

Management Information System (MIS)

Information and the MIS concept

Information is a set of classified and interpreted data used in decision making. It has also been defined as 'some tangible or intangible entity which serves to reduce uncertainty about future state or events'. A management information system (MIS) is 'an integrated user-machine system for providing information to support operations, management and decision making functions in an organization. The system utilizes computers, manual procedures, models for analysis, planning, control and decision making, and a database' MIS facilitates managerial functioning. Management information is an important input at every level in the organization for decision making, planning, organizing, implementing, and monitoring and controlling. MIS is valuable because of its content, form and timing of presentation. In the context of different levels of decision making, information can be described as:

- source
- data
- inferences and predictions drawn from data
- value and choices (evaluation of inferences with regard to the objectives and then choosing a course of action) and
- action which involves course of action.

The MIS concept comprises three interrelated and interdependent key elements: management, system and information (Murdick and Ross, 1975).

Management and MIS process

An MIS is directed towards the managerial functions of planning, controlling and monitoring, and decision making.

Planning

Planning consists of **five** sequential and interactive steps (Kumar, 1989). These are:

Selecting objectives:

- identification of the activities which are required to achieve the stipulated objectives;
 - detailing the resources - including the various skills - required to undertake the activities;
 - determining the duration of each activity to be performed; and
 - defining the sequence of the activities.
- The basic requirements during the planning process of most importance in designing and implementing an MIS for an organization are (Kumar, 1989):
 - providing the information required by the planner at each step of planning;
 - establishing procedures for obtaining the information;
 - arranging for storage of the approved plans, as these will provide the information requisite to monitoring and controlling; and
 - evolving methods for communicating the plans to employees in the organization.

Activities Involved in MIS

1. The Selection of Information

Deciding what information will be useful for making decisions about an activity or program is often the most difficult part of setting up a MIS system. There is always a danger of collecting too much information on every detail of a program. The problems associated with this are:

- If too much data is collected it may not be measured or recorded accurately.
- There is no time to analyze or use a large amount of information. Again if a large amount of information is being collected regularly from the same people they may resent it.
- If information is too detailed it may be difficult to identify important trends.

It is worth remembering that a small system that works better than a big system that does not. The selection of monitoring information should focus on to the objectives of the system. In order to focus the information collection following issues are important:

Goal oriented: Using established goals, objectives and other targets like outputs, activities etc.
Decision focused: Answering key questions to assist project management and other stakeholders to make day-to-day decision

After determining what information is required the next step is developing indicators. It is important to establish ways of measuring that progress is being achieved. To make information on progress available right from the early stages of implementation and throughout the project cycle, indicators need to be structured. The logframe approach to project design provides an efficient structure by postulating a hierarchy of objectives for which indicators are required. In this approach there are mainly four types of indicators for four different level of objectives.

Hierarchy of project objectives

Goal
Purpose
Outputs
Activities

Types of indicators Goal

Impact
Effects
Outputs
Process

Starting from the bottom

- Process indicator measures what happens during implementation. They are needed to show the volume of work done, efficiency and quality of work.
- Output indicators show the immediate outputs of the project or the services/benefits has been created by the project.
- Effect indicators describe change 'in condition or behavior as a result of project intervention.
- Impact indicators measure broader socio-economic or sectoral changes or welfare.

2. The Collection and Analysis of Data

Analysis refers to the way the information is interpreted and how the meaning of the results is assessed. It gives meaning to the collected data. The main considerations for interpreting data are different methods of analysis, which should carry them out and the use of computers. In a monitoring system analysis can be done continuously, periodically or irregularly depending on the use of information. The most important thing is to ensure that the analysis is accurate and relevant, that it is understood by the people using the findings and the results are available when they are needed.

Analyzing data

The approach and methods should be decided according to the objectives of the exercise. Details on analysis of quantitative and qualitative data have described gradually in this curriculum.

When should the data be?

It is important to make sure enough time is allocated for analysis when planning the exercise. If the analysis is too rushed, information may be wasted or misinterpreted and important details may be missed out. On (lie contrary, if the analysis takes too long, the results may be out of date.

Who should analyze the data?

The process of analysis can lead to a greater understanding of the data and so a certain amount of analysis should be carried out by the people collecting it and by the people using the data to make decisions. Supervisors also should involve in analysis process of monitoring data. Where large amounts of quantitative data are collected, the actual calculation may need to be carried out by people with statistical expertise.

The use of computers

Computers are most useful for:

- Analyzing quantitative data, for example from surveys or regular record systems:
- Recording and displaying information, which is continually updated: for instance, gradual progress towards targeted outputs of the project

The types of programs that can be used include:

Spreadsheet programs, in which text and figures can be entered in tables, which can be easily amended and updated. It can produce simple statistics including totals, sub-totals and averages and graphs. Statistics programs are only necessary for more complicated analysis. **Graphics programs** can be used to draw graphs. Moreover some **specialized software program** can be developed to address the objectives. For writing report **word processing** program is useful

Methods of Data Collection in MIS System

There are wide range of data collection methods and techniques generally used in project M&E system depending on kind and source of information. A combination of various methods is always useful for cross checking of the collected data. The most commonly used methods employed in the project M&E system include:

Questionnaire survey: In order to demonstrate effects of project intervention (e.g. systemic or behavioral changes) on targeted people many often projects apply questionnaire survey. Using the methods data are collected from the project beneficiaries before starting project intervention and compare the baseline data with the follow up survey at regular interval to monitor the effect of intervention overtime.

Participatory methods: Among various participatory methods PRA and RRA are the widely used techniques in project monitoring system. These techniques are very useful to find out how people are participating in the project, how they are using project services and various problems associated with project implementation.

Regular record keeping (forms and diaries): Recording the information about project activities on a regular basis is important for tracking the progress towards target. Both quantitative and qualitative data can be obtained in this process. Forms specially designed for collecting specific information and diaries are also useful tools for regular record keeping.

Supervision checklist and reports: Supervision checklist is also useful for collecting information especially during supervision meeting. In fact, it provides opportunity to discuss the information before collection. These types of tools can be a great help for the project staff to obtain data focus on key indicators.

3. Presenting and Using Information

Different forms of presentation are appropriate for different users. For instance, the results can be presented to staff, partners and people affected by the work in meeting using diagrams and other techniques to stimulate discussion about the findings. Within the project, the monitoring findings have different uses. Some of the most commonly uses are as follows:

Using the result for planning procedures: Monitoring information can be used for improving the quality of work being carried out. SO it must be incorporated in the existing planning procedures or planning procedures should be developed specifically to use the information.

Using the results for institutional learning: Monitoring system is a way of analyzing project experience. The results of this analysis can be used by the agency and other organizations in making informed decisions about future work

As a basis for evaluation or review: Monitoring provides a continuous assessment of progress but at certain times it is useful to undertake a formal evaluation to look in more detail at the impact of the work.

A review can also take place to take detail at certain aspects of a program which have been identified as problem areas through the monitoring system.

Conclusions and recommendations based on findings:

Every data collection and analysis involve in a monitoring system lead to certain form of conclusion, which is followed by some recommendations. In the process, it is important to show how the conclusions have been reached. It may be useful to show how the work is viewed by different people with different perspectives. It is often more useful to show the range of different opinions and why they are held, then to present a broad agreement which may be superficial.

Include a description of the important point raised in interviews and interpretation. It is useful to give a selection of examples of what people actually said in interviews, word for word, which illustrate important points.

Recommendations are based on the conclusions should propose:

- What course of action should be taken;
- How they should be implemented, by whom and when;
- What resources or 'inputs are required (money, people, assets, training time);
- The constrains or problems that are likely to be involved and how they can be addressed
- The follow up that will be needed to make sure the recommendations are acted upon

Once the recommendations have been accepted by all the relevant people, it may be necessary to provide support to those responsible for putting them into practice. A follow up meetings can be organized to assess the relevance and effectiveness of the recommendation. Ensure all level of staff will support the excepted changes in work methods, job description, and training.

What reports will be required and for whom?

The report produced depends on the purpose of the monitoring, the question it is expected to answer and who it is for. It is best to decide at an early stage how the findings will be recorded and presented. It may be better to develop a report format or framework at the beginning of the exercise. Where clear formats are used for reports this can help the analysis of the information and stimulate discussion about the most important issues. As a general guide, a report should be short, written in clear language and translated as necessary. When a report is long it is vital to highlight the most essential information. It may also be possible to present some of the findings as a set of diagrams.

The Management Information System

The essence of a MIS is the continuous comparison of the actual situation against plan, in relation to-

- physical progress,
- financial expenditure
- quality of the services or project outputs to reach the intended purposes and other information specific to the project including environmental aspects.

When project shows a deviation between the planned progress and the actual progress, project managers need to decide whether remedial action is possible or necessary.

The Control System

Once the MIS has been established, manager will need to institute a control system, which takes action speedily and effectively when deviation from the plan are noted. In the context of a project management, control system describes the process of analyzing the variances shown up by the monitoring system, assessing the implication of these variances for project progress and *taking* remedial action where necessary. Any revision in the original plan must be communicated to the project staff in a timely manner.

The Information System

The function of the information system is to provide managers with the information on which they can take timely action in pursuit of project activities. The information system underpins the monitoring and control systems. Information is passed from the project site to the managers, who use it to monitor project progress against plan. If deviations have occurred and modifications to the plan are required, these are instituted through the control system, and the consequent decisions are passed back to the team at the project site using the project management information system (PMTS).

Readiness of the Organization before designing

MIS are now widely seen as integral parts of the planning and management process for development projects. The acknowledged need to improve the performance of development assistance calls for close attention to the provision of management information, both to support the implementation of projects and programs and to feed back into the design of new initiatives. Now the question is how to proceed with the process of devising monitoring and evaluation system. In fact, a monitoring and evaluation system should be in place before entering into the project implementation phase. Designing an organized M&E system and its smooth implementation require the presence of some other management systems tools and mechanism that are structured. Systematic, well clarified and functional accordingly. Some of them have been discussed below:

- a. **Clean organizational structure:** It includes different sections or divisions within the organizational set up to carry out certain types of jobs and an organogram that depicts the position of staff in the organizational hierarchy or frame work.
 - b. **Specific delegation of responsibilities and systematic reporting channel:** There should have written job descriptions for each position, stated very specific and clearly. Staff will follow the job responsibilities in carrying out their job and must report his accomplishments to the next tier in the project hierarchy
 - c. **Existence of planning system:** A planning system will work in all departments, units and at individual level of the project management. All the planning applicable for certain period will contribute to the achievement of the whole project planning. Project implementation plan (multi year, yearly, quarterly, monthly) that includes the targeted outputs and activities of the project against certain time period, project budget procurement plan are the example of planning tools often used in project.
- Planning system provides the basis for comparing the progress with the target. It is the essence of the project managers' job to decide what corrective action is necessary if any performance or efficiency variance takes place.
- d. **Institutional arrangements & capacity building:** Good M&E system should have arrangements for data collection, data processing and feedback to the management for decision-making. In line with that capacity building of staff to perform the activities efficiently is widely acknowledged to be important.
 - e. **Project objectives should be described in clear and measurable form:** Clear statements of measurable objectives for the project and its components for which the indicators should be defined. The logframe approach to project planning provides an efficient structure by postulating a hierarchy of objectives for which indicators are required.

■ ABOUT STRUCTURE OF MIS UNIT

A senior staff member in the project management hierarchy should preferably head the MIS unit. The unit need not be large. One to three professional staff with training in economics and statistics, and supporting staff, are adequate in most cases. Additional staff may be hired on a temporary or contractual basis when the need arises. For example, if a baseline survey or some in-depth study is needed a research agency might be hired on a contract basis or, if it is to be undertaken by the unit, enumerators and field staff might be hired on a temporary basis.

To discharge its responsibilities effectively, the project M&E unit should not only be slatted by competent persons but their must also be close rapport between the unit and the project manager. To meet this need, the M&E unit should directly report to the manger. It is equally important hat title project manager must understand and appreciate the role of M&E in project implementation and management.

■ ABOUT SOME TYPICAL RESISTANCE AND REMEDIES

MIS are widely approved and accepted in theory as an aid to effective management but are often found to be poorly operated and ineffective in practice. Sometimes there is unstated opposition to monitoring in government and non-government implementing agencies. M&E may reveal weakness in management, which may be linked to individuals managing a project, and it is human nature to opposite this possibility.

Methodology for implementing MIS

1. Understand the organization
2. Analyse the information requirements of the organization
3. Plan overall strategy
4. Review
5. Preliminary analysis
6. Feasibility assessment
7. Detailed fact finding
8. Analysis
9. Design
10. Development
11. Cutover
12. Obtain conceptual schema
13. Recruit database administrator
14. Obtain logical schema
15. Create data dictionary
16. Obtain physical schema
17. Create database
18. Modify data dictionary
19. Develop sub-schemas
20. Modify database
21. Amend database

Strategies for determining MIS design in SUS

MIS design should be specific to an organization, respecting its age, structure, and operations.

Six strategies for determining MIS design have been used for SUS:

■ *Organization-chart approach*: Using this approach, the MIS is designed based on the traditional functional areas, such as finance, administration, production. These functional areas define current organizational boundaries and structure.

■ *Data-collection approach* This approach involves collection of all data which might be relevant to MIS design. The collected data are then classified. This classification influences the way the data can be exploited usefully at a later stage. The classification therefore needs to be done extremely carefully.

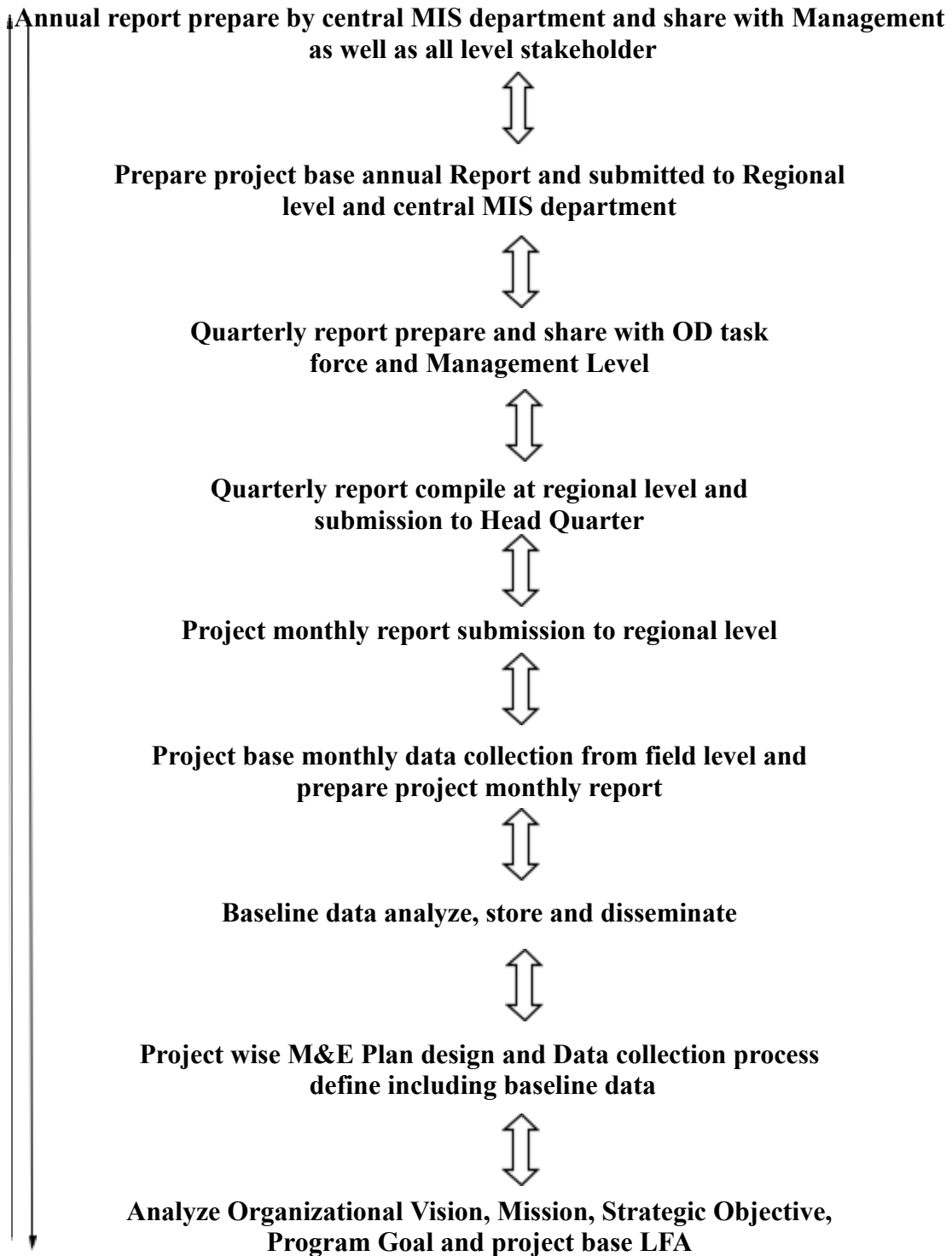
■ *Database approach* A large and detailed database is amassed, stored and maintained. The database approach is more and more accepted for two main reasons: first, because of data independence it allows for easier system development, even without attempting a complete MIS; and, second, it provides management with immediate access to information required.

■ *Top-down approach* The top-down approach involves defining the information needs for successive layers of management. If information required at the top remains relatively stable in terms of level of detail, content and frequency, the system could fulfil MIS requirements. The usefulness of this approach depends on the nature of the organization. It can be suitable for those organizations where there is a difference in the type of information required at the various levels.

■ *Total-system approach* In this approach the interrelationships of the basic information are defined prior to implementation. Data collection, storage and processing are designed and done within the framework of the total system. This approach can be successfully implemented in organizations.

MIS in SUS

Data work flow at Organization Level



MIS in SUS

Data work flow at Program Level

Samity/Self Reliant Group/Collect data from field and community



Compile community data at WC/Ward Federation/Ward PO level (from several CBO)



**Compile Union CBO/Union Federation MIS data at Union level
(Upazila CBO aggregate data from several Union CBO/PO)**



Compile MIS data at Regional level from different CBO/PO



SUS/HQ compiles data of Region level



Prepare Dashboard based on MIS data at SUS/HQ for taking Management decision