Chapter 4: Introduction to Bibliographic Research

1-Definition of Bibliographic Research

Bibliographic research is the set of steps that enable the search, identification, and retrieval of documents related to a specific topic through the development of a search strategy. There are various methods for defining an effective documentary research strategy, all of which are based on some key principles that we will explore in succession.

2. Purpose of bibliography:

- The primary purpose of a bibliography is to help users find books and materials of interest. For researchers, it allows them to discover existing literature on their subject, staying informed and preventing duplication in their work, ultimately saving time and money.
- The secondary purpose of a bibliography is to assist in selecting books and verifying bibliographic information, as well as locating materials in libraries or for purchase. Readers often use bibliographies to find resources on specific subjects in various formats. The effectiveness of a bibliography depends on the organization creating it, and there are various types of bibliographies with varying objectives.

3-Steps in Bibliographic Research

There are various methods for defining an effective bibliographic research strategy, but they all rely on a few key principles. It will revolve around four successive steps:

3 -1- Investigation Phase:

It involves gathering the necessary documentation for processing the topic, including accessing databases, consulting manuscripts, conducting surveys, and more. This step should enable the formulation of the research question, identify documentary requirements, and select the necessary concepts/keywords for querying documentary sources.

3-2- Analysis Phase.

This phase involves creating a detailed plan for the intended research.

3-3- Documentation Phase.

It involves sorting and organizing the data and useful elements obtained during the investigation phase. The objective is to consult ordered cards (bibliographic, citation, and thematic) in preparation for writing.

4-4- Writing Phase.

It involves putting in writing the ideas and data organized on the cards following a progressive plan of presentation. The objective is to write paragraphs and sections following a logical structure.

5- Criteria for evaluating the quality and relevance of sources.

In the face of the abundance of documentation, what needs to be mastered is the sorting of information and the delineation of useful resources. To do this, the research student must immediately combine several types of selection criteria:

- Searching by domain-specific keyword (Biology, Chemistry, Physics, Electronics, etc.);

- Searching by keyword in the title or author's name;

- Searching by keyword related to the topic, ensuring a specific research focus;

- Searching within the document's title: for a book, this would be the title listed on the title page;

- Searching in the abstract: it is typically found in most bibliographic records from databases, at the beginning or end of journal articles, and often on the back of books (back cover).

-Searching in the table of contents: it allows for a better understanding of the content (structure and logic of the argument) and helps identify relevant chapters.

- Searching within tables, graphs, etc.: they can aid in understanding the subject and be useful for your work.

-Introduction and conclusion: Consulting these sections helps in understanding the initial question and the author's conclusions.

6- Different types of documentation:

-General or specialized dictionaries (paper);

-General or specialized encyclopedias (paper or electronic);

-Books, also referred to as publications or monographs (manuals, synthesis works, studies, published theses...)

-Journals, also known as periodicals, are a major tool for the publication of scientific research. Journals are available in both paper and electronic formats (paid or free).

7- Methodology of bibliographic research

7-1-Phase of designing and constructing the study object

To successfully carry out research, one must carefully plan, reflect, precisely identify a problem, formulate a central question (strengthened by others), imagine appropriate answers (hypotheses), and consider their validity. The steps of the object construction phase are as follows:

7-1-1-Select and formulate a research problem

Drawing on readings (consulting books and works) and preliminary field observations, the researcher formulates a research problem. In other words, they develop and articulate, through a sequence of arguments, the translation of a major concern, the expression of "what is problematic" and "what constitutes a problem" and is worthy of study and elucidation. This involves stating the research questions, objectives, research hypotheses, and potentially the thesis position.

7-1-2- Counting the relevant books and works

In this section, the researcher demonstrates a good understanding of other authors and works that have, in one way or another, addressed the field and research subject that are relevant to their own study.

7-1-3- Develop a framework of reference

In principle, the framework of reference defines the particular theoretical perspective through which the research problem will be approached and addressed, placing the study in a context of significance.

7-2- Methodological or Discovery and Data Collection Phase.

During this phase, the researcher explains and justifies the methods and instruments they will use to understand and collect data in response to the questions posed and hypotheses formulated. The researcher also specifies the characteristics of the population (human or non-human group) they will work with and from which they will extract information.

Finally, they describe the data collection process and outline the data analysis plan.

7-2-1- Selection of Data Collection Methods and Instruments

At this stage, the researcher presents or outlines the methods they will employ and then describes the instruments or techniques that will be used. Various instruments are used to

measure the study variables. These instruments can provide qualitative information (interviews, observations, etc.) or quantitative information (questionnaires, measurement scales, etc.).

7-2-2- Definition of the Study Population and Sample

The researcher characterizes the population by establishing the selection criteria for the study, specifying the sample, and determining its size.

The accessible population is the portion of the target population that is within the researcher's reach. It can be limited to a region, a city, a company, an agency, a department, etc. A sample is a subset of elements or subjects drawn from the population, selected to participate in the study.

7-3/ Data Processing Phase (Analysis/ Presentation and Interpretation/ Discussion of Results)

A substantial amount of collected data (for example, two boxes of a thousand filled questionnaires, ten tapes, or gigabytes of recorded interviews) does not, on its own, constitute research. All this data needs to be processed. This means conducting an analytical process to isolate meaningful units (themes, patterns, variables...) abstracted from their context to perform a term-by-term comparison. Subsequently, the researcher synthesizes this information. This phase consists of two steps:

7-3-1/ Data Analysis and Presentation

Data analysis depends on the type of study and its purpose, whether it involves exploring or describing phenomena, or understanding and verifying relationships between variables.

Statistics are used for quantitative analysis.

Qualitative analysis involves gathering and summarizing non-numerical data in a narrative format.

Data analysis helps produce results that are interpreted and discussed by the researcher.

7-3-2/ Interpretation and Discussion of Results

Since the data is analyzed and presented using narrative texts, tables, graphs, figures, and other means, the researcher explains them in the context of the study and in the light of previous research.

Starting from the results, the researcher discusses their authenticity, revisits the hypotheses, appropriately references theories and authors who have addressed the studied issue. This

process allows for making inferences, drawing conclusions, developing a theory, and providing recommendations.

7-Command Languages

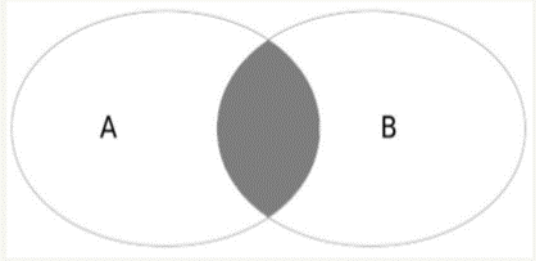
A command language consists of a set of commands to be entered into a document system (catalog, bibliography, table of contents, search engine, etc.) to ask questions, view, and select references.

7-1-Boolean Operators

Based on Boolean algebra, they allow for the combination of multiple search elements to refine or broaden a query.

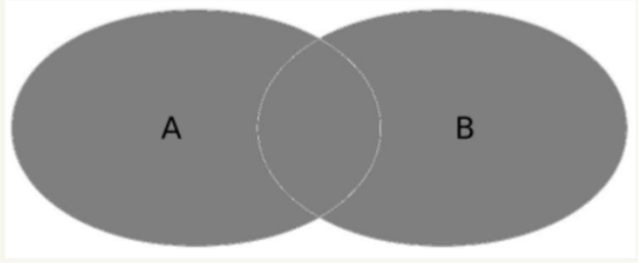
There are three operators: AND, OR, and NOT."

AND: The AND operator represents an intersection. With the AND operator, the displayed references contain both term A and term B. If either term is absent, the reference is rejected. Displayed references must belong to both sets



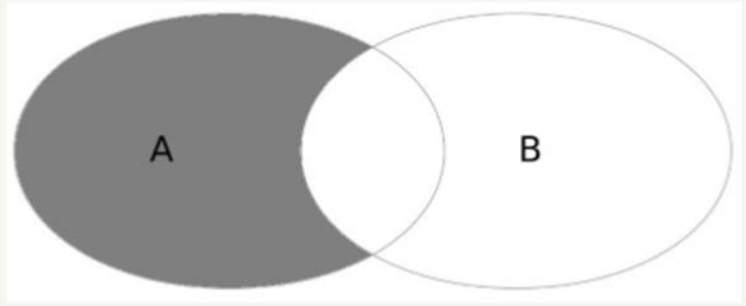
The AND operator has the effect of reducing the number of responses to a question. It is used to refine a question. For example, to search for a document on tomato diseases, one would use the query: 'disease AND tomato'

OR: The OR operator represents a conjunction. With the OR operator, the displayed references contain at least one of the terms in the equation. The displayed references belong to one or more sets.



The OR operator has the effect of increasing the number of responses; it combines the results from different sets. It is used to include synonyms in a search query. For example, to search for documents on wheat, one would use the query: 'wheat OR triticale OR blé

NOT: The NOT operator represents exclusion. With the NOT operator, the displayed references contain term A but not term B. All references in set A that also contain term B are eliminated.



7-2-Exact Phrases and Proximity Operators

When searching for documents about the "greenhouse effect," you can ask the question: "effect AND greenhouse." The results will include documents about the "greenhouse effect," but also documents about the "effect of continuous watering on greenhouse growth," which does not match the original question.

Two tools are available to refine the query: **exact phrases** and **proximity operators.**

An exact phrase is represented in documentary language by the use of quotation marks. You can enforce a multi-term search simply by using quotation marks, for example: "greenhouse effect." This operator works with nearly all existing tools.

Proximity operators allow for more precise searching within a text (title, abstract, etc.). They are only available in certain bibliographic databases. There are two groups of commands: commands that impose a specific order of appearance of terms and those that do not consider the order of appearance. Some common commands you may encounter include "ADJ," "W," "WITHIN," "NEAR," "SAME," or "N," followed by an optional number.

"ADJ": Stands for adjacent. It requires that the terms appear next to each other in the specified order.

"W" or "WITHIN": Specifies that the terms should appear within a certain range of each other.

"NEAR": Requires the terms to be in close proximity, but it is more flexible than "ADJ" or "W."

"SAME": Specifies that the terms must appear in the same order as provided.

"N" followed by a number: This indicates the maximum number of words allowed between the terms.

3-Parentheses

Parentheses can serve two different functions.

Traditionally, they are used to separate elements in a query. For example: "apple* AND (scab OR preservation OR mold*)" is equivalent to "(apple* AND scab) OR (apple* AND preservation) OR (apple* AND mold*)".

With certain tools, terms within parentheses are considered to be linked with the "OR" operator, while those outside are linked with the "AND" operator. For example, the query above can be translated as: "apple* (scab preservation mold*)".