for the selection of the best system. This best system can fulfil system performance requirements. In this unit, a brief explanation on feasibility analysis of a system will be stated. Further, we will discuss different steps which are to be carried out during feasibility analysis and also the process of constructing a feasibility report in this unit.

7.3 SYSTEM PERFORMANCE DEFINITION

The performance of a system can be defined by describing its outputs in a user-acceptable format and also aiming at a higher level of detail than what was observed in the initial investigation. The system performance can be attained by the following 3 steps:

1. Statement of constraints
2. Identification of specific system objectives
3. Description of outputs

7.4 STATEMENTS OF CONSTRAINTS

Constraints refer to some factors that can bound the solution of the problem. Some constraints are identified during the initial investigation and are discussed with the user.

A system has three basic constraints:

- **Specific structure and behaviour:** A system must have some structure and behaviour which is designed to achieve a predefined objective.
- **Interconnectivity and interdependence:** These two constraints must exist among the system components.
- **Objectives of the organization:** The objectives of the organization have a higher priority than the objectives of its subsystems.

7.5 IDENTIFICATION OF SPECIFIC SYSTEM OBJECTIVES

After finding out the factors that limit the solution, the system analyst proceeds to identify system's specific performance objectives. These objectives are derived from the general objectives as specified at the end

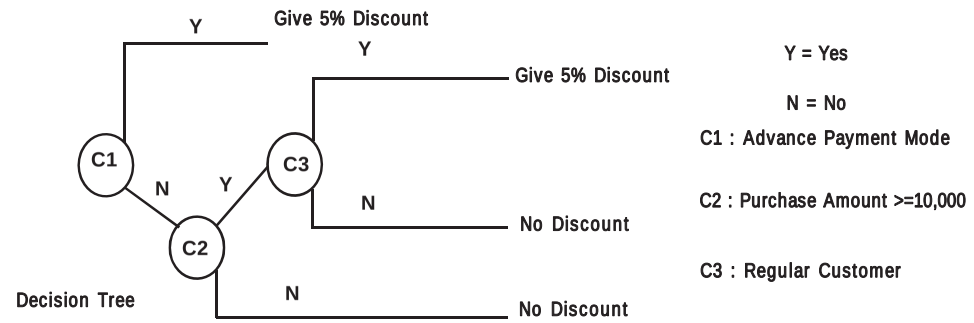


Figure 6.8: Decision tree describing discount policy of a Super market store.

6.7 DECISION TABLE

A decision table is a tabular representation of the logic of a problem. It specifies the possible conditions and the resulting actions to be taken to address them, in a structured tabular format.

It is a powerful tool to debug and prevent errors. It helps to group similar information into a single table and then by combining tables it delivers easy and convenient decision-making.

Decision tables are a method of describing the complex logical relationship in a precise manner which is easily understandable.

- It is useful in situations where the resulting actions depend on the occurrence of one or several combinations of independent conditions.
- It is a matrix containing row or columns for defining a problem and the actions.

A decision table consists of four parts: condition, condition alternatives, action and action alternatives. This tabular structure of a decision table is shown in figure 6.9. Condition stubs include conditions relevant to decision, action stubs specify actions that result from a given set of conditions and rules specify which actions are to be followed for a given set of conditions.

Conditions and Actions	Rules
Conditions	Condition Alternatives
Actions	Action Entries

Figure 6.9: Four sections of a decision table

Creating Decision Table:

To create a decision table, four fundamental steps must be followed:

- Identify all possible conditions to be addressed,
- Determine actions for all identified conditions,
- Create Maximum possible rules,
- Define action for each rule.

It is to be mentioned that decision table should be verified by end-users and can lately be simplified by eliminating duplicate rules and actions.

Constructing a Decision Table:

PART 1. FRAME THE PROBLEM.

- Identify the conditions (decision criteria). These are the factors that will influence the decision.
- Identify the range of values for each condition or criteria.
- Identify all possible actions that can occur.

PART 2. CREATE THE TABLE.

- Create a table with 4 quadrants. (Put the conditions in upper left quadrant and place the actions in lower left quadrant)
- List all possible rules. Put the rules in the upper right quadrant.
- Enter actions for each rule. (In the lower right quadrant, determine what, if any, appropriate actions should be taken for each rule)

UNIT 7: FEASIBILITY STUDY

UNIT STRUCTURE

7.1 Learning Objectives
7.2 Introduction
7.3 System Performance Definition
7.4 Statements of Constraints
7.5 Identification of Specific System Objectives
7.6 Description of Outputs
7.7 Feasibility Consideration
7.7.1 Economic Feasibility
7.7.2 Technical Feasibility
7.7.3 Behavioural Feasibility
7.8 Steps in Feasibility Analysis
7.9 Feasibility Report
7.10 Let Us Sum Up
7.11 Further Reading
7.12 Answers to Check Your Progress
7.13 Model Questions

7.1 LEARNING OBJECTIVES

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

- define system performance
- list the objectives of specific system
- explain how to conduct the feasibility study
- describe the different steps in feasibility analysis
- explain how to prepare the feasibility report

7.2 INTRODUCTION

An initial investigation in a proposal for a system to be developed can determine the feasibility for an alternative system. This proposal is then presented to the user for any review. Once it is approved, a feasibility study is required to describe and evaluate candidate systems and provides



6.11 MODEL QUESTIONS

Q 1: Explain how the DFD model can help to understand the working of a software system.

Q 2: How do you define data flow diagram? Name the fundamental notations used to draw a data flow diagram.

Q 3: Draw context diagram for Online Tourism Management system.

Q 4: Give the context diagram and level 1 DFD for E-shopping system.

Q 5: Write the main advantages of using decision table in designing a problem. Explain with an example.

Q 6: What is the purpose of using data dictionary? What are the elements of data dictionary?

Q 7: How does structured English support to describe a structured program? Explain with a suitable example.

Q 8: Prepare the data dictionary for E-shopping system.

*** ***** ***

Let us take an example of super market store. We begin by identifying all conditions that may be considered in purchasing items from the store and their respective possible challenges. We include all possible problems under column conditions and the corresponding actions under column Actions. Table 1 presents the decision table explaining this super market problem.

Table 1: The decision table for super market problem

CONDITIONS	**Rule 1**	**Rule 2**	**Rule 3**	**Rule 4**
Purchase amount >Rs 10,000/-	Y	N	N	N
Purchase amount <= Rs 10,000/-	-	Y	Y	N
Regular Customer	-	Y	N	-
ACTIONS				
Give 5% discount	X	X	-	-
Give no discount	-	-	X	X

The entries in the decision table are given by decision rules which define the relationships between combinations of conditions and courses of action. In rules section,

- Y shows the existence of a condition.
- N represents the condition, which is not satisfied.
- A blank - against action states it is to be ignored.
- X (or a check mark will do) against action states it is to be carried out.



CHECK YOUR PROGRESS

Q.4: Choose the correct option for the following questions:

i) ..... is a tabular method for describing the logic of the decisions to be taken.

A. Decision tables

B. Decision tree
C. Decision Method
D. Decision Data

ii) A decision table is preferable when the number of
A. conditions to be checked in a procedure is small
B. conditions to be checked in a procedure is large
C. actions to be carried out are large
D. actions to be carried out are small

Guidelines for Selecting Appropriate Tools

We can use the following guidelines for selecting the most appropriate tool that would suit our requirements to analyse a system-

- Use DFD at highor low level analysis for providing good system documentations.
- Use data dictionary to simplify the structure for meeting the data requirement of the system.
- Use structured English if there are many loops and actions are complex.
- Use decision tables when there are a large number of conditions to check and logic is complex.
- Use decision trees when sequencing of conditions is important and if there are few conditions to be tested.



6.8 LET US SUM UP

- Structured analysis phase employs various tools like DFD, decision table, decision tree, data dictionary, structured English, etc. to present a system in an easiest way.
- As a graphical notation, DFD presents data sources, data sinks, data storage and processes performed on data as nodes, and logical flow of data as links between the nodes.
- A decision table is defined as a table that contains all the possible conditions for a problem and the corresponding results based on

condition rules that connect condition with results. It is composed of rows and columns in the form of a matrix and matrix is formed in four quadrants.

- Decision trees are a method for defining complex relationships by describing decisions and avoiding the problems in communication. A decision tree is a diagram that shows alternative actions and conditions within horizontal tree framework.
- Structure English is derived from structured programming language which gives more understandable and precise description of process. It is based on procedural logic.
- The data dictionary is an organized listing of all data elements that are pertinent to the system, with precise, rigorous definitions so that both user and system analyst will have a common understanding of inputs, outputs, components of stores and intermediate calculations.



6.9 FURTHER READING

1. Awad, E.M. (2010). System analysis and Design. Galgotia Publications Pvt. Ltd.
2. Wasson, C.S. (2005). System analysis, design and development : concepts, principles and practices (Vol. 22). John Wiley & Sons.



6.10 ANSWERS TO CHECK YOUR PROGRESS

Ans to Q No 1: i) B ii) C
Ans to Q No 2: i) a ii) c
Ans to Q No 3: i) a ii) b
Ans to Q No 4: ii) B