Data Requirement Gathering

Initially, we have to think about the reason or purpose of doing this data analysis. Then we have to decide what type of data analysis we require to do. Finally, in this phase, we have to focus on what to analyze, how to measure it, and what measures we have to use to do this analysis.

Data Collection

After requirement gathering, a clear idea about what things we have to measure and what should be the findings can be achieved. Based on requirements, it is time to collect data from various sources by maintaining a log with a collection date and source of the data. This collected data must be processed or organized for analysis.

Data Cleaning

It is to be noted that collected data may contain duplicate records, white spaces or errors which may not be useful or irrelevant to analysis. Hence, that form of data should be cleaned and made error free. This phase must be done before analysis because based on data cleaning, output of analysis will be closer to our expected outcome.

Data Analysis

Once the data is collected, cleaned, and processed, it is in ready form for analysis. While manipulating data, we may be experienced either with the exact information we need, or we might need to collect more data. During this phase, various data analysis tools and software can be used which will help us to understand, interpret, and derive conclusions based on the requirements.

Data Interpretation

After analysing data, it is finally turn to interpret the results. We can choose the way to express our data analysis either in textual form or may be in a table or a chart form. From these, we can decide our best course of action.

Data Visualization

Data visualization is very important step by which data can be presented in the form of charts and graphs so that it will be easier for the human brain to understand and process it. Data visualization often used to discover unknown facts and trends. By observing relationships and comparing datasets, we can find a way to find out meaningful information.

Determine and evaluate performance and cost effectiveness of each candidate system:

Here the analyst has to determine and evaluate the system's performance and cost of each candidate system against the system performance requirements set prior to the feasibility study.

The cost incorporates both designing and installing the system. Evaluation for both design and implementation are performed in this phase. It includes user training, updating the physical facilities and documenting etc. Costs can be easily computed if the benefits of the system are found to be tangible and measurable.

Weight system performance and cost data:

According to the performance and cost of the candidate system, some weight is given to each alternative of the system. Then the candidate system with the highest total score is considered acceptable.

The procedure for weighting candidate system is as follows:

1. Assign a weighting factor to each evaluation criterion based on the criterion's effect on the success of the system.
2. Fix a quantitative rating to each criterion's qualitative rating.For example, ratings for poor, fair, good, very good, excellent can be assigned 1,2,3,4,5 respectively.
3. Multiply the weight assigned to each category by the relative rating to determine the score.
4. Find the summation of the score column for each candidate system.

Rank the other alternatives and select the best candidate system:

The system with the highest total score is considered the best system among several candidate systems. This simplifies that the weighting factors are impartial and the rating of each evaluation criterion is accurate and acceptable.

7.9 FEASIBILITY REPORT

The outcome of the feasibility study is a document called feasibility report which is prepared and directed to the management. This report is a formal document for management use. It should be brief, and sufficiently

nontechnical to be understandable. However, it provides the detailed basis for system design. Although there is no standard format for feasibility report, yet a suitable format is considered by the analyst which is acceptable for the user and system.

The following sections are included in a feasibility report:

1. **Cover letter**-It presents the report and briefly specifies the nature, general findings and recommendations to be considered to management.
2. **Table of contents**- It lays down the location of the various parts of the reports.
3. **Overview**- Adescriptive explanation of the purpose and scope of the project, the reason for undertaking the feasibility study and the department(s) involved or affected by the candidate system. It also includes the names of the persons who conducted the study and when it started.
4. **Detailed findings**- Point out the methods used in the present system. The System's effectiveness and efficiency as well as operating costs are considered. This section also provides a description of the objectives and general procedures of the candidate system.
5. **Economic justification**–It presents point by point cost comparisons and preliminary cost estimates for the development and operation of the candidate system. A return on investment assessment of the project is also included.
6. **Recommendations and conclusions**– It proposes the most beneficial and cost-effective system to management. They are written only as a recommendation, not as a command; from which any conclusions from the study may be encompassed.
7. **Appendixes** –It documents all memos and data compiled during the investigation. They are placed at the end of the report for reference.

Thereby, it can be summarised that the feasibility report is a detailed summary of the investigation that is carried out and it outlines the options

benefit. The next unit will explore the topics related to the process and stages of system design.

8.3 DATA ANALYSIS

Data analysis is a prerequisite to cost/ benefit analysis. System investigation and data gathering lead to an assessment of current findings. From the data analysis, the design requirements for a system can be identified which include better customer service, faster information retrieval, quicker report generation, minimal time consumption, accuracy, reduce data redundancy, improved staff efficiency and lower processing & operating costs.

Data analysis is defined as a process of cleaning, transforming, and modelling data to discover useful information for business decision-making. The purpose of data analysis is to extract useful information from data and taking the decision based upon the data analysis.

To achieve these design objectives, several alternatives must be evaluated. The analyst selects those that are feasible economically, technically and operationally. Each approach has its benefits and drawbacks. An analysis of the costs & benefits of each alternative guides the selection process.

Data Analysis Process

The data analysis is nothing but a process of gathering information by using a proper application or tool which allows us to explore the data and find a pattern in it. Based on that information and data, we can either take decisions or be able to get ultimate conclusions.

Data Analysis process consists of the following phases:

- Data Requirement Gathering
- Data Collection
- Data Cleaning
- Data Analysis
- Data Interpretation
- Data Visualization

UNIT 8: COST/BENEFIT ANALYSIS

UNIT STRUCTURE

8.1 Learning Objectives

8.2 Introduction

8.3 Data Analysis

8.4 Cost and Benefit Categories

8.5 Procedure for Cost/Benefit Determination

8.6 Let Us Sum Up

8.7 Further Readings

8.8 Answers to Check Your Progress

8.9 Model Questions

8.1 LEARNING OBJECTIVES

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

- get an idea about data analysis
- learn about data analysis process
- acquire the knowledge of cost and benefit analysis
- learn about various categories of cost/benefit
- learn the procedure for cost/benefit determination

8.2 INTRODUCTION

In the previous unit, we discussed about the feasibility study. Once the feasibility study for a system is completed and finalised, a feasibility report is generated. It is to be followed by data analysis process. Data gathering is only one part of systems analysis. Subsequently, cost and benefit analysis are processed. The costs and benefits of each alternative guide the selection of the best system for the job. Cost/ benefit analysis is a procedure that gives a picture of the various costs, benefits and rules associated with a system. The determination of costs and benefits is based on some steps. This unit covers data analysis and its different phases. Also, it describes the cost/benefit analysis and various categories of cost/

and recommendations. After carefully going through this report, management can decide whether the candidate system should be designed. An outline of a written feasibility report is presented in the Table 1.

Table 1. Feasibility report

SL.No	Section	Purpose
1	TITLE PAGE	Defines the name of the project
2	TABLE OF CONTENTS	Includes various parts, features and exhibits showing page numbers
3	SCOPE	Defines a short description of the system boundaries
4	STATEMENT OF THE PROBLEM	Describe current system followed by proposed system
5	SUMMARY/ABSTRACT	Mention a summary of project highlighting benefits
6	COST/BENEFIT STATEMENT	List quantitative benefits and savings
7	IMPLEMENTATION SCHEDULE	Describe implementation plan, human resources requirements
8	HARDWARE CONFIGURATION	List computer configuration, perpherals, communication equipment
9	CREDITS	Give credit to those who contributed to the project study
10	APPENDIX	Include exhibits, correspondence on project



CHECK YOUR PROGRESS

Q2: Choose the correct options from the followings:

a) The rate of …… is always an important factor for management especially in relation to the rate of return

i. Cost
ii. Benefit
iii. Sales
iv. Investment

b) The Key considerations involved in the feasibility analysis is / are
i. Economic
ii. Technical
iii. Behavioural
iv. All of these

c) ……. gives defining the flow of the data through and organization or a company or series of tasks that may or may not represent computerized processing.
i. System process
ii. System flowchart
iii. System design
iv. Structured System3



7.10 LET US SUM UP

- A feasibility study is carried out to select the best system that meets performance requirements. It involves an identification description, an evaluation of candidate systems, and the selection of the best system.
- System's required performance is defined by a statement of constraints, the identification of specific system objectives, and a description of outputs.
- There are three basic considerations in feasibility analysis which are economic feasibility, technical feasibility and behavioural feasibility. Economic analysis is also called cost/benefit analysis which determines whether the adoption of a new system is cost effective. Technical feasibility centers around the existing hardware

and software system. Behavioural analysis determines how much effort is required for educating, selling, and training the user staff on a candidate system.



7.11 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.



7.12 ANSWERS TO CHECK YOUR PROGRESS

Ans to Q No 1: a) ii. b) i c) ii

Ans to Q No 2: a) iv b) iv c) ii



7.13 MODEL QUESTIONS

Q 1: What makes up a system performance definition? With an example, explain the steps to prepare the definition.

Q 2: Evaluate the feasibility study. What were the strong and weak points of the study?

Q 3: Discuss the three key considerations on feasibility study. For a proposed system "Payroll management system", how do you describe these threeassessments.

Q 4: What makes up a feasibility report? How do you change it? Explain it.

Q 5: Mention the steps involved in feasibility analysis and explain each step briefly.

Q 6: Discuss the elements considered for preparing a feasibility report.

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