

ACADEMIC PROGRAMME: Bachelor of Business & Information Technology

COURSE CODE AND TITLE: SIT 400 Management Information Systems

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Design and deployment of MIS

Expected Learning Outcomes:

By the end of this lesson, you should be able to: (Arial, font size 12)

- i) Explain planning process for implementing and MIS
- ii) Discuss Major challenges in MIS implementation
- iii) Describe Information System Requirements
- iv) Analyze Factors for Success and Failure

MIS - Development Process

In MIS, the information is recognized as a major resource like capital and time. If this resource has to be managed well, it calls upon the management to plan for it and control it, so that the information becomes a vital resource for the system.

- The management information system needs good planning.
- This system should deal with the management information not with data processing alone.
- It should provide support for the management planning, decision-making and action.
- It should provide support to the changing needs of business management.

Major challenges in MIS implementation are –

- Quantity, content and context of information – how much information and exactly what should it describe.
- Nature of analysis and presentation – comprehensibility of information.
- Availability of information – frequency, contemporariness, on-demand or routine, periodic or occasional, one-time info or repetitive in nature and so on
- Accuracy of information.
- Reliability of information.
- Security and Authentication of the system.

Planning for MIS

MIS design and development process has to address the following issues successfully –

- There should be effective communication between the developers and users of the system.
- There should be synchronization in understanding of management, processes and IT among the users as well as the developers.

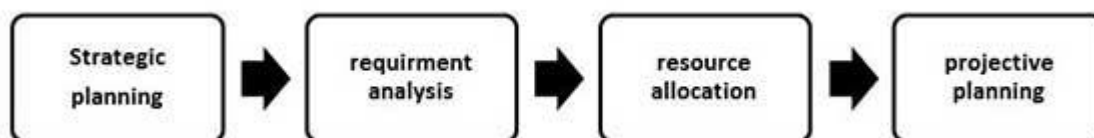
- Understanding of the information needs of managers from different functional areas and combining these needs into a single integrated system.
- Creating a unified MIS covering the entire organization will lead to a more economical, faster and more integrated system, however it will increase in design complexity manifold.
- The MIS has to be interacting with the complex environment comprising all other sub-systems in the overall information system of the organization. So, it is extremely necessary to understand and define the requirements of MIS in the context of the organization.
- It should keep pace with changes in environment, changing demands of the customers and growing competition.
- It should utilize fast developing in IT capabilities in the best possible ways.
- Cost and time of installing such advanced IT-based systems is high, so there should not be a need for frequent and major modifications.
- It should take care of not only the users i.e., the managers but also other stakeholders like employees, customers and suppliers.

Once the organizational planning stage is over, the designer of the system should take the following strategic decisions for the achievement of MIS goals and objectives –

- Development Strategy – Example - an online, real-time batch.
- System Development Strategy – Designer selects an approach to system development like operational verses functional, accounting verses analysis.
- Resources for the Development – Designer has to select resources. Resources can be in-house verses external, customized or use of package.
- Manpower Composition – The staffs should have analysts, and programmers.

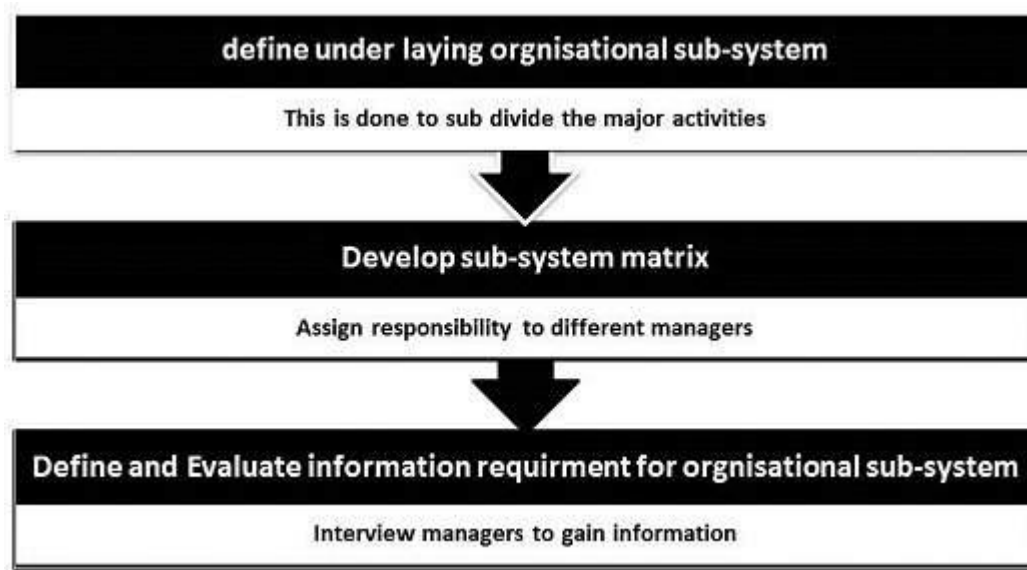
Information system planning essentially involves –

- Identification of the stage of information system in the organization.
- Identification of the application of organizational IS.
- Evolution of each of this application based on the established evolution criteria.
- Establishing a priority ranking for these applications.
- Determining the optimum architecture of IS for serving the top priority applications.



Information System Requirements

The following diagram illustrates a brief sketch of the process of information requirement analysis –



The following three methodologies can be adopted to determine the requirements in developing a management information system for any organization –

- **Business Systems Planning (BSP)** – this methodology is developed by IBM.
 - It identifies the IS priorities of the organization and focuses on the way data is maintained in the system.
 - It uses data architecture supporting multiple applications.
 - It defines data classes using different matrices to establish relationships among the organization, its processes and data requirements.
- **Critical Success Factor (CSF)** – this methodology is developed by John Rockart of MIT.
 - It identifies the key business goals and strategies of each manager as well as that of the business.
 - Next, it looks for the critical success factors underlying these goals.
 - Measure of CSF effectiveness becomes an input for defining the information system requirements.
- **End/Mean (E/M) analysis** – this methodology is developed by Wetherbe and Davis at the University of Minnesota.
 - It determines the effectiveness criteria for outputs and efficiency criteria for the processes generating the outputs.
 - At first it identifies the outputs or services provided by the business processes.
 - Then it describes the factors that make these outputs effective for the user.
 - Finally it selects the information needed to evaluate the effectiveness of outputs

Information System Analysis and Design

System analysis and design follows the typical System/Software Design Life Cycle (SDLC) as discussed in the previous chapter. It generally passes through the following phases –

- Problem Definition
- Feasibility Study
- Systems Analysis
- System Design
- Detailed System Design
- Implementation
- Maintenance

In the analysis phase, the following techniques are commonly used –

- Data flow diagrams (DFD)
- Logic Modeling
- Data Modeling
- Rapid Application Development (RAD)
- Object Oriented Analysis (OOA)

Technology for Information Systems

The technology requirement for an information system can be categorized as –

- Devices
- Data center systems – It is the environment that provides processing, storage, networking, management and the distribution of data within an enterprise.
- Enterprise software – These are software system like ERP, SCM, Human Resource Management, etc. that fulfill the needs and objectives of the organizations.
- IT services – It refers to the implementation and management of quality IT services by IT service providers through people, process and information technology. It often includes various process improvement frameworks and methodologies like six sigma, TQM, and so on.
- Telecom services

System Test Planning and Execution

The system should be fully tested for errors before being fully operational.

The test plan should include for each test –

- Purpose
- Definition
- test inputs
- detailed specification of test procedure

- details of expected outputs

Each sub-system and all their components should be tested using various test procedures and data to ensure that each component is working as it is intended.

The testing must include the users of the system to identify errors as well as get the feedback.

System Operation

Before the system is in operation, the following issues should be taken care of –

- Data security, backup and recovery;
- Systems control;
- Testing of the system to ensure that it works bug-free in all expected business situations;
- The hardware and software used should be able to deliver the expected processing;
- The system capacity and expected response time should be maintained;
- The system should be well documented including;
 - A user guide for inexperienced users,
 - A user reference or operations manual for advanced users,
 - A system reference manual describing system structures and architecture.

Once the system is fully operational, it should be maintained throughout its working life to resolve any glitches or difficulties faced in operation and minor modifications might be made to overcome such situations.

Factors for Success and Failure

MIS development projects are high-risk, high-return projects. Following could be stated as critical factors for success and failure in MIS development –

- It should cater to a specific, well-perceived business.
- The top management should be completely convinced, able and willing to such a system. Ideally there should be a patron or a sponsor for the system in the top management.
- All users including managers and other employees should be made an integral part of the development, implementation, and use of the system.
- There should be an operational prototype of the system released as soon as possible, to create interest among the users.
- There should be good support staff with necessary technical, business, and interpersonal skills.
- The system should be simple, easy to understand without adding much complexity. It is a best practice, not to add up an entity unless there is both a use and user for it.
- It should be easy to use and navigate with high response time.
- The implementation process should follow a definite goal and time.

- All the users including the top management should be given proper training, so that they have a good knowledge of the content and function of the system, and can use it fully for various managerial activities such as reporting, budgeting, controlling, planning, monitoring, etc.
- It must produce useful outputs to be used by all managers.
- The system should be well integrated into the management processes of planning, decision-making, and monitoring.

Further E-Resource Readings

List any (or all) of the following (to be in Arial font size 11). Mugambi of the University Library can be consulted

Management Information System Tutorial

[Tutorialspoint](#)

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