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Name of the Programme: M.Lib.I.Sc

Course - 4.5: Elective – V

(B) INFORMETRICS AND SCIENTOMETRICS

Course Code:P21MLS20A

Unit-V :Emerging Trends: Webometrics, Altmetrics, Analysis Tools (Hitscite and Bibexcel, PAJEK, VOS Viewer and Bibloshiny)

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Webometrics

Almind and Ingwerson coined the name Webometrics.

According to Bjorneborn & Ingwerson "Webometrics is defined as the study of quantitative aspects of construction and use of information resources, structures and technologies on the web drawing on bibliometrics and informetrics approaches".

Webometrics is based on two indicators:

- Volume of published materials of institutions/individual on the web, and
- The visibility and impact of the web pages measured by the citation (site citations or links they receive).

There are four areas of webometrics research as follows.

- Web page content analysis.
- Web link structure analysis (e.g. Hyperlink, Self link and External link)
- Web usage analysis (Including log files of users' search & browsing behavior).
- Web terminology analysis (Including search engine performance).

Webometrics

- Webometrics measures the web related phenomenon. Webometrics includes
  - **Webpage Content analysis**

    Ex. automatic categorization of webpages and texts **;**
  - **Web Link structure analysis;**

    Ex. categorization of hyperlinks and inlinks, self-links and external links
  - **Web usage analysis; and**

    Ex. exploitation of log files for users' searching and browsing behavior)
  - **Web technology analysis.**

    Ex. Performance of Search Engines

Web Page Content Analysis or Citation Analysis

- The Webpage Content Analysis can be used to analyze content of the websites.
- It provides hits on the systematic organization of web based information sources.
- It enables the users to reduce their time in the choice of right sources.
- It compares the efficiency of search engines in retrieving the required information sources.
- It will be useful for students, researchers, scientists who seek information through www.
- Simplistic counts and content analysis of web pages are like traditional publication analysis.

Web Link Structure Analysis

- Link analysis has been used successfully for deciding which
- The web pages add to the collection of documents (i.e., which pages to *crawl*), and
- How to order the documents matching a user query (i.e., how to *rank* pages).
- It has also been used
  - to categories web pages,
  - to find pages that are related to given pages,
  - to find duplicated websites, and
  - various other problems related to web information retrieval.
- The Web Link Structure Analysis provides ***hyperlinks or selflinks*** between documents and records of user behavior. To be precise, *hypertexts* (i.e., collections of documents connected by hyperlinks).
- It provides counts and analysis of outgoing links from web pages, here named called ***outlinks or external links***.
- It provides links to web pages or links coming from the other websites called ***inlinks or incoming links.***

Web Usage Analysis

The following components cover the web usage analysis

- Log files for users searching.
- Browsing behavior.
- Log analysis for security applications.
- Web usage pre-processing.
- Novel techniques for discovery and analysis of Web usage patterns.
- Integrating semantics and domain knowledge in Web usage mining and analysis.
- Reliability and consistency of Webometrics.
- Integration of click stream data with back-end data and related metrics.
- Intelligent summarization/explanation of changes in Web usage metrics

Web technology analysis: Search engine performance

The search engines performance determines following aspects:

- Measuring the search engines performances.
- Total number of hits retrieved.
- Number of relevant hits retrieved.
- The content of the page like what is the page all about and so on.
- Ranking of search engines.
  - **LexiURL Searcher** is a programme to conduct automatic analysis of the impact of collections of documents or websites, or to create network diagrams of collections of websites. It has the ability to automatically submit queries to search engines and process the results. The four main features of LexiURL Searcher are:
- A Web Impact Report of the number of times each of a set of words, phrases or documents have been mentioned online.
- A Link Impact Report of the number of web pages and websites that link to one or more websites or web pages.
- A Network Diagram of the links between a collection of websites.
- A Web Environment Network of an individual website.

Web Impact Factor (WIF)

- Ingversen (1998) introduced the concept of WIF.
- the number of **web** pages in a **web** site receiving links from other **web** sites, divided by the number of **web** pages published in the site that are accessible to the crawler. Mathematically,
- $$WIF = \frac{No.of\ hyperlinks\ in\ a\ site}{Total\ no.of\ webpages\ in\ that\ site}$$

Altmetrics

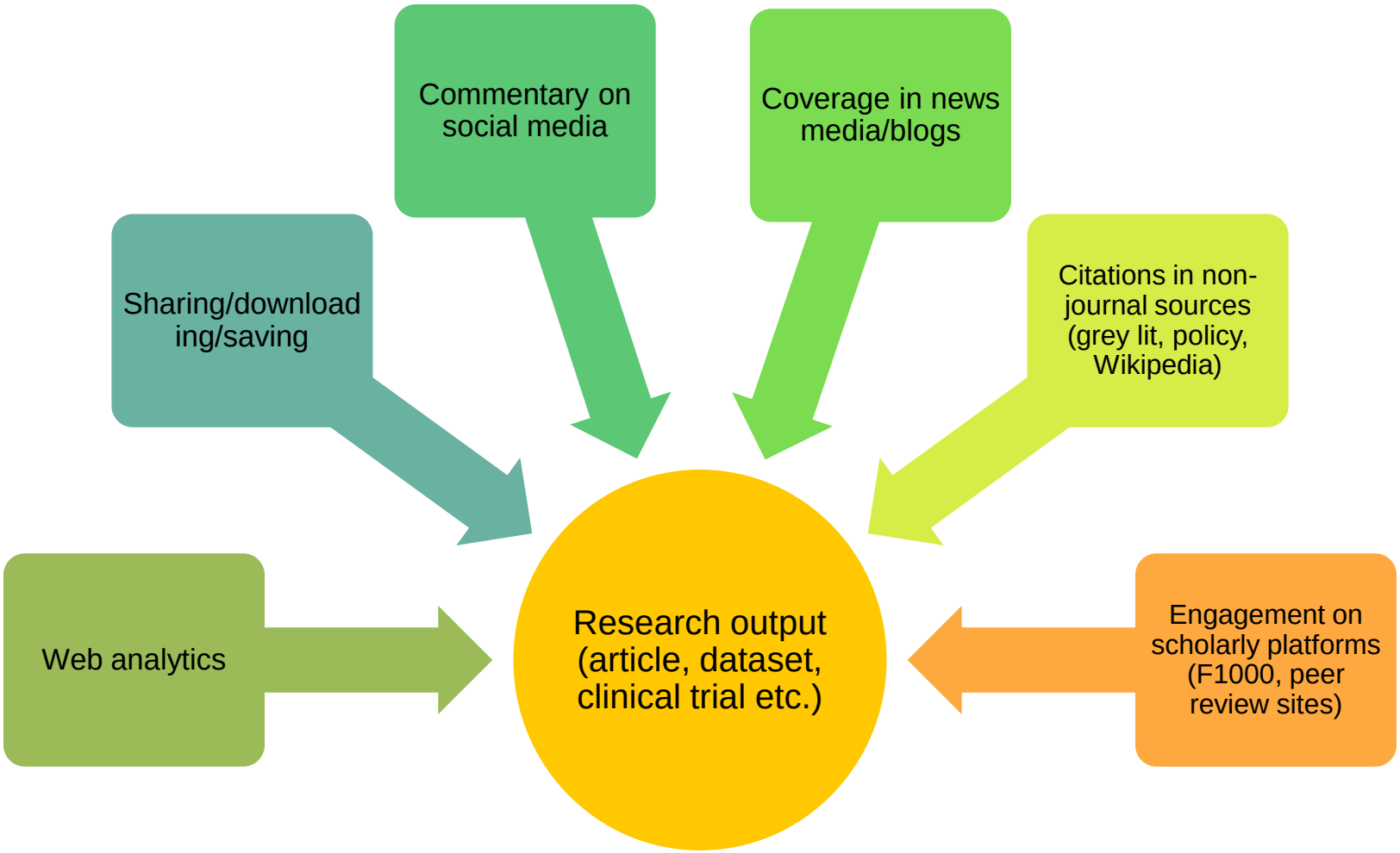
- Altmetrics is a concept and term coined by Jason Priem, University of North Carolina-Chapel Hill, North Carolina, USA.
- It is a short form for 'Alternative to Metrics' or in other words it is an alternate to conventional metric tools.
- Altmetrics is the creation and study of new metrics based on social web for analyzing and informing scholarship.
- Altmetric tools capture the article level scholarly data that is shared in social media and measures the impact of content in real time basis and the data is presented with visual effects.
- Altmetrics aren't citations, nor are they webometrics. They are relatively unstructured and closed.

Altmetrics

- It is alternative to traditional metrics. The term Áltmetrics' is proposed in 2010 , basically for developing article-level metrics. Some of the aspects like view, discussed, download, saved, cited, recommended etc are taken into consideration while measuring impact in altmetrics.

Alternative, web-based metrics are…

Any trace or indicator of online behavior surrounding research



TRACKING A RESEARCH OUTPUT

An ***output*** (journal article, dataset, etc)

An ***identifier*** attached to the output (DOI, PMID, etc)

Mentions in a ***source***

News outlets & Blogs

- **Over 2000 news sites**
- **Global coverage**
- **9,000+ Blogs**

Post-publication peer review

Publons
Pubpeer

Policy documents

- NICE Evidence
- Intergovernmental Panel on Climate Change
- Many more…

Reference managers

- **Mendeley, Citeulike etc**
- **Reader counts**

Other sources

Scopus Citations
Wikipedia
Youtube
Reddit
F1000
Q&A

Social media

Twitter, Facebook, Google+,
Public posts only

Altmetric Score

The altmetric score provides an idea of **how important an article is by the quantitative value of attention** that it receives.

It is calculated through the **weighted counts of the values of different social media sources** such as newspaper stories, tweets, google+, blogs, comments etc.

Article Level Metrics

Four major hat aggregate and provide article level metrics.

- **PLOS** (http://article-level-metrics.plos.org/). It is a non-profit making publisher, which provides article-level metrics free. It covers only articles.
- **ImpactStory** (http://impactstory.it/). It is a non-profit making article-level metrics providers, which provides article-level metrics freely. It covers not only articles but also code, software, presentations and datasets.
- **Altmetric** (http://altmetrics.org/)**:** It is a non-profit making article-level metrics providers, which provides article-level metrics freely. It covers not only articles but books, code, software and datasets also.
- **Plum Analytics:** It is a non-profit making article-level metrics providers, which provides article-level metrics freely. It covers only articles.

Analytical Tools

- Hitscite
- Bibexcel,
- PAJEK,
- VOS Viewer and
- Bibloshiny

Thank You