Debere Birhan Polytechnic College

DATABASE ADMINISTRATION SERVICES Level III

MODULE TITLE: **Gathering Data to Identify Business Requirements**

LO1. Identifying the key information sources

1.1 Introduction to the module

Gathering business requirements means listing the changes you will need to make in how your business operates. These changes can range from work activities, to procedures and policies, to installing new equipment or software. The purpose of these changes is to help your organization achieve its goals more efficiently and with less expense. A comprehensive look into business requirements can turn up a surprising number of opportunities for taking your organization to a new level of operating efficiency.

* **In general this module Provides information and activities to enable you to gain the skills required to identify the needs of a business or a business process and quantify those needs into technical requirements that will enable the business or process to meet expectations.**

1.%.1. Overview of information

In computing science, information refers to the output (processed data) or result of the processing task.
Data on its own may have no meaning, and only when interpreted by some kind of data processing system, it may take on meaning and become *information*.
I.e.: Information is a collection of meaningful facts and figures that can be used as a base for guidance and decision making.

- Information is necessary for each action we take and the decisions we make.

So what is information? What is the relationship between information, data and knowledge?

- "Information is stimuli that have meaning in some context for its receiver".
- When information is entered and stored in a computer, it is generally referred to as data. After processing (such as formatting and printing) output data can again be perceived as information. When information is packaged or used for understanding or doing something, it is known as "knowledge".
- Within this resource the conceptual boundaries of data and information blur when we talk about gathering information and data to define the business and user needs. At the end of this resource you should be armed with sufficient information to gain an understanding of the business requirements - you should have acquired knowledge.
- The value of information can be measured by its:

✓ **Accuracy** - The information must be clear and accurately reflect the meaning of the data.
If information is inaccurate, it leads to wrong decision which in turn results in investment of unnecessary time, energy and cost.

✓ **Timeliness** - **The right information must be delivered to the right person at the right time.**
- This refers to getting information within the needed time.
- **The objective of data processing is "getting the right information to the right person at the right time".**

✓ **Meaningfulness –The information produced by the data processing system must be meaningful to the people.**
- **The information must be appropriate and relevant to the user's needs.**

1.%.2. Documentary sources

➢ **Sources of information**

Information can be obtained from various sources but generally we can classify the sources into two categories.

A. Documentary sources

B. Non-documentary sources

A. Documentary sources:

Documentary sources are written documents that are stored in different formats. These sources can further be classified as primary, secondary and tertiary sources.

- **Primary documentary sources** are first published records of original research and development activities.
  - It may also reflect a description of new application or new interpretation of an old idea.
  - If a document represents unfiltered and original idea, it can be classifies under this category.

- **Secondary documentary sources** are those sources which are either compiled from or referred to primary source of information in order to serve a particular purpose.
  - Unlike the primary sources, the secondary documentary sources of information have filtered, organized, digested and repackaged information. Examples include: indexes, textbooks, reference books etc.

- **Tertiary documentary sources** contain information that is refined or distilled and collected from primary and secondary sources.
  - Usually these sources are organized with the aim of assisting the search of information in the use of primary and secondary sources.

B. Non-documentary sources

Non-Documentary sources are information that is not contained in written format.
Example: - information that is transferred from generation to generation orally is considered to be a non-documentary source.

1.2 Identifying information repository

Repository commonly refers to a location for storage or a place or container in which things can be stored for safety.
Information repository is a central place where data is stored and maintained. Example: **Information repository** is like a library.

- A repository can be a place where multiple databases or files are located for distribution over a network, or it can be a location that is directly accessible to the user without having to travel across a network.

Numerous organizations use information repositories to handle their data and may network with others to share material as necessary. You will find repositories for government forms and data, maps, and even computerized data.

1.3 Reviewing current organization document

The legal documents in the organization may incorporate:

- Business forms
- Policy documents
- Financial statements
- Performance reports
- Annual reports

1.3.1 Business forms

Form – A business document that contains some predefined data and may include some areas where additional data are to be filled in. An instance of a form is typically based on one database record.

Report – A business document that contains a passive document used only for reading and viewing.
- A report typically contains data from many unrelated records or transactions.

1.3.2 Policy documents

The **policy document** is a formal document that is regarded as a legally binding document.

- The purpose, definitions and the responsibilities outlined within its content must be uphold/maintain in order to support an individual.

1.3.3 Financial statements

A **Financial Statement** (is a document reporting business financial performance and resources.

- It is a formal record of the financial activities of a business, person, or other entity.

Some common financial statements are:

- A **balance sheet**, showing a business's assets, liability, and owner's equity or retained earnings.
- An **income statement**, showing the sales and expenses of a business over a period of time.
- A **cash flow statement**, showing the cash in and out of a business over a period of time.

Financial statements are usually compiled on a quarterly and annual basis.

1.3.4 Performance reports

A **performance report** is a report on the performance of something.
It is a statement that displays measurements of actual results of some person or entity's activity over some time period.
Such reports also will contain performance indicators which measure the achievements of the organisation and its programmes.

1.3.5 Annual reports

An **annual report** is a comprehensive report on a company's activities throughout the preceding year.

The contents of annual report provide information about how well the business is doing financially, upcoming changes projected for the next year, and the management staff of the company.

- Concerned parties, such as shareholders, can use an annual report to make important decisions.
- At a minimum, an annual report must include a balance sheet, a report from an independent auditor, an income statement, and a general report on company operations.

1.4 Developing critical questions

1.4.1 Using open and close ended questions

Asking questions is a basic way to gather more information.
The reasons why you need to ask questions include:

- To gain Information - To gather additional information, someone may ask the concerned body in detail.
- To clarify and verify Information.
- To check for understanding and level of interest - For understanding and evaluation purpose, someone may raise more questions.

1. Open-ended questions

Open-ended questions are unstructured questions in which (unlike in a multiple choice questions) possible answers are not suggested, and the respondent answers it in his or her own words. Such questions usually begin with a **how, what, when, where** and **why**, and provide qualitative instead of quantitative information.

- Open-ended questions are reflexive questions.

Example: - What are the main tasks that you use your computer for?
- What would you like to do on your computer that you cannot do now?
- What factors you take into account when buying a vehicle?
- Tell me about your relationship with your boss
- What do you think about the two candidates in this election?
- What kind of information are you looking for?

2. Closed-ended questions

A **closed-ended** question is a type of *question* which encourages a short or single-word answer.

- It provides a set of answers from which the respondent must choose.
- Multiple choice questions are examples of closed-ended questions.

Example: - Can I help you?
- Can you give me an example?
- What operating system is installed on the computer?
- What main software do you use?
- Do you know how much memory your computer has?
- Is the computer connected to a network?

What is the difference between an **open-end question** and a **close-end** question**?**

* Open-ended questions usually have no real 'right' or 'wrong' answer. It is what you think.
* Close-ended questions have a definite 'correct'(‘yes’ or ‘no’) answer.

LO2. Gather data through formal and informal process

2.1 Information gathering techniques

Designing questions is an important aspect of gathering data - you may not get the information you need if you don't ask the right questions! This resource looks at the implementation of gathering data - for example developing appropriate questions or conducting workshops.

Regardless of whether you are implementing an interview, questionnaire or structured workshop, you need to consider carefully how you develop questions for stakeholders. Developing appropriate questions will determine the quality of the information you gather.

2.1.1 Questionnaires

A **questionnaire** is a research instrument consisting of a series of questions and other prompts for the purpose of gathering information from respondents.

- Questionnaires are effective mechanisms for efficient collection of certain kinds of information.
- The standard questionnaire design is a set of questions with fixed alternatives. These alternatives should have yes/no, multiple options or rank scaling.
- All the readers need to do is tick/choose or scale the most appropriate answer according to them.

Generally questionnaires have subjective/objective and qualitative/quantitative options depending on their type.

* Questionnaire serves four basic purposes:
    i) To collect the appropriate data.
    ii) To make data comparable and amenable /agreeable to analysis.
    iii) To minimize bias in formulating and asking question.
    iv) To make questions engaging/attractive and varied.

2.1.2 Interviews

An **interview** is a conversation between two or more people (the interviewer and the interviewee) where questions are asked by the interviewer to obtain information from the interviewee.

An interview is a planned meeting during which you obtain information from another person. The personal interview is often the preferred information gathering technique when developing business and user requirements.

The interviewing process consists of seven steps:

1. Determine the people to interview
2. Establish objectives for the interview
3. Develop interview questions
4. Prepare for the interview
5. Conduct the interview
6. Document the interview
7. Evaluate the interview

2.1.3 Observation

Observation can be defined as the visual study of something or someone in order to gain information or learn about behaviour, trends, or changes. This allows us to make informed decisions, adjustments, and allowances based on what has been studied.

In other words Observation is a technique that enables the analyst to view how processes and activities are being done in the context of the business. This additional perspective can give a better understanding of system procedures. It is sometimes worthwhile to read procedure manuals to find out how things should be done - then interview people to find out how they believe it is being done - then observe processes to find out how it is actually done.

An observation is a method of data collection in which the situation of interest is watched and the relevant facts, actions and behaviours are recorded.

2.1.4 Surveying

A **survey** is a data collection tool that used to gather information about individuals.

Surveys are commonly used in psychology research to collect self-report data from study participants.
A survey can be administered in a couple of:

- Structured interview - the researcher asks each participant the questions.
- Questionnaire, the participant fills out the survey on his or her own.

Advantages of Using Surveys

- Surveys allow researchers to collect a large amount of data in a relatively short period of time.
- Surveys are less expensive than many other data collection techniques.
- Surveys can be created quickly and administered easily.
- Surveys can be used to collect information on a wide range of things, including personal facts, attitudes, past behaviours and opinions.

2.2 Reviewing Reports and data sources

Reviewing report refers to the process where in the proposed report is examined in detail for both its technical content and its composition by the author, the author's supervisors, and the technical review committee or a single reviewer.
A **data source** is simply a collection of records that is stored in the media.
A **data source** is any of the following types of sources for (mostly) digitized data:

- a database
  - Data source is a special name for the connection set up to a database from a server.
- a computer file

A data source, also called a data file, is simply a collection of records that store data. This data is used to populate merge fields in mail merges. These files can be databases from Access. In theory, any Open Database Connectivity (ODBC) database can be used as a data source.

Actually, just about anything that can be organized by category heading, such as First Name, Last Name, Address, etc., can be used as a data source.

2.3 Confirming Business critical factors

2.3.1 Response times

In technology, **response time** is the time a system or functional unit takes to react to a given input.
Response time may refer to Reaction time, the elapsed time between the presentation of a sensory stimulus and the subsequent behavioral response.

2.3.2 Scalability

Scalability is the ability of a system to expand to meet your business needs. You can scale a system by adding extra hardware or by upgrading the existing hardware without changing much of the application.
It is the ability of a computer application or product (hardware or software) to continue to function well when it is changed in size or volume in order to meet a user need.

2.3.3 Traffic

Traffic is the load on a communications device or system.
One of the principal jobs of a system administrator is to monitor traffic levels and take appropriate actions when traffic becomes heavy.

2.3.4 Data knowledge and management

Knowledge is what we know.
I.e. Knowledge is the appropriate collection of information, such that its intent (aim) is to be useful.

- A knowledge base provides a means for information to be collected, organised, shared, searched and utilised.

Data Management is administrative process by which the required data is acquired, validated, stored, protected, and processed, and by which its accessibility, reliability, and timeliness is ensured to satisfy the needs of the data users.

2.3.5 Security

Security is the degree of protection against danger, damage, loss, and crime.
- It has to also be compared to safety, continuity, reliability.
- In addition to reliability, security must take into account the actions of people attempting to cause destruction.

2.3.6 Customer demographics

Demographic is the physical characteristics of a population such as age, sex, marital status, family size, education, geographic location, and occupation.
Customer demographic is a description of a customer or set of customers that include all the measurements necessary to statistically describe the end-user base in a given market.

✓ This would include the measurement of parameters such as:

- Total number of customers
- Customers by the number of employees
- Customers by the size of production
- Customer budgets and expenditures

2.3.7 Customer confidence

Customer confidence is the degree of optimism/hopefulness that consumers are expressing for the state of the economy through their saving and spending activity.
It is an economic indicator which measures the degree of optimism that consumers feel about the overall state of the economy and their personal financial situation.

2.4 Defining and analyzing business priority

Priority is precedence, especially established by order of importance or urgency.

- Good business planning must involve setting priorities and working on the most important ones first.
- Business budgeting is the process of allocating available resources among a variety of possible expenditures based on priority.

LO3. Ensure Analysis is accurate and complete

3.1 Analyzing and evaluating accurate and consistent information

Information should provide some value to its user since user need it to make decision or take an action.

- Gathered information must be analyzed and evaluated for accuracy and consistency.

- **Analyzing** means separate things or idea into constituent parts or elements and studying their interrelations to determine (find out or examine): - The elements or essential features.
  - Their nature, proportion, function, interrelationship, etc.

- **When to analyze**

Broadly speaking you will analyze data as you collect it and/or once it has been collected.

Analyzing when collecting data

During an interview or workshop you may be collecting and analyzing data at the same time. Often you ask a question that prompts a second or third question. In this situation you are attempting to clarify or classify the initial response received. The follow-up questions are either probing questions or classification questions.
Workshops typically involve data collection and analysis in real time.

- **Analyzing data already collected**

Data collected from several interviews and/or data collected from questionnaires need to be aggregated and collated into meaningful information. The analysis technique involves identifying similarities and disparities between data.

- **Organizing and Summarizing**

Once you have classified data into meaningful categories, it should be documented in tables and summarized in a paragraph. Often data in tables can be visually represented through the use of charts. You need to carefully select the type of chart to match your data.

- **Evaluating** means determining significance or worth usually by careful appraisal and study.
  - It is the process of determining the worth or value of something
  - Kinds of evaluation can be – qualitative or quantitative

Example: - Answers the question "How *well* did we do?" (Qualitative evaluation)
- Answers the question "How *much* did we do? (Quantitative evaluation)

3.2 Resolving conflicts in information or point of views

- Conflicts in information or points of view are resolved with stakeholders.

Conflict, arguments, and change are natural parts of our lives, as well as the lives of every agency, organization, and nation.

Conflict resolution is a way for two or more parties to find a peaceful solution to a disagreement among them. The disagreement may be personal, financial, political, or emotional.

LO4. Submit analysis and gain agreements

4.1 Preparing detailed document

4.1.1 Using documentation standards

Documentation is collection of information that describes the product to its users how it can be operated or used.

- Detailed document must be prepared according to documentation standards and organizational templates.
- Standard documentation is a set of documents provided on paper, or online, or on digital media within standard format.

4.1.2 Using organizational templates

A **template** is a form, mold, or framework as a guide to making something.

Example: - A ruler is a template when used to draw a straight line.
- A document in which the standard opening and closing part is a template.

- An Organizational template means an organizational format.

4.2 .Writing succinct/concise and appropriate document

Succinct means 'short and to the point' or 'brief and to the point.'

- Document in a style are written that is succinct and appropriate to the audience.
  For example the structure for requirements of concise document:

Chapter	Description
Preface	This should define the expected readership of the document and describe its version history, including a rationale for the creation of a new version and a summary of the changes made in each version.
Introduction	This should describe the need for the system. It should briefly describe its functions and explain how it will work with other systems. It should describe how the system fits into the overall business or strategic objectives of the organisation commissioning the software.
Glossary	This should define the technical terms used in the document. You should not make assumptions about the experience or expertise of the reader.
User requirements definition	The services provided for the user and the non-functional system requirements should be described in this section. This description may use natural language, diagrams or other notations that are understandable by customers. Product and process standards which must be followed should be specified.
System architecture	This chapter should present a high-level overview of the anticipated system architecture showing the distribution of functions across system modules. Architectural components that are reused should be highlighted.
System requirements specification	This should describe the functional and non-functional requirements in more detail. If necessary, further detail may also be added to the non-functional requirements, eg interfaces to other systems may be defined.
System models	This should set out one or more system models showing the relationships between the system components and the system and its environment. These might be object models, data-flow models and semantic data models.
System evolution	This should describe the fundamental assumptions on which the system is based and

	anticipated changes due to hardware evolution, changing user needs, etc.
Appendices	These should provide detailed, specific information which is related to the application being developed. Examples of appendices that may be included are hardware and database descriptions. hardware requirements define the minimal and optimal configurations for the system. Database requirements define the logical organisation of the data used by the system and the relationships between data.
Index	Several indexes to the document may be included. As well as a normal alphabetic index, there may be an index of diagrams, an index of functions, etc.

4.3. **Ensuring the availability of data gathered to client**

- Data gathered are communicated to client to gain consensus and agreement on business requirements.

Data availability is the process of ensuring that data is available to end users and applications- when and where they need it. The availability of data will also depend on how information is currently captured and stored.

The Requirements Report

There are many templates available for writing a Requirements Report. This section looks at one possible report layout.

The following headings may be used in a requirements report:

- Introduction
- System description
- Functional requirements
- Non-functional requirements
- Information domain
- Project costs
- Benefits
- Other project specific topic

* The table below summarizes what each heading contains.

Requirements Definition Report Elements	
Introduction	Purpose Scope Definitions Overview of Document
System Description	Overall System Sub Systems Operating Environment
Functional Requirements	Logical View Physical View
Non Functional Requirements	Performance Quality Business Rules
Information Domain	Data Definitions Structure
Project Costs	Analysis Software Development Hardware & Network
Benefits	Tangible Intangible

These headings are described in detail below.

Introduction

Defines the purpose of the document with a summary of the entire document.
The introduction should describe the scope of the system - i.e. what functions will the system implement.

System Description

Describes top-level functions of the system and the system environment. Diagrams (eg Use Cases and Context Diagrams) can be used to model the system and interactions with its environment.
For example if the system is a website - you could include a top level storyboard to demonstrate to the client the main functions.

Functional Requirements

Defines the services that the system provides.
Examples of mandatory and desirable functional requirements might be:

- ✓ The system Must associate non-stock purchases of raw materials to a specified customer order
- ✓ The system Must associate design work as well as production work to customer special orders
- ✓ The system Must provide a users' guide for products
- ✓ The system Must capture customer details online
- ✓ The system May have password protection for a members only section
- ✓ The system May track the completion status of customer special orders

Use Case diagrams, Data Flow diagrams and State chart diagrams are common techniques used to describe the systems functions.

Non Functional Requirements

Defines any constraints within which the current system operates. For example: database size, response times, and web page download times.

Information domain

Defines the data requirements of the system. ER diagrams, Class diagrams and Data Dictionaries are common techniques used to describe a system's data.
For websites, the storyboard information should be expanded to show what information (web pages) will be included.

Project Costs

Defines estimated costs of the project in terms of development and running costs.

Benefits

Defines the areas that the new system will improve. This includes benefits measurable in dollars (tangible) and those that cannot be measured in dollars (intangible) but are important nonetheless.

Other Project Specific topics

Defines any other topics that may impact on the project.
These may include such things as methodology, legal implications or employee acceptance etc.