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MANAGEMENT INFORMATION SYSTEM 1 (GST 401)

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CHAPTER ONE

INTRODUCTION AND OVERVIEW OF MANAGEMENT INFORMATION SYSTEM

Definition of Management Information System

Management Information System can be defined as a formal method of collecting timely information in a presentable form in order to facilitate effective decision making and implementation, in order to carry out organizational operations for the purpose of achieving the organizational goal. A management information system is a system design to provide selected decision –orientation information needed by management plan, control and evaluate the activities of the corporation. It is designed within the frame work that emphasizes profit, planning, performance planning and control at all levels. It complements the ultimate integration of required business information sub system both financial within the company.

According to Philip Kotler, A marketing information system consist of people, equipment and procedures together, sort, analyze, evaluate and distribute the needed timely and accurate information and marketing decision makers.

Professor Allen S. Lee states that research in the information system field examines more than the technological system or just the social system or even the two side by side; In addition, it investigates the phenomena that emerge when the two interact.

An information system can be any organized combination of people, hardware, software, communication network and data resources that collects, transforms and disseminates information in an organization.

Purpose of Management Information System

Information processing is a major social activity. A significant part of an individual's working and personal time is spent in recording, searching for, and absorbing information, as much as 80% of a typical executive's time is spent on processing and communication information. Their duties involve the production and use of information outputs documents, reports, analysis, plans, etc.

The system provides information on past, present, and project future and on relevant events inside and outside the organization in the society. It may be defined as planned and integrated system for gathering relevant data and converting it in to right time. The main purpose of management information system is to provide the right and correct information to the right people at right time.

Another important purpose of management information system is that it is needed by all business organization because of increased complexity and rate of change of today's business environment, for example, marketing manager needs information about sales performance and trends financial manager needs information on returns, production manager needs information analyzing resources requirement and workers' productivity, and personnel manager needs information analyzing resources requirements and

workers' productivity and

personnel manager needs information concerning employee compensation and professional development; thus, effective managers with the specific marketing, financial, production and personnel information, and products they require to support their decision-making responsibilities.

Management information system concept is vital to effective computer use in business of two or major reason:

1. It serves as a system framework for organizing business computer applications. Business application of computer should be viewed as interrelated and integrated computer based information system and not as independent data processing job.

2 It emphasizes the management orientation of electronics information processing in business the primary goal of computer based information should be the processing of data generated by business operations.

Advantages of Management Information System

1 Management information system helps the managers to make planning and control decision.

2. Facilitated planning: management information system improves the quality of plants by providing relevant information for sound decision-making; Due to increase in size and complexity of organization, Managers have lost personal contact with the scenes of operations.

3. Minimizes information overload: management information system changes the larger amount of data into summarized form and thereby, avoids the confusion which may arise when managers are flooded with detailed facts.
4. Brings coordination: management information system facilitates integration of specialized activities by keeping each department aware of the problem and requirement of their department. It connects all decision centers in the organization.
5. Makes control easier: It serves as a link between managerial planning and control. It improves the ability of management to evaluate and improve performance. The use of computers has increased the data processing and storage capability and reduces the cost.
6. Management information system assembles, processes, stores, retrieves, evaluates, and disseminates the information.
7. It ensures that appropriate data is collected from the various sources, processed, and sent further to all the needy destinations.
8. Management information system helps in strategic planning, management control, operational control and transaction processing.
9. It helps the clerical personnel in the transaction processing and answers

their queries on the data pertaining to the transaction the status of a particular record and reference on a variety of documents.

Objectives of Management Information System

1. Management information system's main objective is to attain the transaction processing of data of an organization effectively. Transaction processing is applied in conversion and analysis of raw data.
2. Management information system is the management of marketing, finance, production, and the personnel becomes better trained which result in his efficiency.
3. Management information system is in making the forecasting and long- term prospective planning more effective.
4. It tries to create a structured database in knowledge base for all the people in the organization.

Characteristics of Management Information System

Management information system and Top Management: Management Information System is a comprehensive and coordinated set of information subsystems which are rationally integrated and which transform data information in a variety of a ways to enhance productivity in conformity with the manager's style and characteristics on the basis of established quality.

1. Management-oriented: The system is designed from top to bottom. This does not mean that the system will be geared to providing information directly to top management; rather, it means that the system development starts from an appraisal of management needs and overall business objectives. It is possible that top management is the focus of the system such that they are cornerstone on which the system is built, for example - a marketing information system basic sales order processing the shipment of goods to the customers and the billing of the goods is fundamental operation control activities. However, if the system is designed properly this transaction information can be traced by salesman, sales territory, size of order, geography and product line furthermore if designed with strategic management needs in mind external competition market and economic data can be created to give a picture of how well the company's product are faring in their marketing environment and to serve as a basic of new product or marketplace introduction the initial application can be geared to the operational and management control areas but in such a way as not preclude its integration into a strategic planning subsystem for upper management.

2 Management directed: Because of the management information system, it is imperative that management actively directs the system development efforts to determine what information is necessary to improve its control of operation. It is rare to find management information system where the manager himself or a high-level representative of his department is not spending a good deal of time in system design. It is not a no-time involvement for continued review and participation are necessary to ensure that the implemented system meets the specification of the system that designed therefore management is responsible

for setting system specification, and it must play a major role in subsequent trade off decision that inevitably occur in system development. An important element of effective system planning is the process for determining the priority of application development. Management must control this process if a management information system is the objectives. A company without a formal application approval cycle and a management steering to determine priorities will never develop management information system.

3. Integrated: Integration is significant because of the ability to produce more meaningful management information for example in order to develop an effective production scheduling system we must balance such factors as:

- A. Set up cost.
- B. Work force.
- C. Overtime rates.
- D. Production capacity.
- E. Capital requirement
- D. Customer service.

4. Common data flows: Because of the integration concept of management information system, there is an opportunity to avoid duplication and redundancy in data gathering storage and dissemination for example customer orders are the basic for billing the customer for goods ordered setting up the accounts receivable initiating production activity sales analysis sales forecasting and so on it is prudent to capture this data closest to the source where the event occur and use it throughout the functional area. It is also prudent to capture it once and

thus, avoid the duplicate entry of sources data into several systems.

5. Heavy planning elements: Management information system do not occur overnight they take from three to five years and longer to get established firmly within a company a heavy planning element must be present in management information system development. The management information system designer must have the future objectives and needs of the company firmly in mind. The designer must avoid the possibility of system obsolescence before the system planning is an essential ingredient to successful management information system. The management information system provides meaningful direction towards which one strives.

6. Sub-system concept: In tackling a project as broad and complex in scope as a management information system, one just avoids losing sight both the forest and the trees. Even though the system is viewed as a single entity, it must be broken down into digestible sub-systems that can be implemented one at a time. The breakdown of management information system into meaningful subsystems set the stage for prioritized implementation. The sub-system analysis is essential for applying boundaries to the problem, thus enabling the designer to focus on manageable entities that can be assigned and computerized by selected system and programming team.

7. Flexibility and ease of use: Despite a careful analysis of the future management information needs, it is impossible to predict what is desired in three to five year. This is true in most industries and especially in industries with

rapid change patterns. It is naïve to think that if anyone possesses the omniscience to predict the future with this premise, the next best thing a management information system developer can do is to build in the flexibility to incorporate as many manufacture nuances as possible.

8 Database: The data is the mortar 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 any of the functional system. It seems logical to gather data once, properly validate it and place it on a central storage medium that can be accessed by any system. However, it is not unusual to find a company with multiple data files, one serving one functional system and another serving another system.

9. Distributed data processing: The majority of the companies implementing management information system have a geographic network of sale office, distribution channel, manufacturing plants, division, sub-division and so on. Some of these entities are operated in a completely independent fashion and therefore, may not be part of the integrated management information system. More often than not, the remote site is to have the connection with each other and with a host of operation in order to create an effective management information system with geographical boundaries, some form of distributed data processing is necessary. Distributed data processing can be thought of as the delivery system, placing information in the hands of those who need it when they need it.

10. Information as a resource: Providing the entire organization must be a concept that information is a valuable resource particularly in the management control and strategic planning areas must be properly managed. This is a subtle but important change in thinking. It was common in the past to view the data processing.

Models/Types of Management Information Systems

1. Accounting management information systems - All levels of accounting managers share all accounting reports.
2. Financial management information systems - It provide financial information to all financial managers within an organization include the chief financial officer. The Chief Financial Officer analyzes historical and current financial activity.
3. Manufacturing management information systems - More than any functional area, great advance in technology have impacted operations, as a result, manufacturing operations have changed. For instance, inventories are provided just in time so that great amount of money are not spent for warehousing huge inventories; In some instance, raw material are even proceeds on rail load-cars waiting to be sent directly to the factory, thus, there is no need for warehousing.
4. Marketing management information system - A marketing management

information system support managerial activity in the area of product development, distribution, pricing decision, promotional effectiveness and sales forecasting more than any other functional area.

5. Human resource management information system - It concerns with activity related to workers, managers and other individual employed by an organization, because the personnel functions relates to all other areas in business. The human resource management information system plays a valuable role in ensuring organization system includes work-force analysis and planning, hiring, training, and job assignment.

6. Structure of management information system - The management information system has been described in terms of support for decision-making, management activity and organization functions.

7. Conceptual structure - The conceptual structure of a management information system is defined as a federation of functional subsystem each of which is divided into four major information processing components, transaction processing, operational control information system support, managerial control information system, managerial control information system and strategic planning information system which has some unique data files which are used by only that sub-system.

8. Physical structure - The physical structure of a management information system would be identical to the conceptual structure of all applications

consisting of completely separate programs used by only one function but this is frequently not the case, substantial information can be achieved from

- Integrated processing
- Use of common modules

Integrated processing is achieved by designing several related applications as a single system in order to simplify the interconnection and reduce the duplication of input. A good example is an order entry system. The recording of an order initiates a sequence of processing, each step using new data but also, most of the data from prior processing. In other words, an integrated order entry system crosses functional boundaries.

Management Information System Planning, Controlling and Limitations

Planning - The top level management is mainly concerned with strategic planning for example the strategic planning activities of top management involve future interaction between the organization and its external environment.

Computational support for planning:

1. An analysis of historical data to obtain relationship useful for projection.
2. Various projection and forecasting techniques to estimate future value.
3. Computations internal to the plan and computation required for outputs.

4. Output of the results in a meaningful planning format.

Historical data analysis techniques

Historical data analyzed to discover pattern or relation that will be useful in projecting the future value of significance variables. Even when the quantitative relations are not sufficiently stable to use in forecasting data analysis is useful for input into the judgmental forecast.

Historical extrapolation techniques

Historical data describes the past planning that involve the future estimating is generally based on analysis of past history combined with various technique to generate data for planning purposes.

Financial planning computation

Models that involve financial plan need to provide for various computation and analyses commonly required for measuring or evaluating profitability example are depreciation computation rate of return analysis and break even analysis. Depreciation is a significant computation in most financial planning. It affects profit computation because it is an expense and it affects cash flow because of its impact on taxes. There are several methods for computing deprecation all of which should be available to the planner. These methods are straight line double declining balance sum of the year digits and production or use basis.

Controlling - At the middle level management, information is management

control. Middle level managers such as departmental heads are concerned with the current and future performance of their units. Therefore, they need aggregate information on the sales, profit etc. of their units such information is available from both within the organization as well as outside the organization, for example, financial data for budgets and ratio analysis are available from the company's records. However, market data can be collected through special surveys and reports from outside the organization. Top-level managers also require management control information. But this information must be more detailed narrower in scope and more accurate than information required for strategic planning. It should also generate at more frequent because the time horizon of decision is shorter.

At the supervisory level of management, operational control is exercised. Production scheduling, cost and credit control, etc. are examples of operational control. Therefore, a detailed report on a daily and weekly basis is required; inventory report, operating cost, production rate, etc. are examples of such information. Such information are available from within the organization.

The control feedback loop is basic to system design. The computer can improve the control process in several ways:

- 1 The standard can be complex. Computational simplifications are not necessary.
2. The computation of deviation and identification of cause can be more

sophisticated.

3. Reporting with computers can use irregular time interval which is very difficult with manual processing and can be done more frequently.

Limitation

1. Aggression - The people may hit back at the system and may even sabotage it by using equipment incorrectly by putting incomplete information into the system or by actual destruction of hardware or software.

2. Projection - It is a psychological mechanism of blaming difficulties on someone or something else. When employees blame the management information system for problems caused by human error or other factors unrelated to the system, projection is taking place.

3. Avoidance - It occurs when individuals defend themselves by withdrawing from or avoiding a frustrating situation. Managers may avoid the system by ignoring its output, in favour of their own information sources.

Management Information System Planning - Management information system general business planning initiates from the following concepts:

1. Mission of the corporate.

2. Objectives and goals for the corporate in all key performance areas. These are in line with the mission of the corporate.

3. Strategic planning for general approach on how to achieve long term objectives.
4. Operational planning for specific guideline on how to transverse short term milestones.

CHAPTER TWO

DEVELOPMENT OF MANAGEMENT INFORMATION SYSTEM

STEPS OF SYSTEM IMPLEMENTATION

There are four basic methods for system implementation:

- Install a system in a new operation or organization, one just formed.
- Cut off the old system and install new. This produces a time gap during which no system is in operation.
- Cut over by segments, this method is also referred to as phasing-in. In the new system, small parts or subsystems are substituted for the old.
- Operate in parallel and cut over. The new system is installed and operated in parallel with the current system until it has been checked out; then, the current system is cut out.

Following are steps in system implementation:

- (A) **Plan the Implementation:** The three main phases in implementation take place in series; these are the initial installation; the test of the system as whole; and the evaluation –maintenance and control of the system.

The first step is plan for implementation that having the following steps:

- **Identify the Implementation Task:** Before starting implementation system analyst should identify the implementation tasks. The plans should list all subtasks for each of these major tasks so that individuals in the organization may be assigned specific responsibilities.

- **Establish Relationship Among Task:** In the small system, the order of performance may be simply be described in text form. In large project, many concurrent and sequential activities are interrelated, so that a network diagram must be employed in any good plan.
- **Establish a Schedule:** A first estimation of the schedule is prepared by having a system designer estimate the times between the events in the program network. The critical time should be calculated. Management may apply pressure or provide additional personnel to shorten the network times.
- **Prepare the Cost Schedule ties to Tasks and Time:** The cost for completing each milestone and possibly each task required to complete a milestone, should be established as part of the plan, then, the rate of expenditure should be budgeted.
- **Establish a Reporting and Control System:** Reporting and control of the work in progress may be obtained by weekly meetings of the key people involved or by brief written progress reports. The objective of the control system is to minimize the confusion and the associated delays and costs.

(B) Acquire Floor Space and Plan Space Layout: The installation of a new system to replace a current one may require a major revision of facilities as well as completely new office, computer room and production layouts. The MIS manager must prepare rough layouts and estimates of particular floor areas he or she feels needed. The manager should prepare cost estimates for this.

(C) Organize the Implementation: Once the implementation tasks have been defined in the planning phase, manager usually assigns a project manager to

guide the implementation. A manager of MIS may assume this responsibility by virtue of a permanent assignment.

(D) Develop Procedures for Implementation: The project leader has available the network plan for proceeding with the implementation. The leader must now call upon key people in the project to prepare more detail procedure for system implementation. The system analyst must develop the procedure for delivering instructions and forms to supervisors, for coordinating and integrating this very small portion of the MIS with other parts of the manufacturing system, and for the working out the problem involved.

(E) Train the Operating Personnel: A program should be develop to support management and personnel the nature and goals of the MIS and to training of operating personnel in their new duties. Practical attention should be paid the training of first –line supervisors, then to professional support personnel like accounting and production personnel and then operational personnel like clerk etc.

(F) Computer-Related Acquisition: Computer related acquisition have the following basic parts :

- **Hardware:** hardware can be purchased according to requirements of system.
- **Software:** In small firm the software might be purchased. In large firm with specialized forecasting, planning, operating and control models most software must be developed internally and under contract.
- **Personnel:** Implementation of an MIS offers the company an opportunity to upgrade and promotes the personnel after training. A personnel chart

should be prepared showing the number of individuals are required in terms of skills, the source and the date they will be required to work.

- **Materials:** Forms and manuals are the principal materials to be ordered for the MIS.

(G) Develop Forms for Data Collection and Information Dissemination: A vast amount of detailed data, both external and internal to the company, must be collected for input to the MIS. Forms are required not just for input and output but also for transmitting data at intermediate stages. So the form should be developed to collect data.

(H) Develop the Files: In the implementation stage, the actual data must be obtained and recorded for the initial testing and operation of the system. This requires a checklist of data, format of data, storage form and format, and remarks to indicate when the data have been stored. The implementation also requires the development of a procedure for updating each piece of the data and for updating entire sections of the files required. The translation of specifications for files into computer programs is the function of computer specialists.

(I) Test the System: As each part of the system is installed, test should be performed in accordance with the test specifications and procedures described earlier. Tests during the installation stage consist of component tests, subsystem tests, and total system acceptance tests. Components test may include; equipment - old and new; new forms; new software; new data collection methods; new work procedures and new reporting formats.. As more subsystem installed subsystem may be tested.

(J) Cut-over: Cut-over is the point at which the new component replaces the old component or the new system replaces the old system. This usually involves a good deal of last-minute physical transfer of the files, rearrangement of office furniture and movement of work stations and people. Old forms, old files, and old equipment are suddenly retired.

(K) Document the System: documentation of the system means preparation of written descriptions of the scope, purpose, information flow components and operating procedures of the system. Documentation is not a frill; it is a necessary – for troubleshooting, for the replacement of the subsystems, for interfacing with other system, for training new operating personnel and also for evaluating and updating the system.

Organizational Evolution of MIS

After the MIS has been operating smoothly for a short period of time, an evaluation of each step in the design and final system performance should be made. Evaluating should not be delayed beyond the time when the system analysts have completed most of the debugging. The longer delay, it will be more difficult for designer to remember the important details.

The evolution should be made by the customer as well as by the designers. It is less important than the previous evaluation, the financial specialists should evaluate the project in terms of planned cost versus actual cost of design, implementation and operation. They should also attempt to identify cost savings and increased profit directly attributable to the MIS.

Following structure is generally used to partial evaluation:

Structure: The measurements of the costs and benefits are the measurement of the changes or differences between the old and new. The measurement of the change must be related to the basic goals of the MIS, the principle activities that further these goals, or the many minor activities that further these goals. In other words, we may measure the changes in the total output of the system or measure the many changes accomplished throughout the system. The former is obviously the most desirable. What we have is the hierarchy of levels at which we are consider measuring costs and benefits.

Following table shows the hierarchy:

Level	Hierarchy in the MIS	Change that is Measured
1	Company Profit (Return on Investment)	Dollars
2	Company Revenues Costs &	Dollars
3	Planning	Specificity, quantification, degree to which plans are achieved.

	Control	Degree of control by exception, selection of activities to be controlled, forwarding of activities going beyond acceptable limits, managerial time required for control, automation of control of repetitive situation
4	Decision	Quality of decisions, frequency of reversal of decision of decisions superior in the organization.
5	Information	Validity, accuracy, clarity, distribution, frequency, appropriateness of detail for each level of management, timeliness, format, availability on demand,

		selectivity of content, disposition method, retention time, cost.
6	System Characteristics	Number of people required, equipment and facilities, response time, frequency of breakdowns, inputs, outputs, number of forms, number of operations, size and quality of data bank.

For a particular MIS, The designer may select the level at which measurement is to take place based upon specific objectives of the MIS. It is probably rare that a measurement of the total system is attempted at the system level. At the system level, judgment of broad concepts might be employed:

- **System Integrity:** How well the subsystems integrated into the total system without redundancy? How flexible is the system? How easily may the system be explained?
- **Operation Integrity:** How skilled are the people operating the system? What backup is there to prevent the system breakdown in the event of loss of key personnel or equipment failure?

- **Internal Integrity:** How well does the system do what it is supposed to do? How valid are the system outputs? How sources is the system against human error, manipulation, sabotage, or theft.
- **Procedural Integrity:** How good is the documentation of the system and procedures? Are procedures such that employee are motivated to follow them? How well are procedures followed in practice? What controls ensure that the procedures are followed?

Formulation of the Measurement: Once the variables of interest have been identified, a table should be set up to formalize the measurement. Table can contain the costs and benefits.

Pitfalls in MIS Development

(A) Fundamental Weaknesses: Following are the fundamental weaknesses of the MIS development:

- **No Management System to Build Upon:** The MIS must be built on top of a management system that includes the organizational arrangements, the structure and procedures for adequate planning and control, the clear establishment of objectives, and all the other manifestations of good organization and management. The lack managerial and operational application is serious because it implies that the process not being performed well. If we can say that the information is the raw material of decision making , and if information is not generated, disseminated and used for management, then no system-manual or computer-is going to solve the problem.

- **What business are we in? :** Not having the clearly stated mission and purpose for the company is a common weakness. Since if it is not terribly clear what business we are in, each major challenge the company must face is a completely new challenge and must be analyzed from the ground up. If there was a mission statement, some of these problems could be dealt with routinely as opposed to their being major crises.
- **Company Objectives:** written objectives are also often missing in the company. A firm without objectives is much like a company without a statement of mission and purpose –it is a ship without rudder. Without the business objectives, the chances of the MIS satisfying management needs are slight.
- **Managerial Participation:** MIS development has been viewed as responsibility of management. This includes both top level management and operating line management. The reasonable conclusion that managers must reach is that MIS is too important to be left to the computer technician.
- **Organization of the MIS Functions:** Another significant cause of computer failure is the lack of proper organization of the EDP and MIS. The exact location in the organization and the authority granted to the MIS manager is, of course, a function of the type business the firm is in and how important the information resource is to its operation.
- **Reliance on Consultant of Manufacturer:** Some computer manufacturers and some consultants will try to sell the system, one that is designed and debugged and ready to push the button or turn on the key. Consultants and the manufacturers are concerned more with the machine than with the management solutions. Before buying the “A” solution from a consultant or

manufacturer, be sure that it is the whole solution, that you understand it thoroughly, and that you understand your legal resources when things do not work the way you expected.

- **Communication Gap:** It is unlikely that for the foreseeable future the computer technician will be able to speak the language of management, and managers for the most part are not prepared to speak the languages of the computer. The result is a communication gap that sometimes causes a design standoff.
- **The People Involved:** There is no substitute for competence. Good performers of people will worth the price.

(B) Soft Spots in Planning:

- **MIS Response to the Business Plans:** The purpose of MIS group is to support line management in the company's main business. As business plans are made and modified, the corresponding MIS plans must be made and changed. Each MIS plan must be a proper response to a business plan.
- **A System View - A Master Plan:** Another cause of computer failure is the lack of a master plan to which hardware development and individual MIS design can be related. The reasons for MIS planning are the same as for planning in general.
- **Setting Project and System Objectives:** setting objectives for projects and systems is not itself a planning activity. However not meaningful plans can be made until these objectives have at least been roughed in. These two activities are co-requisite.
- **Facing Constraints:** Freedom from constraints on financial definition, system performance, system cost, development schedule will lead to

enormous MIS problems. It is essential that both managers and technician recognize the reality of those constraints and plan accordingly.

- **Plan to Sale the MIS :** Most system designers admit to the unpleasant reality that the toughest part of the designing and implementation an MIS is gaining acceptance of the user for whom the system is designed. So the system should be designed in the manner that it can easily sale or accepted by the users.
- **Detail Planning:** It is only method that permits one successful MIS project to follow another. All veteran MIS development managers know this and plan in detail for every phase of the project.

(C) Design Problems:

- **Consider Alternatives Designs:** This is essential for the Manager to require the key designer to lay out the several alternative designs and explain the positive and negative features of each. Then he can select one
- **Beware the User Interface:** It is a technical problem. The user interface should be according to user. User should be comfortable with the design or interface of the system.
- **The Real World - The acid Test:** Business organizations are not research institutes. The MIS is being implemented to support the firm's main line of business, not to extend the state of art in MIS design.
- **If It Moves Automate It:** Some things could be automated but not all. Like designer can easily design the computerized system for visitor. But people want and expect human interaction to at least immediately available when they enter the lobby of place of business.

- **The Computer Obsession:** Computer should not be obsession in system. It is a tools and used as a tools only.
- **Documentation:** Documentation should include: All plans, Project and system objective, specifications of functions and performance, user interface specifications, user instruction and reference manuals and maintenance guideline. These items are necessary to manage and use MIS over time. Not documenting these things in detail is a guarantee of failure in some part of the operation of MIS.

(D Implementation Problems:

Test It and Test It Again: The most common error made with regards to testing is not planning to do enough of it. A good rule of thumb to use in project estimating and planning is 1/3 planning and design, 1/3 implementation, 1/3 testing. For an MIS project of any reasonable size, this figure for testing is by no means too much. Testing must be done at the fictional level, the component level, and the system level.

Controlling the MIS Project: although controlling is the one of the four basic management functions, it remains one of the preeminent cause of MIS development project failure.

System Documentation

Documentation is any communicable material such as text, video, audio, etc., or combinations thereof used to explain some attributes of an object, system or procedure. It is often used to mean engineering documentation or software documentation, which is usually paper books or computer readable files such as

HTML pages that describe the structure and components, or on the other hand, operation, of a system/product. You probably immediately think of printed training manuals when you think of "documentation" but there are several different forms for different occasions.

Characteristics of Good Documentation

Clear: Able to be understood by whomever it was created for. The language used must be appropriate. Terms that may not be understood by everyone need to be explained either the first time they are used or in a glossary.

Concise: It should be as short as it can be while still being comprehensive. Using pictures can replace hundreds of words and be much clearer at the same time.

Complete: It should not leave out important information especially key steps that need to be completed, such as printing, and warnings about what not to do.

Current : It's no use if all the facts are out of date or superseded. Printed material is harder to keep current than electronic versions are.

Correct: It must not contain errors.

Easy to Access: It must be available where and when it is needed.

Easy to Search: Users must be able to quickly find the required information. Indexes or tables of contents are required, along with clear headings. Large documentation may well need to be divided into sections.

Types of Documentation

Printed: The traditional format for documentation, it is used much less now days. Printing is expensive and books are heavy and bulky, which increase

transportation costs. Books are hard to keep up-to-date if their subject matter is subject to change. Books can only be accessed by one person at a time.

On-screen Help: Most programs come with online help that can be accessed immediately by user. It is readily accessible, searchable and can be very detailed. Help can also be gained from online sources such as the internet and intranets. Such sources can easily be kept up to date - even on a daily basis. They can be accessed by any number of people simultaneously.

Audio-Visual: Videos, screen movies, audio narration etc. are colorful and engaging but do not tend to carry a lot of detailed information. These types of documentations are good for introductions or overviews of subjects.

Posters, Leaflets: Sometimes detailed information is not needed. A checkout chick, for example, does not need wiring diagrams for the circuits of the register. User may just need a little poster that quickly reminds her how to do basic tasks.

CHAPTER THREE

FUNCTIONALITY OF MIS

MIS FOR MARKETING

In order to pursue market opportunities as well as anticipate marketing problem, manager need to collect comprehensive and reliable information. Managers cannot carryout marketing analysis, planning, implementation and control without monitoring and researching customers, competitors, dealers and their sales and cost data. Every firm has many information flows of interest to marketing management. Many companies are studying their executive's information needs and design information system for marketing to meet these needs. Instead of plethora of unrelated data, an MIS combines various inputs and present integrated reports.

Definition: Marketing Information System is a continuing and interacting structure of people, equipment and procedures to gather, sort, analyze, evaluate, and distribute pertinent, timely and accurate information for use by marketing decision makers to improve their marketing planning, implementation and control activities.

Components of Marketing Information System: Trends in the marketing environment are picked up and analyzed through four subsystems making up the marketing information system- Internal Accounting System, Marketing Intelligence System, Marketing Research System and Analytical Marketing System.

Internal Accounting System is the most basic information system used by marketing executives. It is the system that reports orders, sales inventory levels, receivable, and payable. By analyzing the information, marketing managers can spot important opportunities and problems.

- **The Order Shipping Cycle:** Sales representatives, dealers and customers dispatch orders to the firm. The order department prepares multi-copy invoice and sends them to various departments. Out of stock items are back ordered. Shipped items are accompanied and sent to various departments. The company wants to carry out these steps quickly and accurately. The computer is harnessed to expedite the order shipping billing cycle.
- **Improving the Timeliness of Sales Reports:** Marketing executives receive sales reports some times, after the sales have taken place. Many companies complain that sales are not reported fast enough in their company. Marketing information system can improve these things rapidly.
- **Designing a User Oriented Report System:** In designing an advanced sales information system, the company should avoid certain pitfalls.

The marketing information system should represent a cross between what managers think they need, what managers really need and what is economically feasible. Management information system should provide the reports for all marketing departments. Information system can delete the unwanted system from the survey and from other departments and prepare reports which are required by different persons of marketing department.

MIS FOR PERSONNEL MANAGEMENT/HRM

Personnel management has the primary objective of providing suitable manpower in number and with certain ability, skills and knowledge, as the business organization demands from time to time. Its goal is to control personnel cost through continuous increase in manpower productivity resorting to the following techniques:

- Motivation through Leadership and Job Enrichment
- Grievance Handling
- Structuring the Organization
- Promotion and Rewards through Performance Appraisal
- HRM through Training and Upgrading the Skills

The information and scope of personnel function have resulted in greater complexity in field. There is need to cope with incredible volume of information and maintaining it. There is need to classify, reclassify and cross this information. This can be achieved by computerized personnel system which enables personnel management to manage more efficiently and effectively and to provide more positive services to the organization.

Input for Personnel Development

The following documents serve as the input in personnel information system:

- Productivity Data on the Job
- Industry Data on Manpower, Skills, Qualification
- Bio-Data of Self and Family
- Personnel Application Form
- Attendance and Leave Record
- Appraisal Form

- Appointment Letter
- Wage/ Agreement
- Record Sources of Manpower, University, Institutes, and Companies

Components of Personnel Information

A computer based personnel information system is designed to support the operational, managerial and decision-making functions of the personnel division in an organization. Following are the components of the personnel management information system:

- **Establishment Records:** Establishment relates to the setting up of budgets for appropriate staff levels and grades throughout the organization. The system should encompass these budgeted posts and report on variations between actual staff numbers and the budget numbers.
- **Recruitment Records:** Details of all vacancies and applicants should be held by the system. These should show the status of each vacancy and of each applicant and should perform as much as possible of the administrative process. This will generally mean that the system should interface with a word processing system.
- **Personnel Records:** These relate to identification data, current and historical salary and allowances data and various employees attributes such as grades and key dates.
- **Pensions Records:** The system maintains all details of service entitlements of employees, contribution by both the employee and the organization to pension scheme, details of dependents, spouse and children, data required for actuarial purpose to verify the availability of the scheme and details and entitlements of employees who have become pensioners.

- **Training Records:** These include data relating to each employees qualification, skills and experience. The system would also hold details of internal and external training courses and its relevant details.
- **Absence records:** The system should allow for the recording of various absence types like sick leave, special leave etc. Input of this sub-system should be automatically reflected in the establishment sub-system.
- **Industrial relations records:** The system should hold data to assist management in negotiations and planning for alternative strategies. Much of this would be held for normal administrative purpose. It is the facility to extract the data in meaningful terms, to able to project forward and to test the impact of applying various rules and scenarios.

MIS FOR FINANCIAL MANAGEMENT

Financial management function has a primary objective of meeting the financial needs of the business. The second objective of FM is to meet the statutory compliance by way of declaring the auditing financial result, submitting reports and returns to the govt. and Tax authorities and fulfill the obligations to the shareholders. FM uses variety of tools and techniques like Break Even Analysis, ABC Analysis, Ratio Analysis, Management Accounting and Cost Analysis.

Input Documents

- Receipts from customers, authorities, employees, shareholders, financial institution and others.
- Payment to suppliers, authorities, shareholders, financial institutions and others.
- Data from stock exchange on the shares prices consolidated financial results of the other companies etc.

Transactions are payments and receipts and they are documented through journal vouchers, bills, debit notes, credit notes, receipts and transfer documents.

Application of Financial Management Information System

The major application of financial management information system includes financial accounting system, which accounts for the financial transactions of the company and produces financial results for the company. It produces balance sheet for the company where the performance of the company is published in standard format prescribed by the govt. The system is made so comprehensive

that it not only collects financial data but also collects data on different matters such as job, department, and division and so on. It forms a basis for certain reports which are required by the top level management. The users of the financial data base are finance managers, cost controller, auditors, material managers, marketing managers, company secretaries and the top management.

MIS for Production Management

The objective of production management function is to provide manufacturing services to the organization. This involves the manufacturing of products of a certain specified quality and within certain costs in a stipulated time, fulfilling the promises given to the customer.

The production management function is supported by other functions like production, planning and control, industrial engineering, maintenance and quality control. It has a very strong interface with materials management function. The organization of production management differs according to the types of production i.e. job shop or continuous. It also varies with the production policy of the organization, like whether the production is initiated against a customer order or for stock.

The system methodology differs with respect to the manufacturing technology the organization has adopted. The goals of the production management are fuller utilization of the manufacturing capacity, minimal rejection, maximum uptime of plants and equipment meeting the delivery promises. The function is of key importance when business strength is in technology and manufacturing, and the market for product and services exist. The function is pegged with the

responsibility of managing high investment in plant, equipment and machinery. It also has to control the large labour force at its disposal.

Inputs of Production Management Information System: The production management is conducted through innumerable transaction. They relate to planning, issuing and controlling the various task involved in the course of production.

- i) process Planning Sheet
- ii) quality Assurance Rating Form
- iii) Production Schedule
- iv) Process Planning Sheet
- v) Job Cards
- vi) Finished Goods Advice
- vii) Material Requisition
- viii) Customer Order
- ix) Breakdown Advice
- x) Material requirement
- xi) Production Programme

The production management also uses standards and norms extensively developed over a period of time as input in the system. These are generally known as production rate available capacity, labour components, material usage standards, rejection norms etc.

Documents mentioned above are indicative and may be more or less different, depending upon the type of production and nature of production of industry. The input data in each transaction would also vary from industry to industry as would the production methodology adopted by the organization. The system and procedures used by the organization in performing the production function also vary respectively.

Components of Production Management Information System

The components of production management information system include:

- Sales department to find out what the customer wants and to compare this with what the firm can provide.
- Design department to design new requirements and make modifications in established items either to bring them up to date or to make them meet a specific requirement of the customer.
- Purchasing department buys the material required at the best possible price and on the most reliable delivery to make the various items either on one off basis for individual job or replenish material held in the stores on maximum and minimum levels
- Manufacturing process sees that the parts are produced as economically as possible for delivery at the time required by the customer and to meet the standards set by the design department.

