
Chapter 21

Promoting Strategies in Visualisation of Library and Information Science Research

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Abstract

Recent developments in the use of data visualisation techniques to visualise and mapping of massive research data have sparked many interests in Library and Information Science (LIS) discipline. One such application is on bibliometric studies that oversee the growth, patterns, networks, and citations analysis of any subject of interest in a certain period time. In general, Bibliometrics is a statistical analysis of bibliographic data that focuses on providing the macroscopic overview of a massive amount of academic literature. It is imperative to oversee the research productivity in LIS through bibliometric research. However, little attention was given to visualisation in bibliometric studies. Against this background, we proposed research strategies to visualise heterogeneous research data by using two major indexing databases namely Web of Science (WOS) and Scopus. This project allows greater understanding of LIS research through visualisation.

Introduction

In recent years, data visualisation techniques were often used in bibliometric studies to enhance readers' understanding through visual representation and mapping on citation network, co-occurrence analysis, research performance and trends. Bibliometrics is a statistical analysis of bibliographic data that focuses on providing the macroscopic overview of a massive amount of academic literature. It is imperative to oversee the research productivity in LIS through bibliometric research. However, little attention was given to visualisation in bibliometric studies. Against this background, we proposed research strategies to visualise heterogeneous research data by using two major indexing databases namely Web of Science (WOS) and Scopus.

Search Strategies

Figure 1 indicates the overall research steps taken in this study. Firstly, we familiarised ourselves on the searching platforms of both databases. Metadata for visualisation can be retrieved from two major indexing systems mainly Web of Science (WOS) and Scopus. In general, WOS consists of 252 categories which include "Information Science & Library Science". In WOS searching platform, we used an advanced search with "Information Science & Library Science" selected as a subject term as shown in Figure 3. After that, we selected this subject term against the publications produced in Malaysia. We used WOS core collections including (i) Science Citation Index Expanded (SCIE), (ii)

Social Science Citation Index (SSCI) and (iii) Arts & Humanities Citation Index (AHCI). In addition, no filtration was executed on the research type to acknowledge the diversity of LIS publications (Bender et al. 2015).

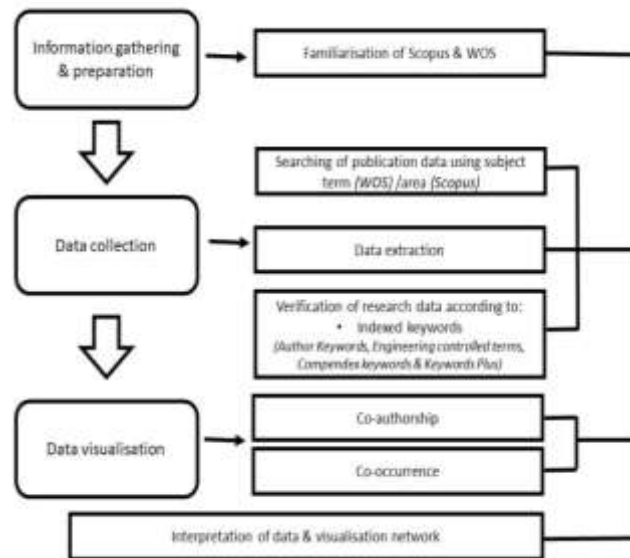


Figure 1: Research Strategies

In this study, we used designated WOS and Scopus subject area or code and country origin as the first stage to indicate relevant research data. Then, we performed abstract-level verification on each of the article against indexed keywords (Author Keywords, Engineering controlled terms & Compendex keywords and Keywords Plus). If none of these available, abstract of the article was read.

On a methodological note, an additional method used in this study was verification of research data according to provided indexed keywords in both databases (*Author Keywords, Engineering controlled terms & Compendex keywords and Keywords Plus*) as shown in Figure 4. We carried out these two strategies which (i) searching through designated subject area name or code and (ii) verification against indexed keywords to reduce the bibliographic errors in WOS and Scopus. In principle, these errors were categorised into (i) citations not being linked and (ii) duplication of items (Franceschini, Maisano, and Mastrogiacomo 2016; Meester, Colledge, and Dyas 2016). We also have found some of the metadata interchanged in other fields and duplication of documents. In response to these issues, scholars have suggested potential improvements for both databases (Valderrama-Zurián, Melero-Fuentes, and Alexandre-Benavent 2016). These research data were then visualised by using open-access visualisation tool.

**SUBJTERMS (3309) AND PUBYEAR > 1968
AND PUBYEAR < 2018 AND AFFILCOUNTRY
(Malaysia)**

Fig 2. Search string in Scopus

WC=(Information Science & Library Science) AND
CU=(Malaysia)
Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-
SSH, BKCI-S, BKCI-SSH, ESCI Timespan=1980-2018

Fig 3. Search string in WOS



Funding details		
Funding number	Funding agency	Accession
QJ1300823A2.03E11	Ministry of Higher Education, Malaysia	MOHE

Fig. 4: Example of Indexed keywords in Scopus

Conclusion

This project demonstrated the research strategies undertaken to visualise Library and Information Science research. Although we used data retrieved from massive indexing databases, visualisation software can also visualise data from other sources such as Pubmed, RIS files, and Crossref. These strategies can be used by scholars in other disciplines.

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