## 5.3 INFORMATION GATHERING

Information gathering is a part of the feasibility analysis process. It is both an art and a science. It is a science because effective information-gathering needs a proper methodology and tools. It is art too because it requires creativity to find the exact information required. To design a system, we need lots of information about the system. That's why software engineers gather and analyzes information like:

a) **Interrelationship between different system components:** To design a system, one must know how the components of the system are related to each other. The degree of cohesion and coupling between different systems components must be known.

b) **System entities and their attributes:**Entities are the concept or objects where data of a system are stored and managed, and their properties are called an attribute. We should know how to store and manage data to design a system efficiently.

c) **System operations and their interrelatedness:**Operations are a piece of code or instructions that enables the functionality of systems. We should understand the functionality of a system to build it.

d) **System business rules:** Business rules are guidelines that specify how the system should operate. These relate to data access, data flow, relationships among entities, and the behavior of system operations.

System engineer or analyst applies various methodologies to collect such information so that they can design the system more accurately and comprehensively.

## 5.4 TYPE OF INFORMATION

Various types of information are required for the design and development of a system. We are looking for information that will help us to define the requirement of the systems accurately. This process is known as the requirements analysis phase, and it leads to a document called





accomplished only when the actual needs of the customer or users are identified and reported. The users' requirements must be evaluated wisely before being evaluated. Only after quality evaluation, an analyst will get an idea about enhancing a new system or developing a new system. The analyst can request the users to fill up some form that includes the objectives and expected benefits. Needs identification gives a clear picture of the system.

## 4.8 DETERMINING THE REQUIREMENTS

Determining the actual requirements of the users is a challenging task as the users might not be able to express their needs. Moreover, the users qualitatively express their needs, but the analyst technically needs them. Different ways can be used by the users to describe their requirements:

- **Kitchen Sink:** For inexperienced users, this strategy is used where the user puts up everything in the requirement definition.
- **Smoking Strategy:** This strategy is used for experienced users. Requests that are manageable, realistic, and achievable are only considered. A smokescreen is set up by asking for various system features, out of which only a few are required.
- **Same Thing Strategy:** This strategy tries to tackle the users who themselves do not know what they want and keeps on requesting the same thing in a better way. The analysts have a tough time dealing with such requests and the success rate is very low because of the non-clarity of the actual need.



### CHECK YOUR PROGRESS

**Q 6:** What is the main aim of initial investigation?

**Q 7:** What are the strategies being used to conclude the initial investigation?

**Q 8:** Name the strategies being used to determine user's requirements.

## 4.9 STEPS FOR INITIAL INVESTIGATION

The steps followed while performing the initial investigation are as follows:

### 4.9.1 Problem Definition and Project Initiation

The initial investigation starts with finding out the user's requirement that has made his request for system change. While defining the problem statement, it should be made sure that the user's problem is well understood and the input, as well as the output in terms of the user's request, must be clearly specified. The main focus should be on the attainment of the results as per the user's requirement. Problem definition must be clearly and correctly specified as follows:

- function of the system, its input, output, constraints (if any), and the environment variables
- skillset required, manpower
- individual components of the system along with their utility and overall flow of activities

### 4.9.2 Background Analysis

Once the initiation starts, a background analysis of the customer's organization is to be done. The system analyst tries to extract the basic information like the physical working process, people associated with the organization, etc. After the analysis, the analyst prepares a detailed chart of the people with their associated functions.

### 4.9.3 Fact Finding

After analyzing the background information, the next step in the investigation is to find facts. The analyst, through various means, tries to collect data on the input, output, and cost of the existing system. The analyst can retrieve this information by the following ways:



# UNIT 5: INFORMATION GATHERING

## UNIT STRUCTURE

5.1 Learning Objectives
5.2 Introduction
5.3 Information Gathering
5.4 Types of Information
5.5 Origin of Information
5.6 Review of Literature
5.7 Procedures and Forms
5.8 Interviews and Questionaries
5.9 Let Us Sum Up
5.10 Further Reading
5.11 Answers To Check Your Progress
5.12 Model Questions

## 5.1 LEARNING OBJECTIVES

After going through this unit, you will be able to –

- explain the need of information gathering for system design
- identify different types of information for system design
- describe the importance of literature review
- describe about different information gathering techniques

## 5.2 INTRODUCTION

In the previous unit, we have learnt about system planning and initial investigation. We have learned in detail about MIS planning and steps for initial investigation. In this unit, we will learn about information gathering. Topics like types of information, origin of information, review of literature, procedure and forms are covered in detail in this unit. In the next unit, we will explore the tools used for structured analysis.

**Ans to Q No 6:** An initial investigation mainly aims at determining the feasibility of the user's need.

**Ans to Q No 7:** Strategies like asking, extracting present system's information and prototyping are used to investigate in order to conclude.

**Ans to Q No 8:** The strategies used for determining user's requirements include kitchen sink strategy, smoking strategy and same thing strategy.

**Ans to Q No 9:** Problem definition should specify function of the system, its input, output, constraints (if any), environment variables, skillset required, manpower, individual components of the system along with their utility and overall flow of activities, economics in terms of cost, value, price, etc.

**Ans to Q No 10:** The output of the background analysis step is a detailed chart of the people with their associated functions.

**Ans to Q No 11:** Input-Output analysis, decision tables and structure charts are used to analyse facts.



## 4.13 MODEL QUESTIONS

**Q 1:** Why are system planning and initial investigation important?

**Q 2:** What should an MIS plan include?

**Q 3:** Explain in detail the three levels of MIS planning.

**Q 4:** Why is it important to identify the needs of the user?

**Q 5:** Explain how can the users describe their needs?

**Q 6:** Discuss the various steps that are used in initial investigation.

**Q 7:** Which method of fact finding is efficient and why? Justify your answer.

**Q 8:** Why is it necessary to analyse facts in initial investigation?

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- **Review of written documents:**For some problems, various documentations like manuals, company studies, government publications are searched and reviewed. However, such a method is not fruitful as it is time-consuming, costly, pieces of information may be outdated. Updated and good manuals might save search time.
- **On-site observations:** It is one of the best methods of fact-finding as the analyst can visit the site all by himself and observe and analyze all the ongoing activities, operations, and functions of the system. The analyst can also interact with the people around to extract all the relevant and meaningful information. This way of fact-finding is fruitful as the information found is unbiased. The analyst gets a clear picture of the actual scenario of the system rather than relying on the documents and manuals. However, this approach takes time and it greatly depends on the quality of inferences drawn by the analyst.
- **Interview and questionnaires:**The third method to find facts is through interviews and questionnaires. By surveying and interviewing, the analyst knows people's awareness, feelings, or motivations. In this approach, information is gathered by posing a set of questions among a large number of people and then analyzing the data.

### 4.9.4 Fact Analysis

The facts obtained from the previous stage must be analyzed. The objective of this phase is to organize and evaluate the data to generate some formal reports to get the final approval from the user. The fact analysis tools those used includes:

- **Input/ Output Analysis:** Input/output analysis tries to find out the features associated with the inputs and outputs of a given system. Various diagrams like Flow-charts and Data Flow Diagrams (DFD) are used to perform such kinds of analysis. A flowchart is a pictorial representation of the overall flow of information throughout the system using various symbols,

shapes, and words. And DFD is used to describe the modeling of the entire process in detail where the system might have some constraints.

- **Decision Tables:** Diagrammatic representation of the data flow is not possible for complex processes. So, decision tables are used to represent the data flow within a system. Decision tables are easy and simple data analysis tools. It serves as a bridge between technical and non-technical staff.
- **Structure Chart:** A structure chart is a hierarchical approach for fact analysis. It starts from preparing a single input-output processing chart, tracing out the module associated with the hierarchy chart, and finally finding the data elements along the line linking the module to a higher level. This tool is a brilliant way to keep track of the data collected for a system.

### 4.9.5 Determination of Feasibility

After the detailed analysis, the analyst has a thorough knowledge of the system. With various information at hand like the interview records, updated system documentation, flowcharts, and pros-cons of the system, the analyst then evaluates the feasibility of the proposal and checks for the possibility of alternative solutions.



**CHECK YOUR PROGRESS**

**Q9:** What should problem definition specify?

**Q10:** What is the output of the background analysis step?

**Q11:** What are the methods used toanalyse facts?



## 4.10 LET US SUM UP

- In system analysis, planning the information systems mainly includes setting up goals to be achieved and formulating tasks and strategies to attain them.





- System planning and the initial investigation are very essential to avoid system failures.
- The initial investigation tries to check for the feasibility of the user's requirements. So, the needs and the requirements of the user must be identified to develop the system correctly.
- Flow-charts and Data Flow Diagrams (DFD) are used to find out the features associated with the inputs and outputs of a given system.
- Decision Tables are used to represent the data flow within a system.
- Structure chart is used for fact analysis.



## 4.11 FURTHER READING

1. Awad, E. M. (1985). Systems analysis and design. Homewood, Ill: R.D. Irwin.
2. Chauhan A & Mishra R. (2009). System Analysis and Design. Pragati Prakashan.



## 4.12 ANSWERS TO CHECK YOUR PROGRESS

**Ans to Q No 1:** System planning and initial investigation is the most critical in project development life cycle.

**Ans to Q No 2:** The major areas of concern for planning includes good return with moderate or high interest rates, price hike, business expansion, shortage of various resources and other governing limitations and increased productivity.

**Ans to Q No 3:** MIS planning is done to improve the overall working process of an organization.

**Ans to Q No 4:** MIS planning is done at three levels namely strategic, managerial and strategic.

**Ans to Q No 5:** Conceptualizing and systematizing the overall planning process makes it easier to gain the support of the upper, mid and ground level management.