



Bibliometrics

A Practical Guide

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Bibliometrics Resources Guide

Introduction

Welcome to the Bibliometrics Resources Guide, a practical and comprehensive companion developed to support academic staff, postgraduate students, early-career researchers, and faculty developers in navigating the landscape of bibliometric analysis. As universities increasingly prioritise research impact, interdisciplinary collaboration, and evidence-based publishing, bibliometrics has become essential for evaluating scholarly output, identifying emerging trends, and fostering strategic research planning. This guide offers a clear and structured pathway, beginning with foundational concepts of bibliometrics and scientometrics, and progressing through the step-by-step process of crafting effective search strategies, extracting data from major citation databases such as Web of Science and Scopus, and using RStudio with the Bibliometrix package to conduct both quantitative and visual analyses. Users are introduced to tools like Biblioshiny and guided through software installation, data merging, and interpretation.

The guide is grounded in a real-world case study and provides practical relevance, replicability, and methodological transparency. Annotated figures, customisable templates, and detailed walkthroughs demystifies the bibliometric process and helps users explore the intellectual, conceptual, and social structures that underpin academic research. Whether supervising postgraduate research, preparing a literature review for funding, or mapping collaborative networks, this guide equips you with the tools and confidence to conduct meaningful bibliometric analyses and engage critically with scholarly knowledge production.

Note from the Authors

The *Bibliometrics Resources Guide* is a vital, hands-on resource that simplifies bibliometric analysis for novice and experienced scholars. Through clear tools, real-world examples, and step-by-step instructions, this guide empowers users to engage with bibliometric analysis as a technical method and a strategic lens for understanding research landscapes, enhancing scholarly visibility, and crafting compelling academic narratives.

Whether you are a graduate student preparing a thesis, a faculty member gearing up for an NRF evaluation, or an institutional leader seeking data-informed decision-making tools, this guide offers a practical starting point for meaningful engagement with bibliometric data.

As the academic community increasingly embraces data-driven research strategies and global collaboration, bibliometric literacy has become essential. This handbook equips you with the technical know-how and the confidence to use tools like Scopus, Web of Science, and Bibliometrix within RStudio, blending precision with accessibility.

We hope this guide supports your bibliometric reviews and encourages critical reflection on the broader processes of research production, dissemination, and evaluation. Thank you for utilizing this handbook—and we invite you to continue exploring, questioning, and contributing to the evolving field of scholarly communication.

Foundational Concepts

"Bibliometrics" and "Scientometrics" first appeared around the late 1960s and early 1970s. "Bibliometrics" was introduced by Pritchard in 1969, defined as "the application of mathematics and statistical methods to books and other media of communication." Around the same time, scientometrics emerged, coined by Nalimov & Mulchenko (1971, cited in Andres 2009) as "the quantitative methods of the research on the development of science as an informational process."

Bibliometric analysis is a rigorously applied method that analyses large volumes of scientific data. It provides scientific direction and unpacks nuances related to trends and topics in a specific field. Additionally, it helps analyse scientific productivity within particular disciplines or research areas. As presented **Table I.1**, bibliometric analysis can be broadly divided into two categories.

Table I.1: Categories of Bibliometric Analysis

Descriptive Bibliometrics	Relational Bibliometrics
Describes characteristics of published literature (e.g., volume, authorship, publication trends).	Explores relationships among data to uncover deeper structures of scholarly communication.
Examples: Number of publications over time; most prolific authors or institutions.	Examples: Citation networks, keyword co-occurrence, institutional collaboration.

Relational Bibliometrics explores three core knowledge structures

- **Intellectual Structure:** Highlights influential publications and how they shape a field.
- **Conceptual Structure:** Reveals key themes and evolving topics through keyword and thematic analysis.
- **Social Structure:** Maps collaborations between authors, institutions, or countries.

Part I

Steps in the process

From **Figure I.1**, preparing data for bibliometric analysis involves a three-step process. A well-designed search strategy is essential as it lays the foundation for accurate and meaningful analysis. Once developed, data is extracted from relevant, research-intensive databases and exported in a format suitable for bibliometric software.



Figure I.1: Steps in the process for preparation of data

Step 1: Formulate a Search Strategy

Conduct a preliminary search to understand the scope of existing literature. Identify relevant keywords and concepts, and ensure your topic retrieves meaningful and relevant results. Refine your topic and search terms if the search yields few or irrelevant studies.

Use Boolean operators to construct your search:

- AND – narrows your search (e.g., *AI AND Education*)
- OR – broadens your search (e.g., *Education OR Learning*)
- NOT – excludes terms (e.g., *AI NOT Robotics*)
- “Quotation marks” – for exact phrases (e.g., “*artificial intelligence*”)
- Wildcard symbols like ? or * – to include word variants (e.g., *educat** retrieves education, educational, educator)

A search strategy template designed by Sara Mitha (**Part I: Appendix I**) supports the construction and documentation of your search. It helps clarify concepts, record keywords, synonyms, inclusion/exclusion criteria, and ensures transparency and replicability, both critical for bibliometric rigour.

Step 2: Search Relevant Databases

Most commonly used databases for bibliometric methods include Web of Science, Scopus, PubMed, and Dimensions. These vary in coverage, syntax rules, and data export features, checking whether your chosen platform supports the format required for analysis is essential. This guide focuses on Web of Science and Scopus, two multidisciplinary databases. Access depends on your institutional subscription, and both databases support large-scale bibliometric analysis with flexible export functions. Coverage of these two databases is evident in **Figure 1.2**. Note that you are to refer to each platform's **Help** section to verify advanced search functions and export limits.

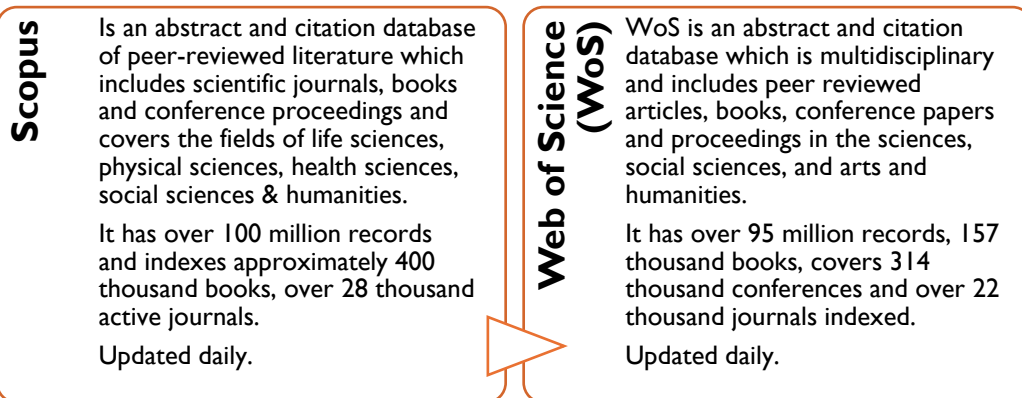


Figure 1.2: Coverage of Databases

A completed example of the search strategy is presented in **Appendix 2**, using the example of “AI in Higher Education institutions: a bibliometric analysis”. This bibliometric study is currently in the submission stage to a journal by the authors of this guide.

Step 3: Export the Data

Table 1.2: Overview of Exporting Data from the Search Engines

Web of Science	Scopus
<ul style="list-style-type: none"> ▪ Use the Topic search field to include Title, Abstract, Author Keywords, and Keywords Plus. ▪ Refine results by publication year, document type, and language. ▪ Export results as plain text by selecting the full record and cited references. ▪ Export limit: 500 records in succession. Use tools like iLoveMerge to merge text files. ▪ Save your search history in the search strategy template. ▪ Record the number of results retrieved. 	<ul style="list-style-type: none"> ▪ Search using Article Title, Abstract, and Keywords fields. ▪ Refine by publication year, document type, and language. ▪ Export limit: 20 000 records ▪ Export results as CSV format and select all fields. ▪ Toggle to Advanced query ▪ Save the advanced search query in the search strategy template ▪ Record the number of results retrieved.
<p><i>Example:</i> This guide uses the topic “AI in Higher Education Institutions: A Bibliometric Analysis” as a working case study, currently under journal submission.</p>	

Graphical Representation of Exporting the Data



Web of Science Export

Populate the search box with your keywords from Concept 1, Concept 2 and Concept 3. Note that the fields we would like to search is the *Topic* since this searches the Title, Abstract, Keyword Plus and Author Keywords as shown in **Figures 1.3 and 1.4.**

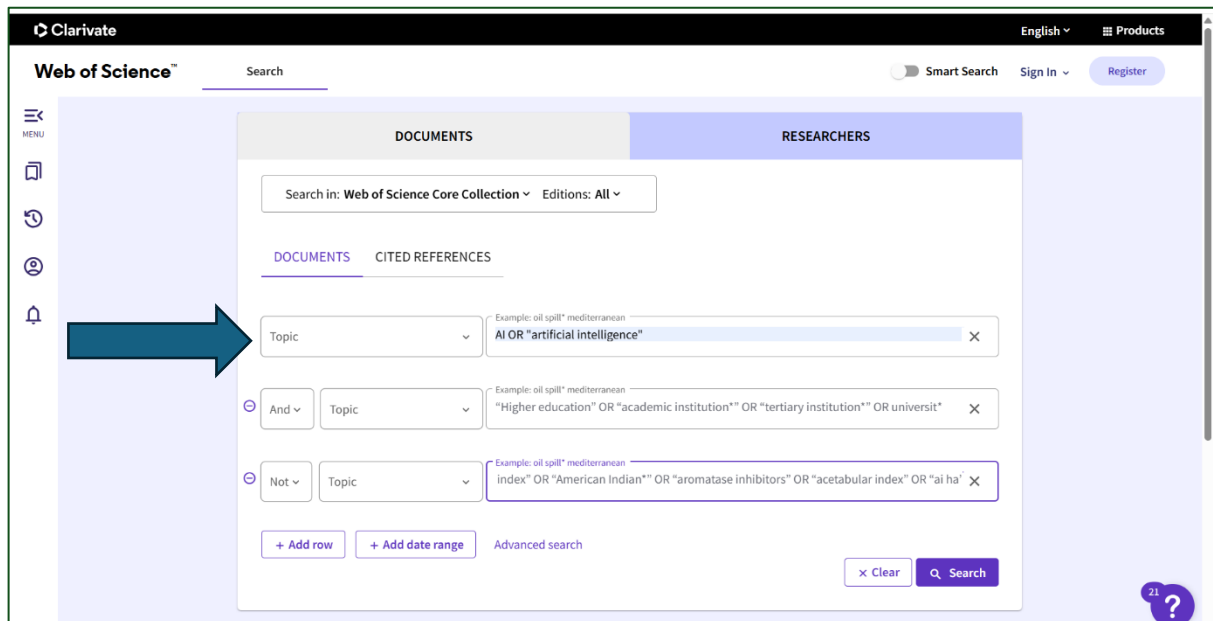


Figure I.3: Web of Science search

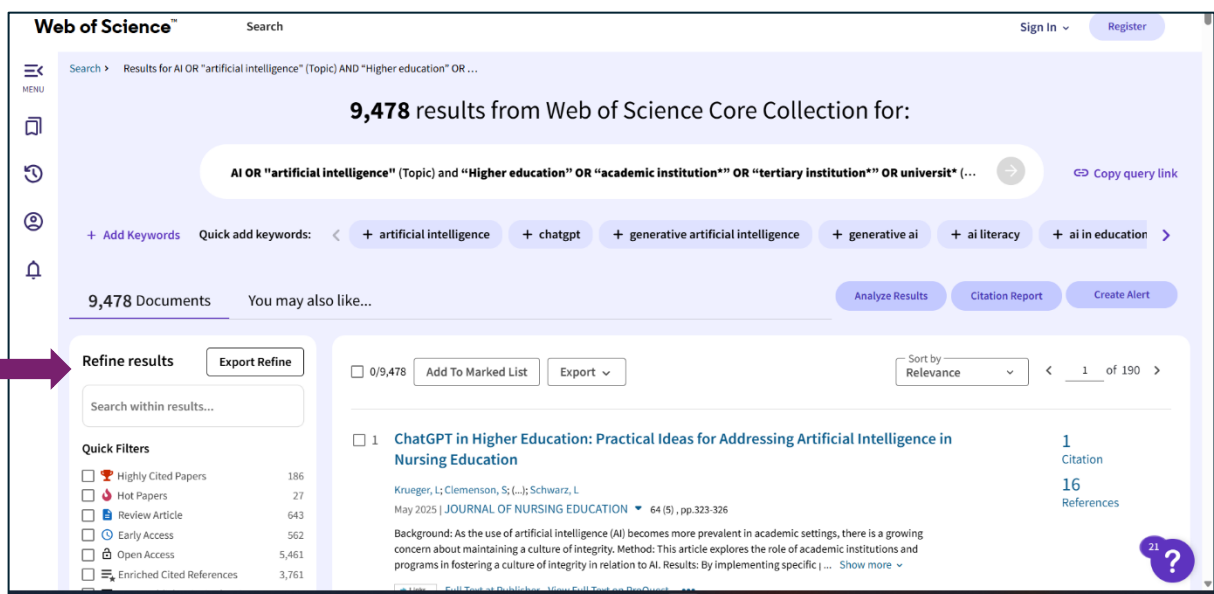


Figure I.4: Web of Science Result screen

Next, refine the options on the left of the result page. Under *document types*, choose the document types that you would like to include for your study (**Figure I.5**). Then refine by *publication years* (**Figure I.6**).

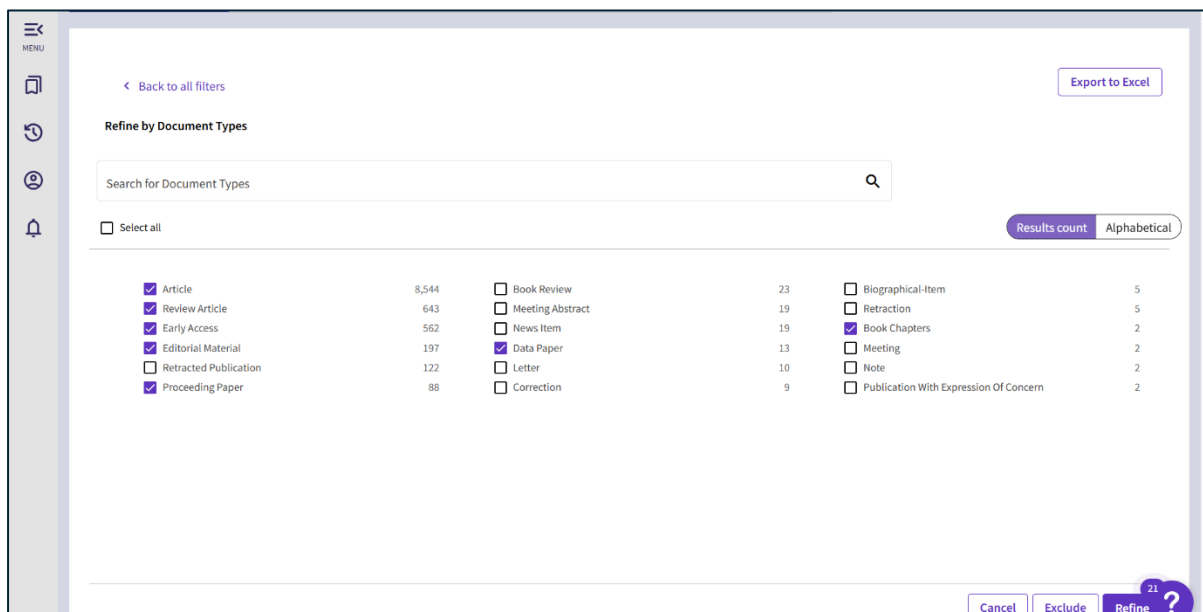


Figure I.5: Web of Science Document Type

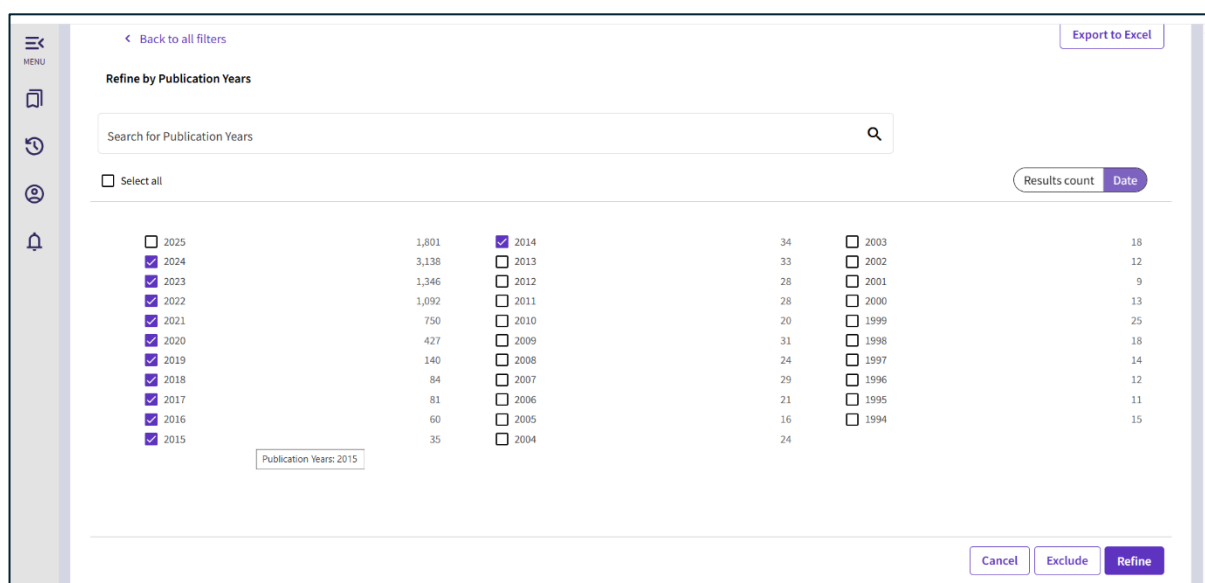


Figure I.6: Web of Science Publication Years

Select the file format to export. Choose the *Plain text* option (**Figure I.7**). The next screen gives the following options:

- Choose the record content for the analysis,
- Select Full Record and Cited References.
- There is a restriction on the number of records that can be exported (500 in succession – **See Figure I.8**).
- Repeat the above step, depending on the total number of records.

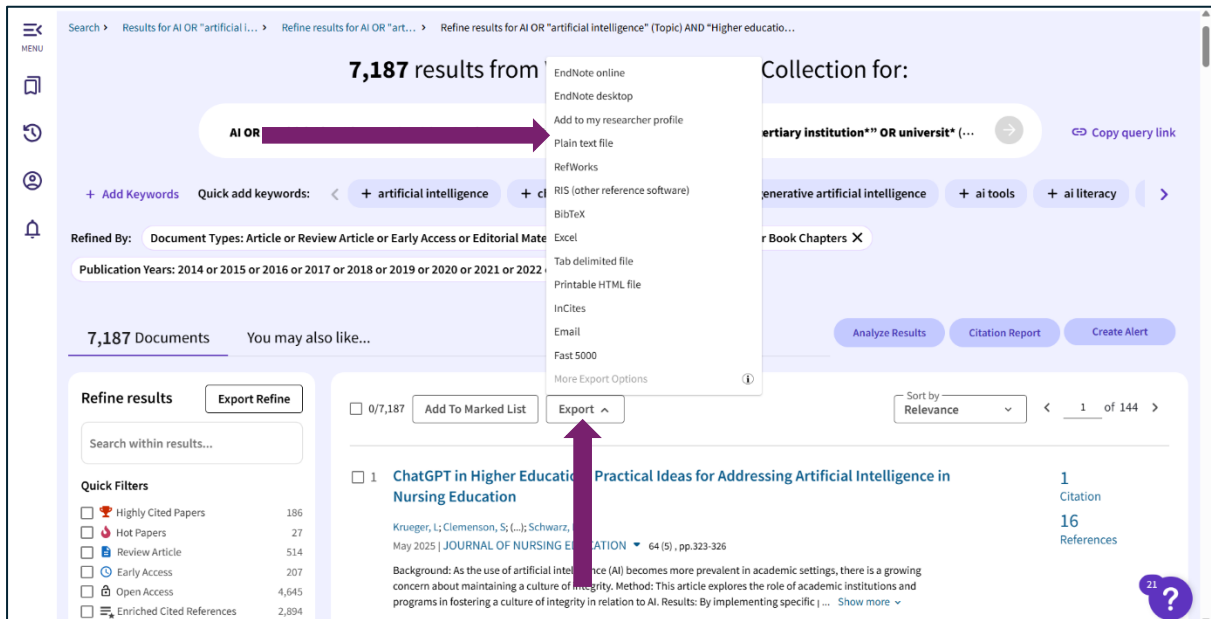


Figure I.7: Export option in WoS Plain text file

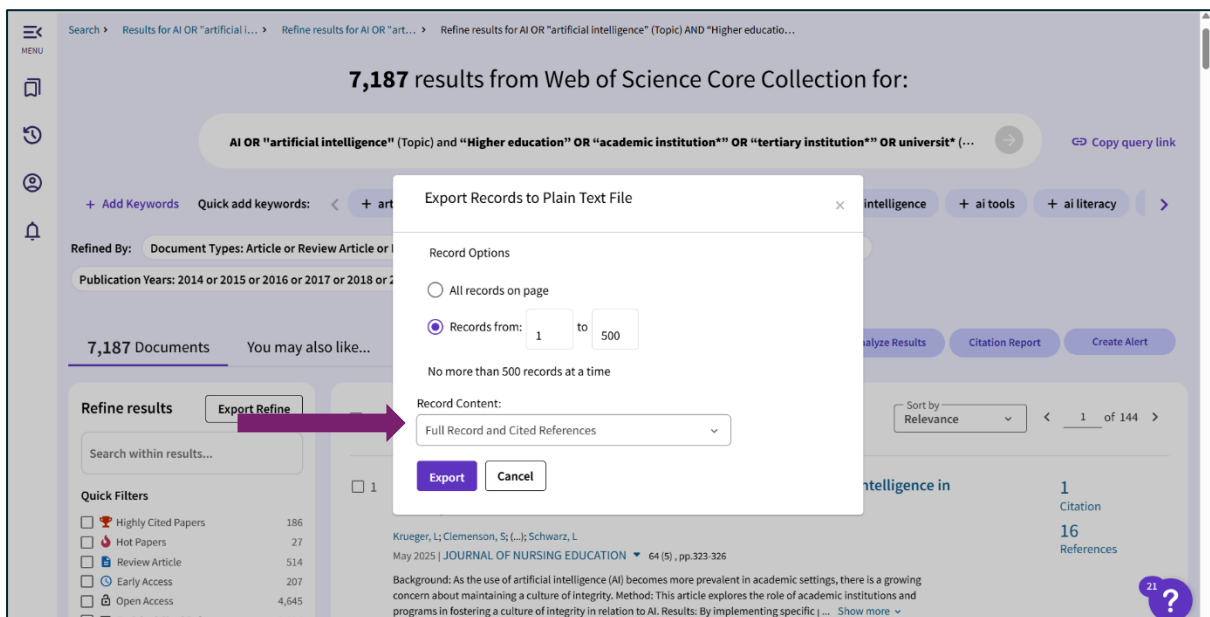


Figure I.8: Export '500 records' in succession

These will be downloaded to your downloads folder. Use the [iLoveMerge](#) site to merge the records - [iLoveMerge - Merge Txt files](#). Copy the search history and paste it into the Search Strategy Template (**Appendix I**), and ensure to note the results (**Figure I.9**).

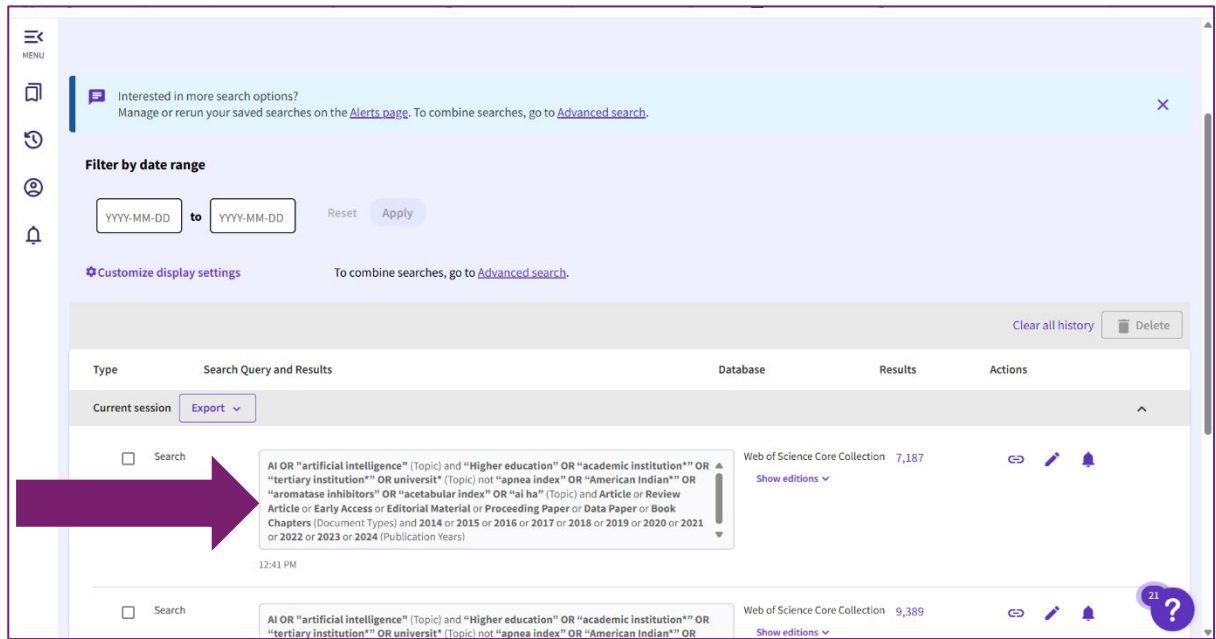


Figure I.9: Search history

Scopus Export



Populate the search box in Scopus, enter the keywords from Concepts 1, 2, and 3 into the relevant fields. Make sure to use the *Article Title, Abstract, and Keywords* option for your search, as illustrated in **Figure I.10**. This will help you retrieve the most relevant articles based on your specified concepts.

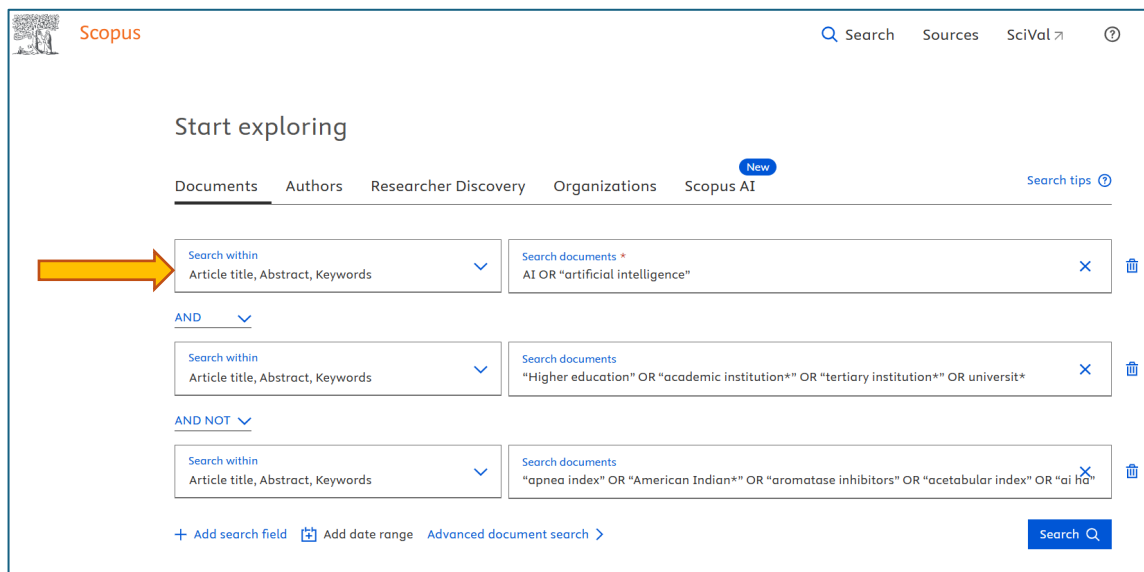


Figure I.10: Scopus search

On the results page use the Refine Search on the left and refine to publication years, e.g., 2014-2024, document types, and language (**Figure I.11**). Select the file format to export as indicated in **Figure I.12**.

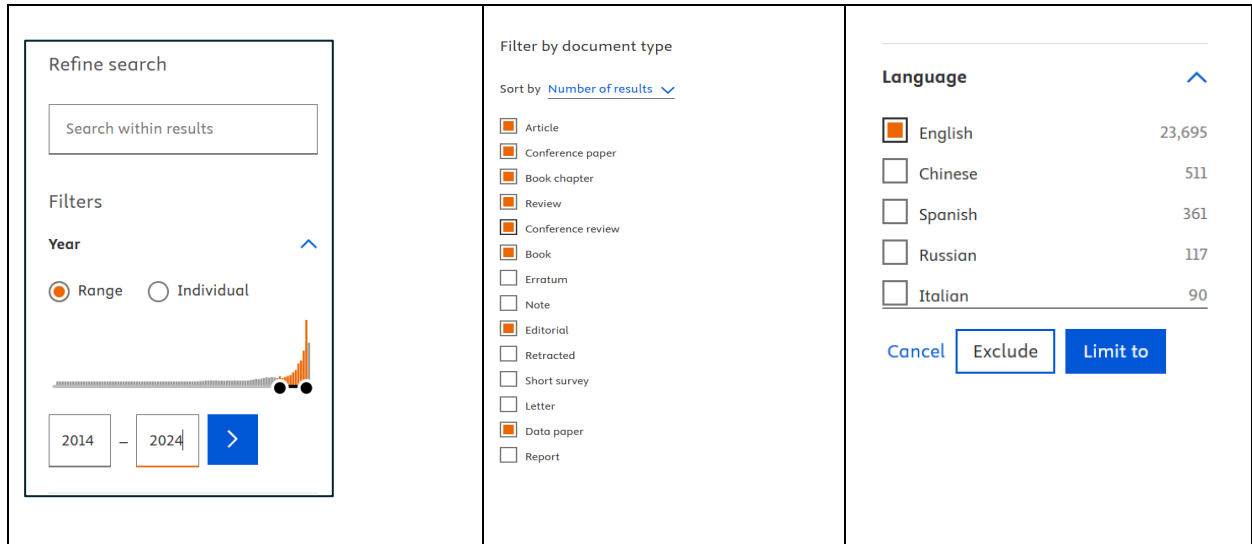


Figure I.11: Refine by Publication years, Document types and Language

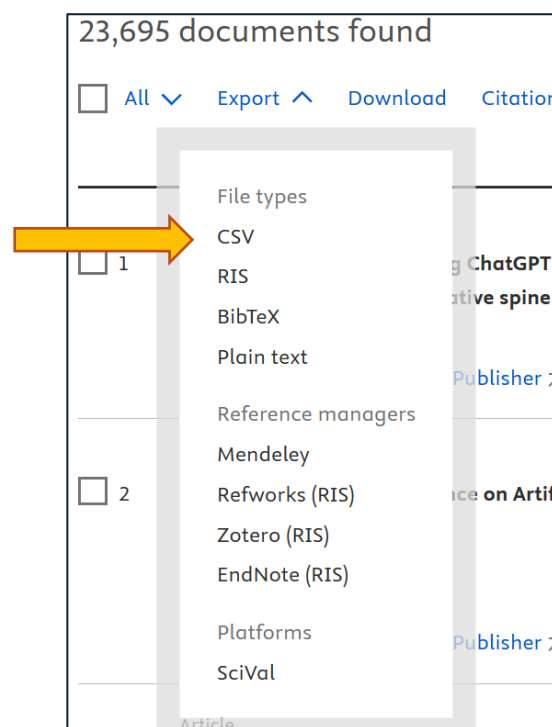


Figure I.12: Export options in Scopus (**CSV**)

Choose the CSV option in Scopus and select all the fields. Scopus requires all the information for the analysis, so select all the fields as indicated in Figure I.13.

What information do you want to export?

<input type="checkbox"/> Citation information	<input type="checkbox"/> Bibliographical information	<input type="checkbox"/> Abstract & keywords	<input type="checkbox"/> Funding details	<input type="checkbox"/> Other information
---	--	--	--	--

<input type="checkbox"/> Author(s)	<input type="checkbox"/> Affiliations	<input type="checkbox"/> Abstract	<input type="checkbox"/> Number	<input type="checkbox"/> Tradenames & manufacturers
<input type="checkbox"/> Document title	<input type="checkbox"/> Serial identifiers (e.g. ISSN)	<input type="checkbox"/> Author keywords	<input type="checkbox"/> Acronym	<input type="checkbox"/> Accession numbers & chemicals
<input type="checkbox"/> Year	<input type="checkbox"/> PubMed ID	<input type="checkbox"/> Indexed keywords	<input type="checkbox"/> Sponsor	<input type="checkbox"/> Conference information
<input type="checkbox"/> EID	<input type="checkbox"/> Publisher		<input type="checkbox"/> Funding text	<input type="checkbox"/> Include references
<input type="checkbox"/> Source title	<input type="checkbox"/> Editor(s)			
<input type="checkbox"/> Volume, issues, pages	<input type="checkbox"/> Language of original document			
<input type="checkbox"/> Citation count	<input type="checkbox"/> Correspondence address			
<input type="checkbox"/> Source & document type	<input type="checkbox"/> Abbreviated source title			
<input type="checkbox"/> Publication stage				
<input type="checkbox"/> DOI				
<input type="checkbox"/> Open access				

Select all information Truncate to optimize for Excel Save as preference Export

Figure I.13: Scopus Data for export

Export the Scopus data into CSV format and save it in the downloads folder. To retrieve the search strategy, toggle to Advanced query, as illustrated in **Figures I.14 and I.15**. To record the search strategy, follow these steps:

1. Change to the Advanced query.
2. Copy the search strategy and paste it into the Search Strategy Template (**Table I.2**).
3. Enter the number of records retrieved from the search into the Search Strategy Template for Scopus.

The top screenshot shows a search interface with a search box containing "AI OR \"artificial intelligence\"". The "Advanced query" toggle switch is currently turned off. A red arrow points to this toggle.

The bottom screenshot shows the same interface with the "Advanced query" toggle switch turned on. The search strategy is displayed in a text area:

```
( TITLE-ABS-KEY ( AI OR "artificial intelligence" ) AND TITLE-ABS-KEY ( "Higher education" OR "academic institution*" OR "tertiary institution*" OR universit* ) AND NOT TITLE-ABS-KEY ( "apnea index" OR "American Indian*" OR "aromatase inhibitors" OR "acetabular index" OR "ai ha" ) ) AND ( LIMIT-TO ( DOCTYPE , "ar" ) OR LIMIT-TO ( DOCTYPE , "cp" ) OR LIMIT-
```

There is a "Show less" link and a copy icon at the bottom right of the text area.

Figure I.14: Search strategy

Appendix I: Search Strategy Template

Objective: Use this template to figure out the keywords about the context of your study.

Identify and decide on your search terms and synonyms, and which fields you are going to search, e.g., Topic search

AND

NOT

Search Limits e.g.

- xxx

Search

Database I e.g., Web of Science =

Search Limits e.g.

- xxx
- Document types:

Web of Science Results

Results =

Appendix 2: Example of Search Strategy

Topic: AI in Higher Education institutions: a bibliometric analysis

Identify and decide on your search terms and synonyms and which fields you are going to search e.g., Topic search

CONCEPT 1

AI OR “artificial intelligence”

AND

CONCEPT 2

“Higher education” OR “academic institution*” OR “tertiary institution*” OR universit*

NOT

CONCEPT 3

“apnea index” OR “American Indian*” OR “aromatase inhibitors” OR “acetabular index” OR “ai ha”

Search Limits e.g.

- Time period: 2014-2024
- Language: English

Search

Database 1: Web of Science

Results= 6981

AI OR “artificial intelligence” (Topic) and “Higher education” OR “academic institution*” OR “tertiary institution*” OR universit* (Topic) not “apnea index” OR “American Indian*” OR “aromatase inhibitors” OR “acetabular index” OR “ai ha” (Topic) and 2014 or 2024 or 2023 or 2022 or 2021 or 2020 or 2019 or 2018 or 2017 or 2016 or 2015 (Publication Years) and English (Languages) and Article or Review Article or Early Access or Editorial Material or Proceeding Paper or Data Paper or Book Chapters (Document Types)

Database 2: Scopus

Result=15654

```
( TITLE-ABS-KEY ( ai OR "artificial intelligence" ) AND TITLE-ABS-KEY ( "Higher education" OR "academic institution*" OR "tertiary institution*" OR universit* ) AND NOT TITLE-ABS-KEY ( "apnea index" OR "American Indian*" OR "aromatase inhibitors" OR "acetabular index" OR "ai ha" ) ) AND PUBYEAR > 2013 AND PUBYEAR < 2025 AND ( LIMIT-TO ( LANGUAGE , "English" ) ) AND ( LIMIT-TO ( DOCTYPE , "ar" ) OR LIMIT-TO ( DOCTYPE , "cp" ) OR LIMIT-TO ( DOCTYPE , "ch" ) OR LIMIT-TO ( DOCTYPE , "cr" ) OR LIMIT-TO ( DOCTYPE , "re" ) OR LIMIT-TO ( DOCTYPE , "bk" ) OR LIMIT-TO ( DOCTYPE , "ed" ) OR LIMIT-TO ( DOCTYPE , "dp" ) )
```

This bibliometric review example is currently in the submission stage to a journal by the authors of this guide.

Part 2

Downloading and Installing R and RStudio

Step 1: Download and Install R and RStudio

To use Bibliometrix, you'll first need to install **R**, the statistical programming language, and **RStudio**, its integrated development environment (IDE). Note: RStudio requires a 64-bit Operating System – check your device before you attempt to download R.

1. Open a web browser (e.g., Chrome, Edge, or Firefox).
2. Navigate to: <https://posit.co/download/rstudio-desktop/>
3. Download and install **R** followed by **RStudio** for your operating system (Windows, macOS, or Linux - See **Figure 1.1**).
4. Locate the downloaded **.exe files** in your **Downloads folder** and double-click to install.
5. Once installed, **launch RStudio** (not R directly).

Tip: Right-click the RStudio icon and select **“Pin to Taskbar”** for quick access.

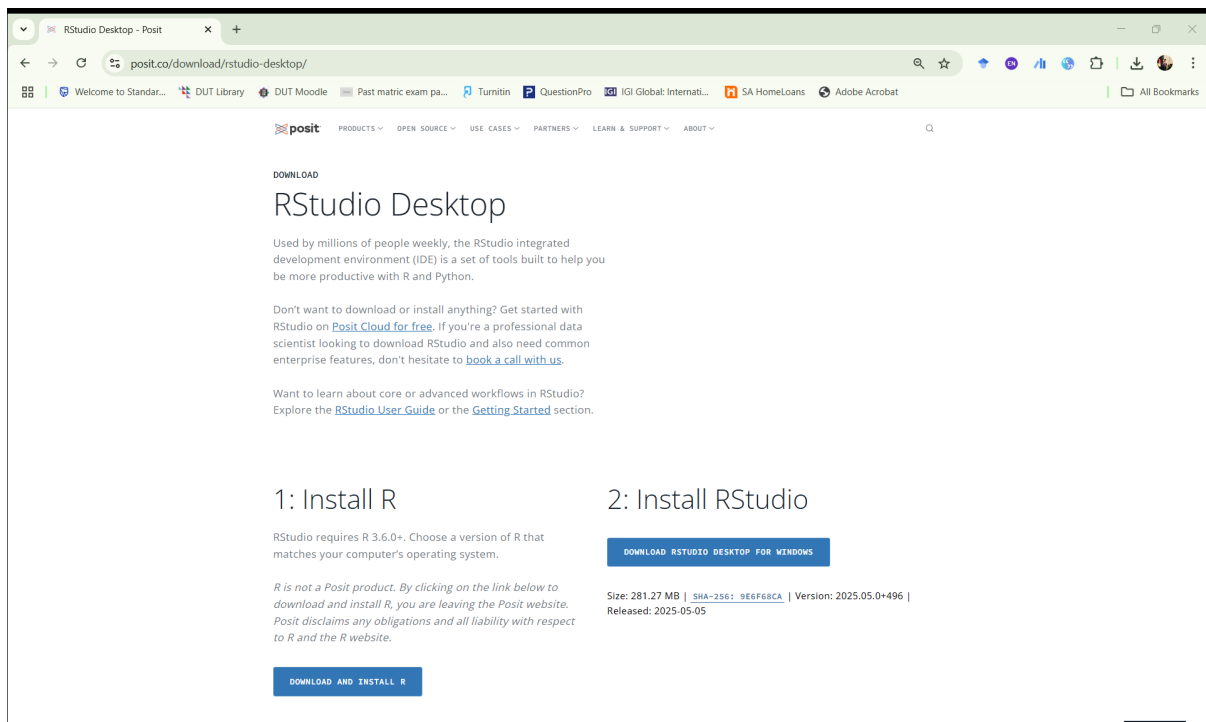



Figure 2.1: Website to download R and RStudio

Step 2: Familiarize Yourself with RStudio Interface

Once you access the folder where you saved RStudio, you can first right-click on the software icon using your mouse or mousepad and select the "Pin to Taskbar" option. You can then access RStudio from your device's desktop using the  Studio icon. Once RStudio opens, the interface contains four main panels (**Figure 2.2** and **Table 2.1**):

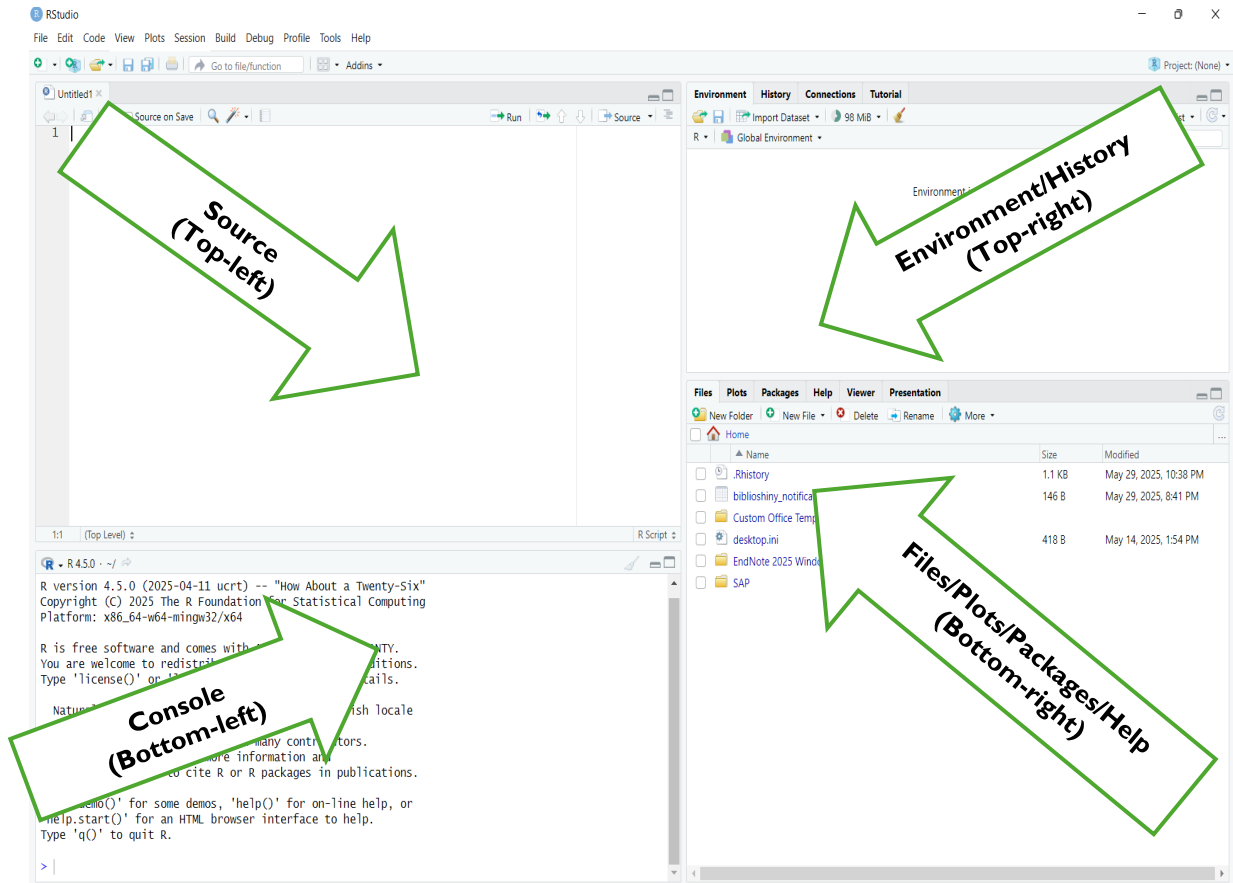


Figure 2.2: RStudio and the four panels

Table 2.1: Overview of the four panels

Panel	Location	Functionality
Source	Top-left	Script editor where you write, edit, and run scripts (.R files).
Console	Bottom-left	Executes R commands directly. Think of it as a command prompt for R.
Environment/History	Top-right	Displays current objects, variables, and command history.
Files/Plots/Packages/Help	Bottom-right	Files: browse your directories Plots: view plots and visualizations Packages: manage and load packages Help: R documentation and help files

Step 3: Installing and Using RStudio for Bibliometric Analysis

Installing Steps

1. Download the RStudio installer (.exe for Windows) from the official website.
2. Locate the downloaded file in your 'Downloads' folder and double-click to start installation.
3. Follow the on-screen prompts to complete the install.

Installing RStudio:

1. Open RStudio
2. You can install the bibliometric package using the *Tools* or *Console panel*.
3. To install the bibliometric package using the **Tools option**, click on the Tools option as displayed in **Figure 2.3**.
4. Once you click on the Tools option, click the Install Packages option.
5. When you click the option to install packages, a box will appear in the middle of the RStudio screen.
6. The box will display three options, which are: Install from, Packages (separate multiple with space or comma), and Install to Library.
7. Click in the box that is labelled **Packages (separate multiple with space or comma)**.
8. Type in the word bib, RStudio will immediately display prompts, select the 4th option labelled bibliometrix, and install the package as shown in **Figure 2.4**.
9. RStudio will immediately begin installing the bibliometrix package, which takes a few minutes.
10. You will know that the package is installed once you notice the blue arrow on the console window (bottom left) showing a prompt (blue greater than sign)
11. You can repeat the same steps to install the XLSX package using RStudio.

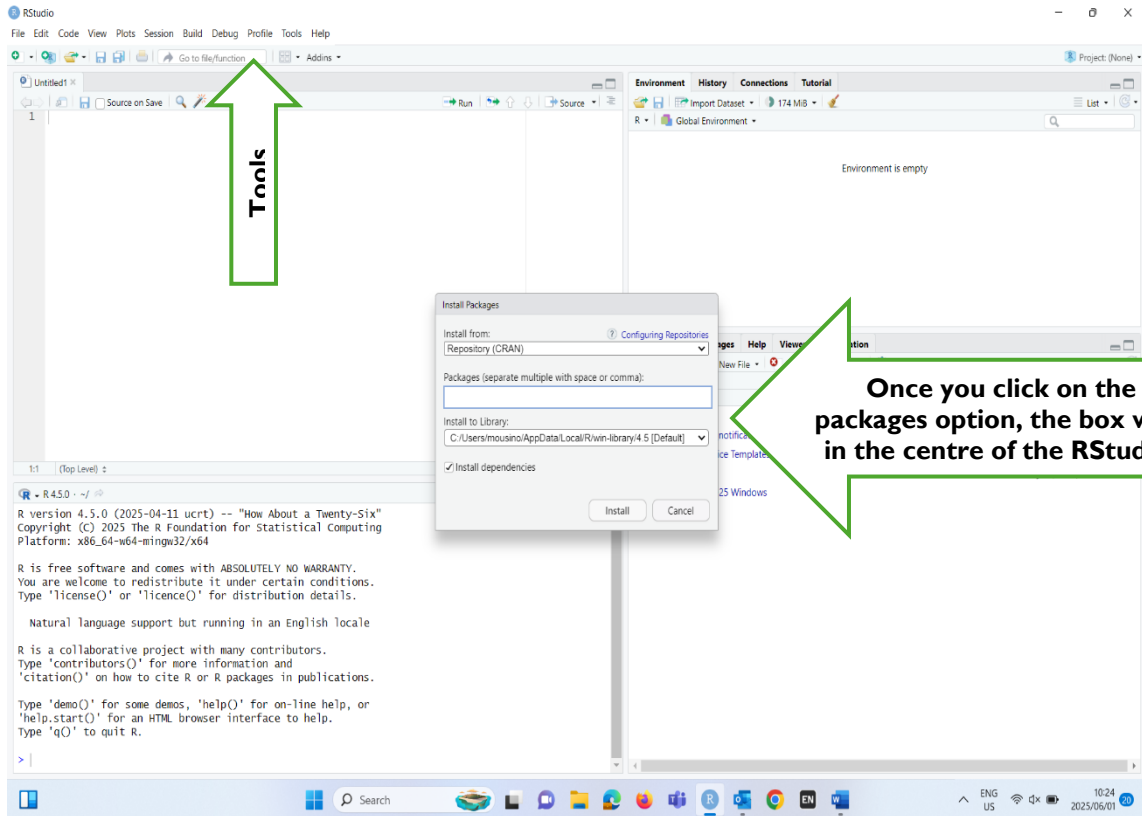


Figure 2.3: The Tools option on RStudio

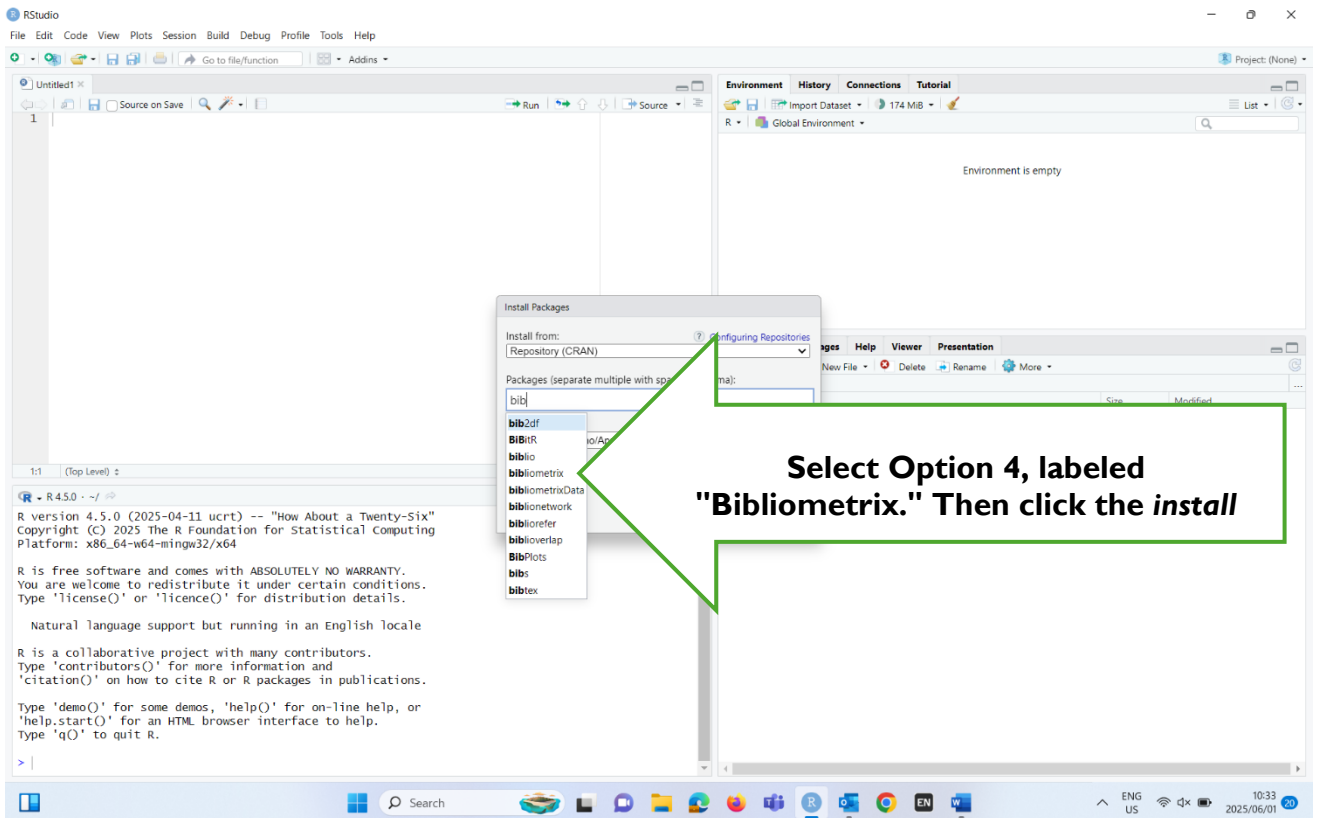


Figure 2.4: Installing the bibliometrix package from the tools option

Installing Bibliometrix Package in RStudio:

1. To install the bibliometrix and xlsx packages using the **Console window**, once you open RStudio for the first time, click next to the prompt (blue greater than sign) in the console panel (bottom left of the RStudio screen), as displayed in **Figure 2.5**
2. Type in `install.packages("bibliometrix")`, RStudio will prompt you to select install as you begin typing these words.`packages()`– **Figure 2.6**
3. Next, click inside the brackets and type the word `bib`. RStudio prompts you to select the relevant option. Select the 4th option labelled **Bibliometrix** – **Figure 2.7**
4. Then click on the Run option shown in Figure 8 and wait for the bibliometrix package to install; this may take a few minutes.
5. You will know that the package is installed once you notice the blue arrow on the console window (bottom left) showing the prompt (blue greater than sign)
6. Follow the same steps to install the XLSX by selecting `install.packages()`. RStudio will prompt you to select `install.packages()`– **Figure 2.6**
7. Next, click inside the brackets and type the word `xlsx`, and RStudio will prompt you to select the relevant option. Select the `h` option labelled `xlsx` and the Run option to install the package.

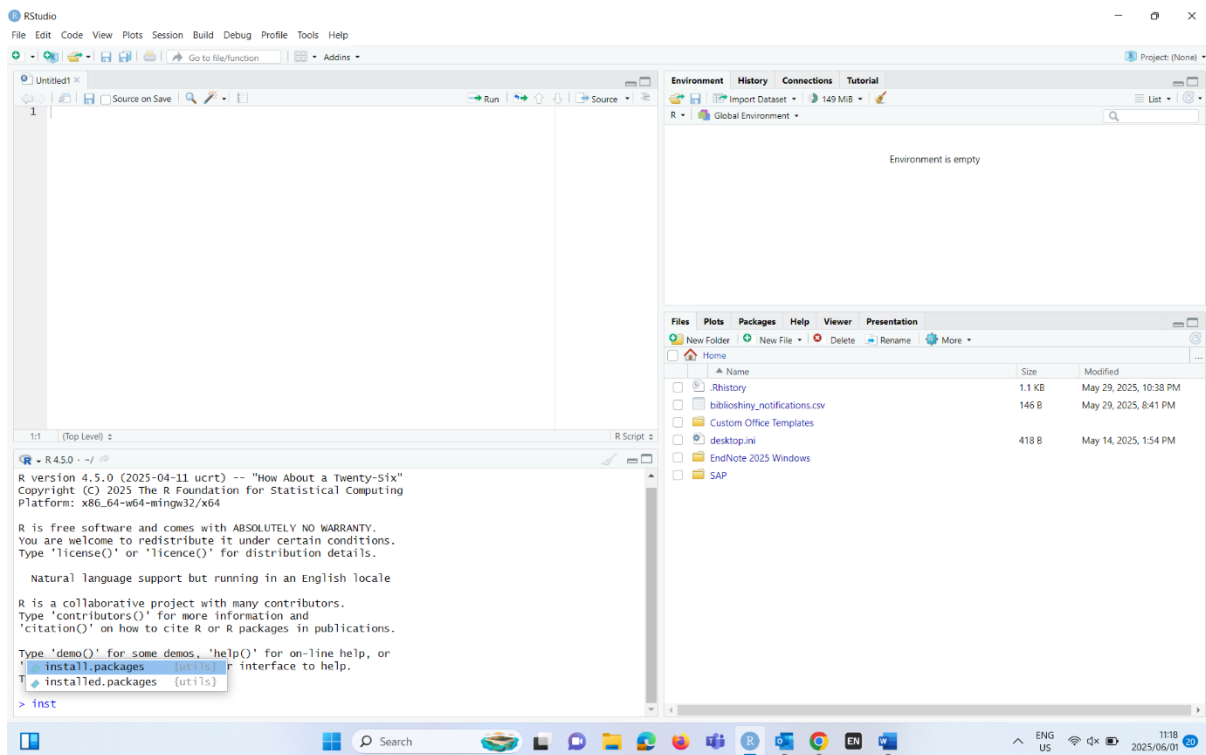


Figure 2.5: Installing the bibliometrix package from the Console panel – showing the prompt (blue greater than sign)

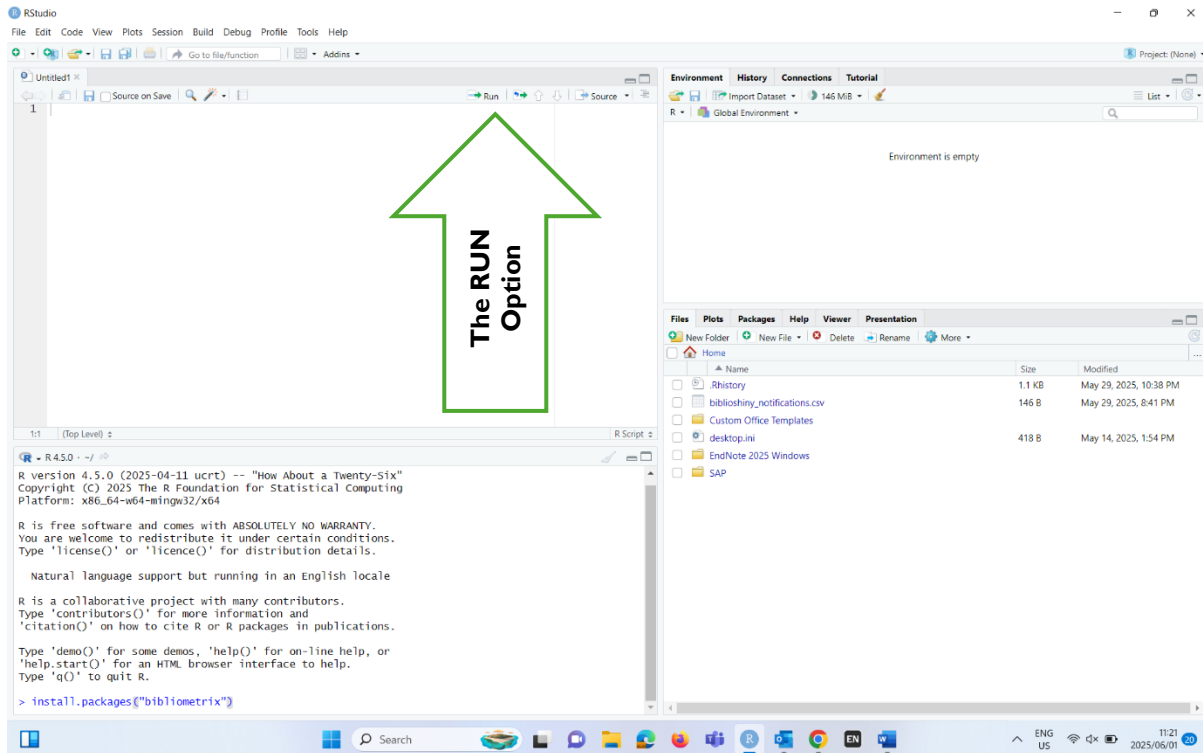


Figure 2.8: The Run option

Step 4: Using RStudio to access Biblioshiny for Bibliometrix Results & Analysis

1. Use the console window to access Biblioshiny to analyse results from Dimensions, Scopus, Web of Science, or PubMed.
2. Click next to the prompt (blue greater than sign) in the console panel (bottom left of the RStudio screen) and type in the words library (bibliometrix) – **Figure 2.9**, and then click on the Run option – **Figure 2.8**
3. RStudio will prompt you to acknowledge the authors who own the intellectual property to Biblioshiny and provide instructions on how Biblioshiny can be accessed – **Figure 2.10**
4. Click next to the prompt (blue greater than sign) in the console panel (bottom left of the RStudio screen) and type in the words bib. You will be prompted, select option five titled biblioshiny, and click on the RUN option – **Figure 2.11**
5. Immediately, the homepage of Biblioshiny will load, from which bibliometrics data can be loaded for results and analysis – **Figure 2.12**

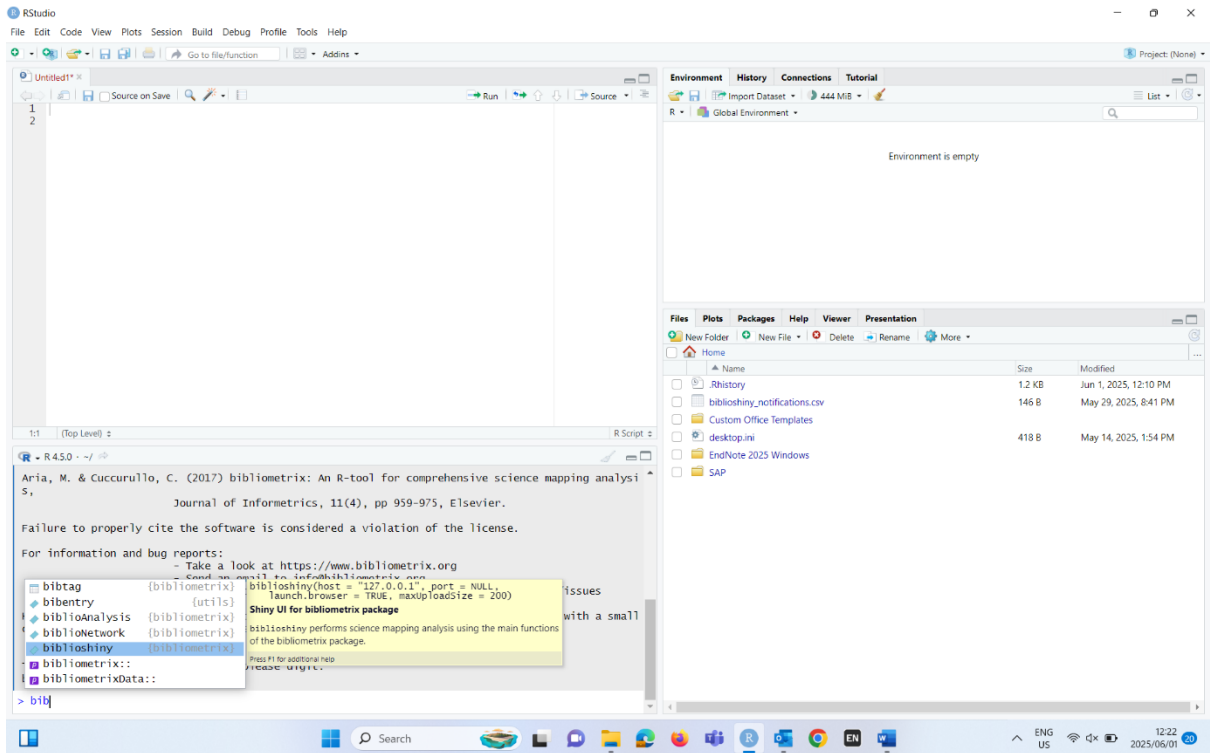


Figure 2.11: Accessing biblioshiny



Figure 2.12: Biblioshiny website

Step 5: Brief Overview of Biblioshiny

Biblioshiny's interface is organised into sections like Data, Descriptive Analysis (publication trends), Network Analysis (collaboration and citation networks), Conceptual Structure (keyword mapping), Intellectual Structure (influential works), and Performance Analysis & Thematic Maps. Once your data is loaded into Biblioshiny via the "Data" Section (**Figure 2.13**), You can navigate to the "Descriptive Analysis" and "Knowledge Structure" sections to analyse your data – **Table 2.2** and **Figure 2.14**. To learn how to use Biblioshiny, visit the websites in **Table 2.3**.

The screenshot displays the Biblioshiny web interface. On the left, a blue sidebar contains navigation options: Info, Data, Import or Load, API, Merge Collections, Filters, Overview, Sources, Authors, Documents, Clustering, Conceptual Structure, and Social Structure. Two callout boxes highlight 'Descriptive analysis' and 'Knowledge structures'. The main content area shows a table with columns for DOI, AU, AF, CR_raw, and AB. The table contains three rows of data. To the right of the table, there is an 'Import or Load' section with a 'Load bibliometrix file(s)' button and a 'Choose a file' section with a 'Browse...' button and a 'combined.xlsx' file selected. Below this is a 'Start' button. Further down, there is a 'Conversion results' section showing 'Number of Documents 3444' and an 'Export collection' section with a 'Save as:' dropdown menu.

DOI	AU	AF	CR_raw	AB
All	All	All	All	All
10.1108/BPMJ-07-2019-0274	REHMAN U IQBAL A	REHMAN, UBAID UR IQBAL, AMJAD	ABUALOUSH SHADI, 2018, INTERDISCIPLINARY JOURNAL OF INFORMATION, KNOWLEDGE, AND MANAGEMENT, V13, P279, DOI 10.28945/4088/ADEINAT IM, 2019, VINE J INF	PURPOSE OF THIS RESEARCH IS TO INVESTIGATE THE EFFECT OF KNOWLEDGE-ORIENTED LEADERSHIP ON ORGANIZATIONAL PERFORMANCE OF HIGHER EDUCATION I
10.1016/j.jk.2022.100162	CHAITHANAPAT P, PUNNAKITIKASHEM P, OO N RAKTHIN S	CHAITHANAPAT, PORNTHIP, PUNNAKITIKASHEM, PRATTANA, OO, NAY CHI KHIN KHIN, RAKTHIN, SIRISUHK	AFRIYIE S, 2019, J GLOB ENTREP RES, V6, DOI 10.1186/S40497-019-0165-3, AL-SAKDI AF, 2017, BUS PROCESS MANAG J, V23, P346, DOI 10.1108/BPMJ-03-2016-0047	DRAWING UPON THE LITERATURE ON KNOWLEDGE MANAGEMENT, LEADERSHIP, AND INNOVATION, THIS STUDY INVESTIGATES THE POSSIBLE ASSOCIATIONS AMONG CUSTOMER KNOW
			AHMAD N, 2017, J	BASED ON KNOWLEDGE-BASED VIEW, THE STUDY

Figure 2.13: Descriptive Analysis and Knowledge Structures (once data is loaded)

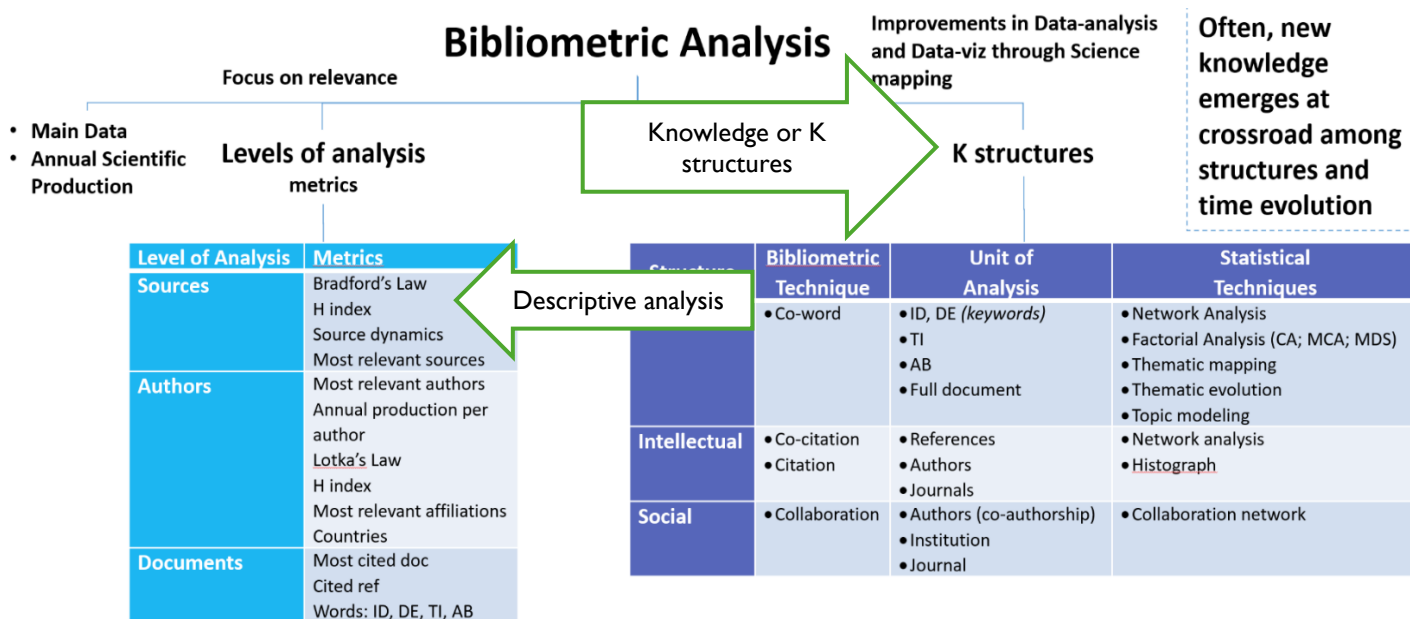


Figure 2.14: Descriptive Analysis and Knowledge Structures (once data is loaded) - Aria and Cuccurullo (2017)

Table 2.2: List of Acronyms when looking at descriptive analysis and knowledge structures - Aria and Cuccurullo (2017)

Acronym	Field Name	Description
ID	Document ID / Keywords Plus	Unique identifier or Keywords Plus (depends on context)
TI	Title	Title of the article
SO	Source Title	Journal or conference title
AB	Abstract	Summary of the article
DT	Document Type	Type of document (e.g., article, review)
DE	Author Keywords	Keywords provided by authors
UT	Unique Article Identifier	Identifier from Web of Science
DI	DOI	Digital Object Identifier
PY	Publication Year	Year the work was published
TC	Times Cited	Number of times the article has been cited
CR	Cited References	List of references cited in the article
AU	Authors	Initials and surnames of authors
AF	Author Full Names	Full names of the authors
BA	Book Authors	Authors of books (if applicable)

RP	Reprint Address	Author to whom correspondence should be sent
RI	ResearcherID Numbers	Unique identifiers for researchers (Web of Science)
OI	ORCID Identifiers	Author ORCID numbers
CI	Author Addresses	Institutional affiliations of authors
EM	Email Addresses	Authors' email addresses
CA	Corresponding Author	Author responsible for correspondence
JI	Journal ISO Abbreviation	Short form of journal title (ISO)
J9	Journal Abbreviation	Alternate short journal title
PD	Publication Date	Date of publication
VL	Volume	Volume number
IS	Issue	Issue number
BP	Beginning Page	First page of the article
EP	Ending Page	Last page of the article
AR	Article Number	Identifier for articles without page numbers
CU	Country	Country of author or institution
IP	Institution	Affiliated institution
NR	Number of References	Total number of references in the article
Z9	Total Citations (All Databases)	Citation count across all WoS databases
LA	Language	Language in which the article is written
CL	Conference Location	Location of conference (if applicable)
CN	Conference Name	Title of the conference
SN	ISSN	International Standard Serial Number
BN	ISBN	International Standard Book Number
SC	Subject Categories	Subject areas assigned to the publication
WC	Web of Science Categories	Specific WoS categories
FX	Funding Acknowledgement	Text describing funding sources
FU	Funding Agency	Name of funding organization(s)
PMID	PubMed ID	Identifier used in PubMed

Table 2.3: List of Websites

Resource Type	Website / Link
Official Website	https://www.bibliometrix.org
Software	https://posit.co/download/rstudio-desktop/
YouTube Channel	https://www.youtube.com/@MassimoAria/playlists
Biblioshiny AI	https://www.bibliometrix.org/home/index.php/component/sppagebuilder/page/60
iLoveMerge	iLoveMerge - Merge Txt files

Step 5: Combining WoS and Scopus Data Using R Script

Use the following script in RStudio to merge datasets:

```
options(java.parameters = "-Xmx4g") # Allocates 4 GB to Java
library(rJava)
library(xlsx)
library(bibliometrix)
##Importing web of science dataset
web_data <- convert2df("wos.txt")
scopus_data <- convert2df("scopus.csv", dbsource="scopus", format="csv")
combined_new <- mergeDbSources(web_data, scopus_data, remove.duplicated
= T)
#Exporting the combined files before it Activate
#function to read excel file
library(xlsx)
write.xlsx (combined_new, "combined_new.xlsx")
```

Reminder: Ensure your files are in your **working directory** or use the full file path.

Tip: Watch the companion video for troubleshooting **Cited References** issues and refining the export – <https://www.youtube.com/watch?v=lfDI3fiHgoo>

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