have,
Is not what we want,
The information we want
Is not the information we need,
The information we need,
Is not available".

Hence, it is said that,

"Don't give the manager,
What he said he wanted.
But what he meant he wanted".

Thus, because information is so critical, crucial, and pivotal for managers and organisations, there has emerged the MIS – The Management Information System to facilitate effective and efficient decision making.

1.2 What is MIS?

Simply put, MIS is the system, which makes available the right information to the right person, at the right place, at the right time, in the right form and at the right cost.

There are, of course, various definitions of MIS. Before we go further, let us try to recapitulate some of these definitions.

According to **Davis** and **Olson**, *"MIS is an integrated user-machine system for providing information to support operations, management and decision making functions in an organisation. The system utilises computer hardware and software, manual procedures/models for analysis, planning, control and decision making and a database"*.

Kelly has defined MIS as *"a combination of human and computer based resources which result in collection, storage, retrieval, communication and use of data for the purpose of efficient management of operations and for Business Planning"*.

Lucey has defined MIS as *"a system to convert data from internal and external sources into information to communicate that information in an appropriate form to managers at all levels , in all functions to make timely and effective decisions for planning, directing and controlling the activities for which they are responsible"*.

According to **Henry C. Lucas**, *"MIS is a set of organised procedures which when executed provide information to support decision making"*.

Krober and **Watson** have defined MIS as *"an organised set of processes that provide information to managers to support the operation and decision making within an organisation"*.

From the various definitions quoted above, we can state that MIS is basically an integrated system which transforms the data (inputs) into reports (outputs) for facilitating decision making through processing using various components of the information system viz. Hardware, Software, Database, Procedures and Personnel.

1.3 The Concept of MIS

In view of the foregoing, the concept of MIS can now be illustrated as follows:

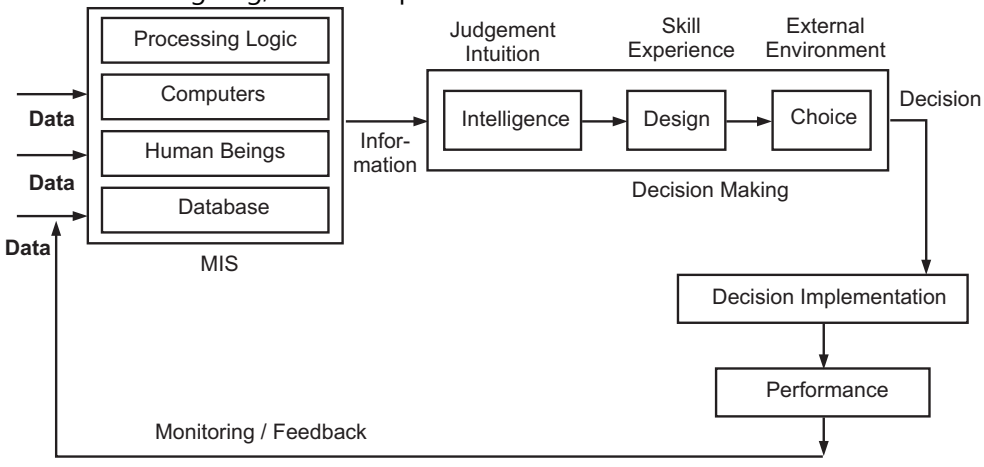

Fig. 1.1: MIS Concept

Thus, in our discussions we will always consider MIS, which is based on making use of computers for processing and providing information.

1.4 Why MIS? Need, Purpose and Objectives

As stated earlier, MIS has become necessary due to the increased Business and Management complexities. These complexities demand not only quantitative but qualitative decision making. And all managers, as we know, have to take decisions under conditions of Risk, Certainty or Uncertainty. A good manager/decision maker is one who minimises, if not eliminates altogether, the elements of risk and uncertainty in decision making. MIS is helpful in doing precisely this.

Hence, MIS is required to enable managers to take qualitative decisions and ensure success for their respective organisations. MIS also enables the managers to minimise the element of surprise.

Then again, MIS enables a decision maker to come out with appropriate responses to a business situation. MIS, thus, enables a decision maker to give either a re-active or pro-active response. As, however, the decisions are also futuristic, MIS facilitates pro-active decision making – it enables the managers/organisations to be ready for tomorrow, today. MIS, thereby, can act or function both as an instrument of defence as well as a weapon for offence, with strong strategic planning base.

1.5 Characteristics of MIS

Let us also keep in mind that, while, originally, MIS was envisioned as a single, highly integrated system, bringing together data processing for all organisational functions, MIS is now viewed as a Federation of Subsystems, developed/implemented as needed but conforming to an overall plan. To illustrate, each organisation will consist of sub-systems like say, Production, Inventory, Finance, Marketing, etc. There could be Functional sub-systems as well as Activities sub-systems as illustrated below:

Functional Sub-systems

Marketing	Sales forecasting, sales planning, customer and sales analysis
Manufacturing	Production planning and scheduling, cost control analysis
Logistics	Planning and control of purchasing, inventories, distribution.
Personnel	Planning personnel requirements, analyzing performance, salary administration.
Finance & Accounting	Financial analysis, cost analysis, capital requirements planning, income measurement.
Information Processing	Information system planning, Cost-Benefit analysis.
Top Management	Strategic planning, resource allocation.

Activities	Sub-Systems
Transaction Processing	Processing of orders, shipments and receipts.
Operational Control	Scheduling of activities and performance reports.
Management Control	Formulation of budgets and resource allocation.
Strategic Planning	Formulation of objectives and strategic plans.

Each of these sub-systems will have a certain degree of autonomy of independence in its functioning. But no sub-system can function as an island by itself, to the detriment of other functional sub-systems. Each sub-system must operate within the overall corporate goal/plan. Thus, because these sub-systems though enjoying autonomy, are loosely connected and are interdependent, MIS is viewed as a **Federation of Sub-systems** as illustrated on the next page.

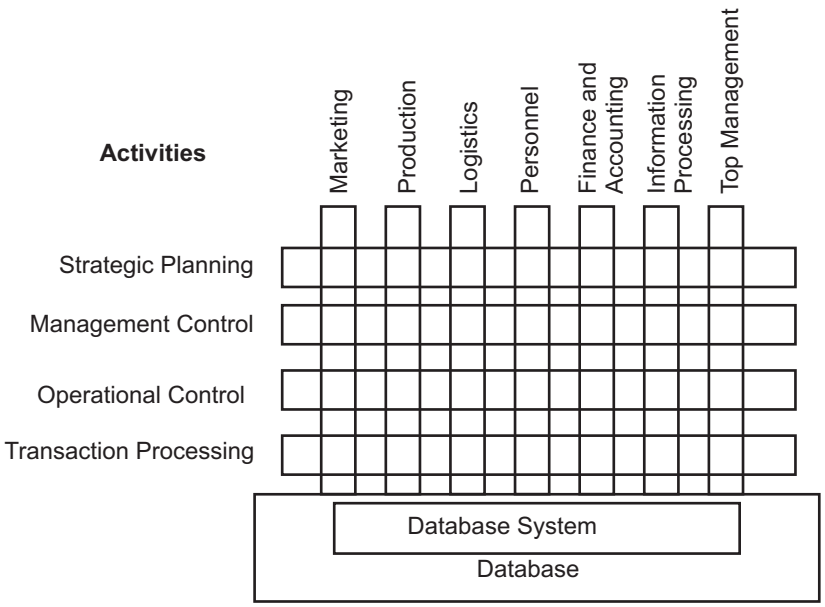

Fig. 1.2: MIS as a Federation of Sub-systems

This feature has also facilitated the modularity and development of computer based information system on a modular pattern, permitting autonomy but ensuring interdependence and wholistic perception.

MIS is also viewed as a multi-disciplinary activity/subject. MIS draws heavily upon various disciplines like Management Accounting, Management Science/Theory, Organisational Behaviour/Theory, Operations Research, Computer Science, etc. as illustrated as follows.

Management Information Systems

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