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CARLO BO

Introductory Workshop To Bibliometrics

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Objectives of the Workshop

The objectives of this workshop are to:

- Introduce students to bibliometric analysis and its importance in academic research.
- Train students on how to extract bibliometric data from Scopus and Web of Science, two major academic databases.
- Teach students how to import, clean, process, and merge data in R, a powerful statistical programming language.

Skills Attained by Students

Upon completion of this workshop, students will be able to:

- Understand the value of bibliometrics in research and academia.
- Extract bibliometric data from Scopus and Web of Science.
- Use R to load, clean, process, and merge bibliometric datasets.

Why Bibliometrics?

Unlike traditional techniques, bibliometric analysis allows for a quantitative assessment of the scientific output. It offers an objective measure of research productivity, impact, and influence while visualising relationships and patterns in a scientific field. With bibliometrics, we can analyze more extensive sets of scientific literature more efficiently, making it an excellent tool for understanding trends and uncovering gaps.

When used in conjunction with qualitative methods like systematic reviews, bibliometric analysis can provide a more holistic understanding of a research field. While systematic reviews offer in-depth insights into selected papers, bibliometric analysis can give a broader overview, uncovering patterns and trends that might not be apparent from a narrower focus.

Session 1: Data Collection and Preparation (1 hour)

1. Introduction (15 minutes)

- Definition of Bibliometrics
- Importance of Bibliometric Analysis
- The Role of Scopus and Web of Science Databases

2. Downloading Raw Data (20 minutes)

- A step-by-step guide to downloading data from Scopus
- Searching for articles, authors, or institutions
- Exporting search results
- A step-by-step guide to downloading data from Web of Science

- Searching for articles, authors, or institutions
- Exporting search results

3. Loading the Data in R (10 minutes)

- Introduction to R and RStudio (if needed)
- Reading and loading data into R

4. Data Exploration (15 minutes)

- Structure of bibliometric data
- Using R functions to explore and understand data (head, summary, str)

Session 2: Data processing and Merging (1 hour)

1. Data Processing (30 minutes)

- Cleaning the data (e.g., missing data, inconsistent entries)
- Normalizing data (if needed)

2. Data Merging (30 minutes)

- Merging data from different sources (Scopus and Web of Science)
- Dealing with duplicate entries

Pre-Workshop Instructions:

In order to ensure that our workshop runs smoothly, please complete the following steps before attending:

1. Install R and RStudio:

- R is a programming language used for statistical computing. Download and install R from The Comprehensive R Archive Network (CRAN) .
- RStudio is an integrated development environment for R. It makes using R much easier. Download and install RStudio from the RStudio website .

2. Access to Web of Science and Scopus:

- Please ensure you have access to Web of Science and Scopus. These are databases that index academic papers across various disciplines.
- If you're a student or faculty member at Urbino University, you should have free access through your institution. Please verify your access.

3. Familiarize yourself with R (optional):

- If you're new to R, you may find it helpful to familiarize yourself with some basics before the workshop. Free online resources, like R for Data Science or DataCamp's Introduction to R, can help you get started.

Pre-Workshop Readings(Optional):

For a deeper understanding of the topics we will be covering in the workshop, please consider reading the following papers:

Donthu et el. (2021) - How to conduct a bibliometric analysis: An overview and guidelines.

Cuccurullo and Aria (2017) - bibliometrix: An R-tool for comprehensive science mapping analysis.

Bales et al. (2019) - Bibliometric Visualization and Analysis Software: State of the Art, Workflows, and Best Practices.

Echchakoui (2020) - Why and how to merge Scopus and Web of Science during bibliometric analysis: the case of sales force literature from 1912 to 2019.

Caputo and Kargina (2021) - A user-friendly method to merge Scopus and Web of Science data during bibliometric analysis.

Nakagawa et al. (2018) - Research Weaving: Visualizing the Future of Research Synthesis.

Shared Resources (Google Drive Shared Folder)

There is a Google Drive folder with additional resources for this workshop.

The folder contains: Suggested pre-workshop readings, R scripts used during the workshop, and other useful resources and references. Feel free to review and practice with them.