INFORMATION TECHNOLOGY UNIVERSITY

RESEARCH METHODOLOGY
LECTURE 2

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Slides Courtesy: Dr. Saeed Ul Hassan

Google Classroom Code

o2emleo

Course Overview

- Understand research terminology and various research Indicators to measure the research quality.
- Be aware of the ethical principles of research, ethical challenges and approval processes.
- Describe quantitative, qualitative and mixed methods approaches to research.
- Identify the components of a literature review process.
- Critically analyse published research.

Course Format

- **Format**:
  - Lecture + quizzes/assignments + Individual term paper project + mid term + final exam

- Submit a paper/thesis on any topic as term project paper.

Citation OR Rerence

- A citation is a reference to a published and unpublished resource (not always the original source).

- Example:

Academic search engines and digital libraries such as Google Scholar[1], Web of Science[2], Microsoft Academic[3], and Semantic Scholar[4] have become a necessary means for researchers to keep abreast of scientific advancements (Safder & Hassan 2019; Ananiadou, Thompson & Nawaz 2013). The search mechanisms used for these scholarly repositories typically represent a document

References

Al-Zaidy, R. A., & Giles, C. L. (2017). A machine learning approach for semantic structuring of scientific charts in scholarly documents. *Twenty-Ninth IAAI Conference*.

Al-Zaidy, R. A., & Giles, C. L. (2018). Extracting semantic relations for scholarly knowledge base construction. *In 2018 IEEE 12th international conference on semantic computing (ICSC)* (pp. 56–63). IEEE.

Safder, I., & Hassan, S. U. (2019). Bibliometric-enhanced information retrieval: a novel deep feature engineering approach for algorithm searching from full-text publications. *Scientometrics, 119*(1), 257–277.

Safder, I., & Hassan, S. U. (2018). DS4A: Deep search system for algorithms from full-text scholarly big data. *2018 IEEE International Conference on Data Mining Workshops (ICDMW)* (pp. 1308–1315). IEEE.

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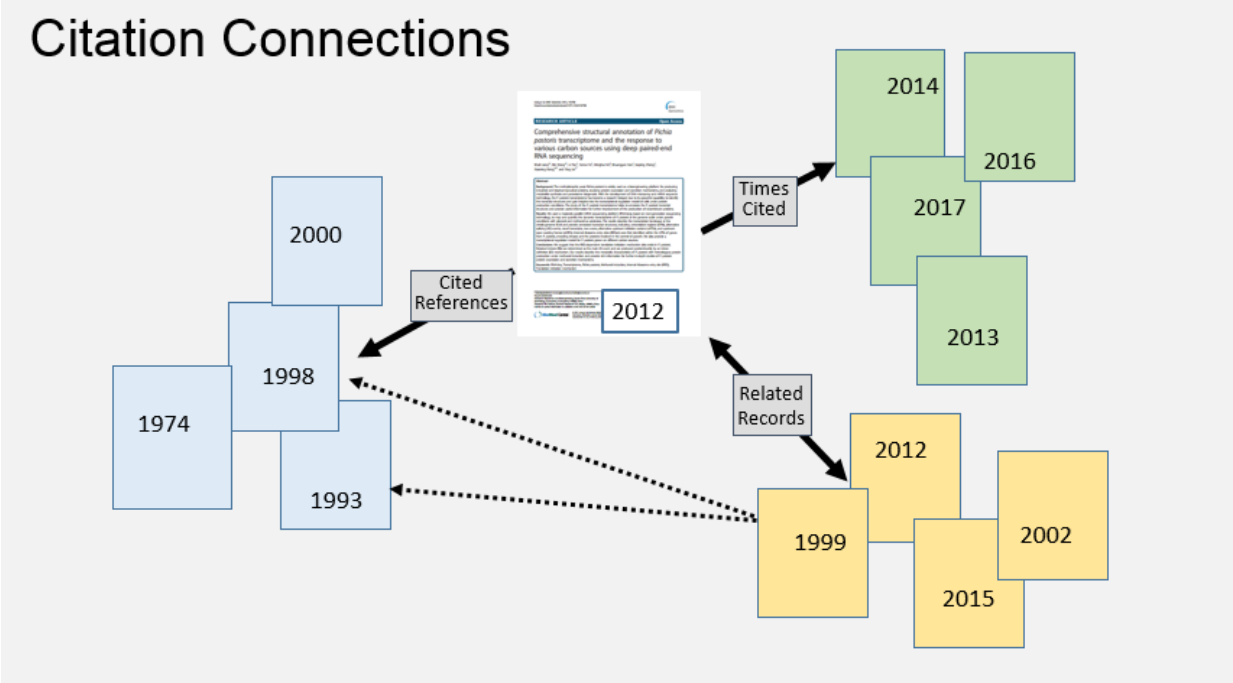

Where the Research is being Published?

- Journals & Conference
- Book/Book Chapters

- A **conference paper** presentation gives you a platform to interact with people of the same field but **journal publication** is generally considered superior especially with a good impact factor.

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THE IMPACT FACTOR (I.F.)

Eugene Garfield

(1925 – 2017)

Introduced the impact factor

in 1963 to help select journal for Science Citations Index (SCI). Garfield expected that it would be used constructively while recognizing that in the wrong hands it might be abused.

(Garfield 1999)

Source: http://www.garfield.library.upenn.edu

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BIBLIOGRAPHY DATABASES

- **Google Scholar**
  - Free
  - Indiscriminate
  - H5-Index

- **Clarivate Analytics ISI WOS**
  - Oldest commercial citation database
  - Institutionalized
  - Impact Factor

- **Scopus**
  - Introduced in 2004
  - Broader coverage than ISI
  - SNIP (Source-Normalized Impact per Paper)
  - CiteScore, Percentile

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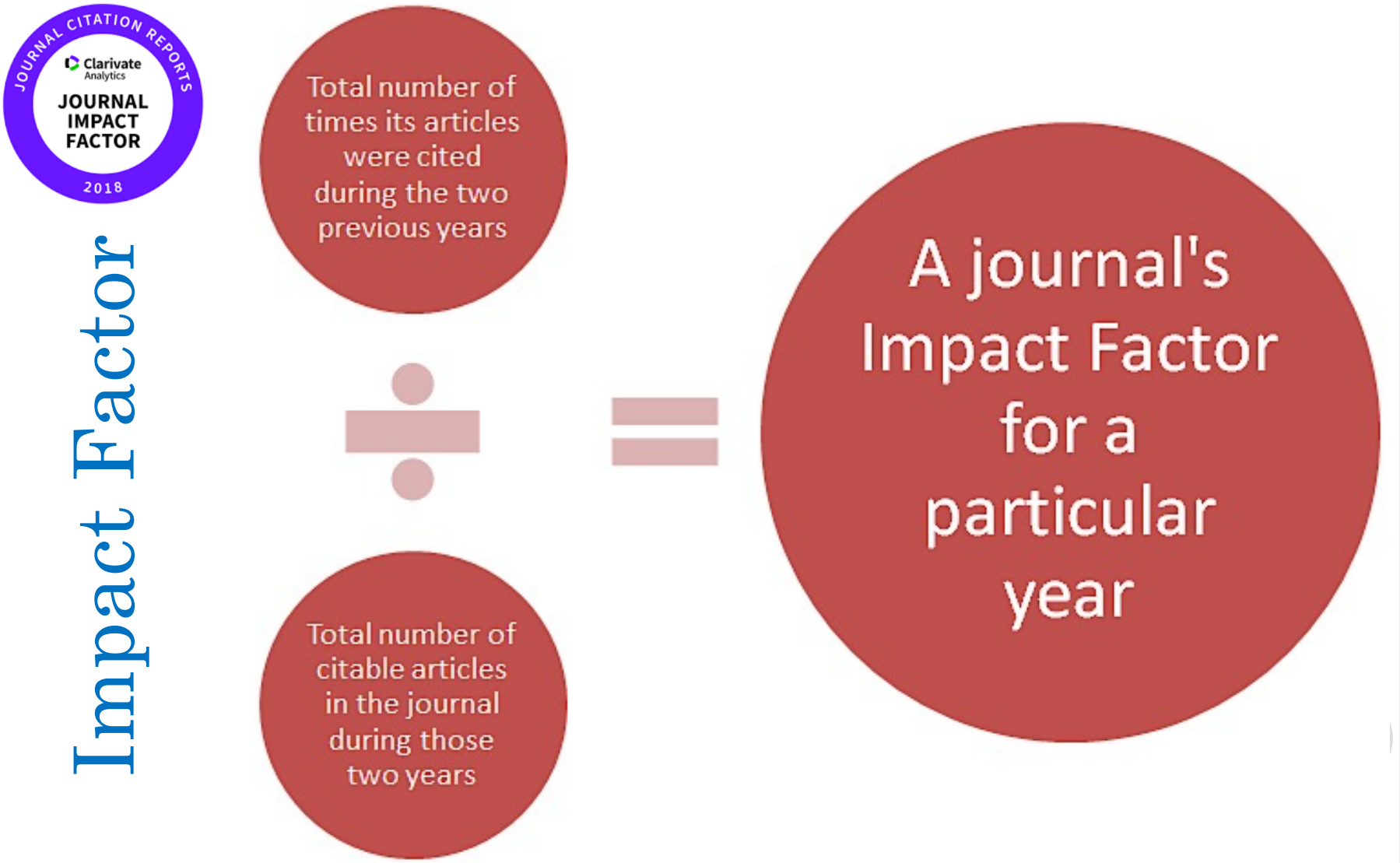
GOOGLE SCHOLAR METRICS

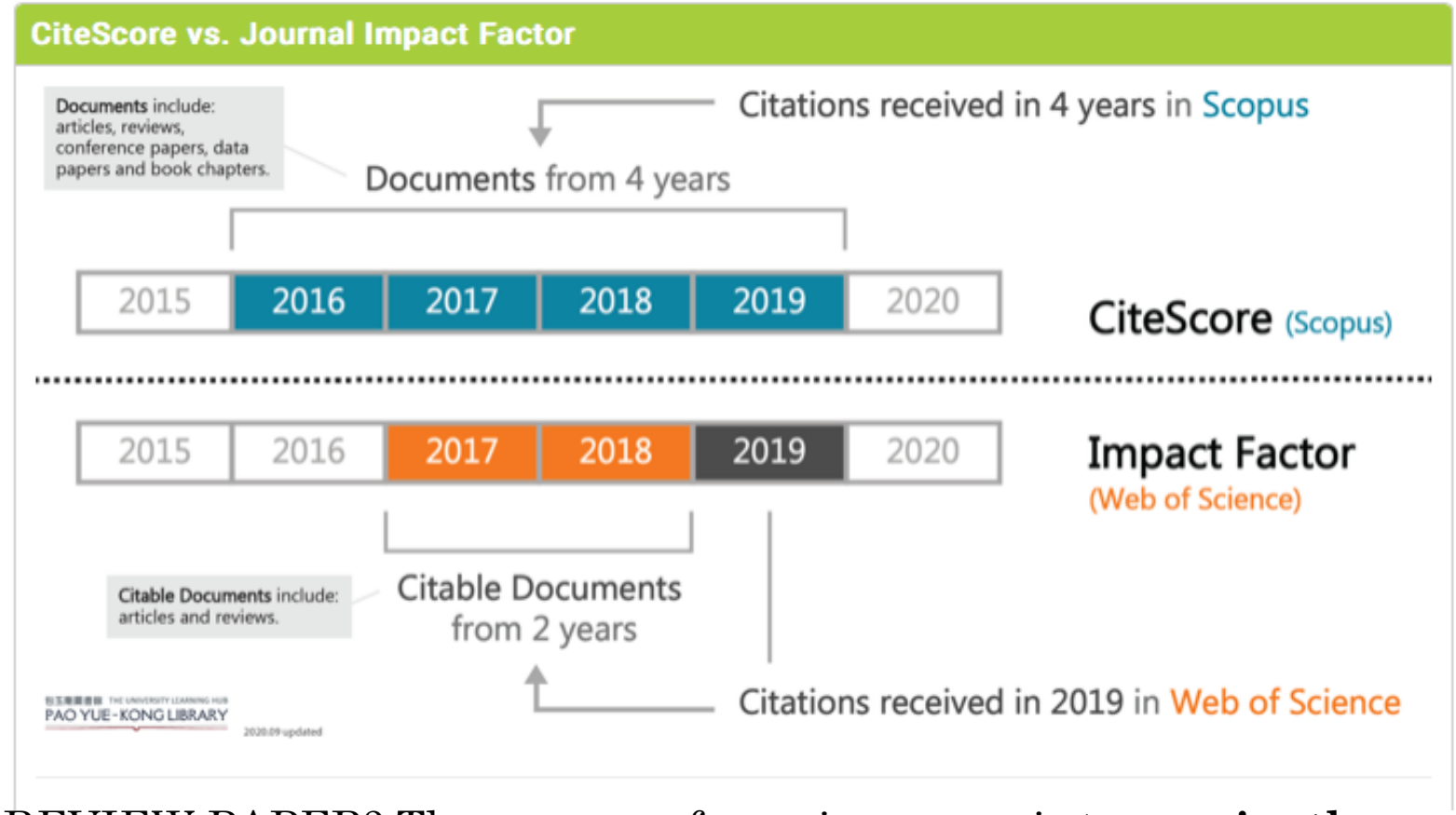
- Google Scholar Metrics provide an easy way for authors to quickly gauge the visibility and influence of recent articles in scholarly publications. Scholar Metrics summarize recent citations to many publications, to help authors as they consider where to publish their new research.
- https://scholar.google.com

Google Scholar

Impact Factor (IF)



IMPACT FACTOR VS CITESCORE

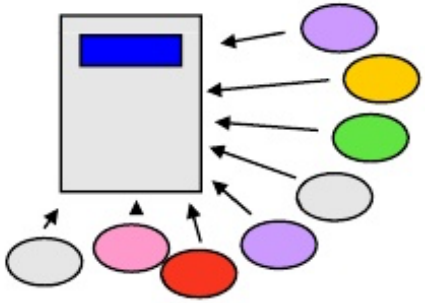


REVIEW PAPER? The purpose of a review paper is to **succinctly review recent progress in a particular topic**. Overall, the paper summarizes the current state of knowledge of the topic. It creates an understanding of the topic for the reader by discussing the findings presented in recent research papers.

Source Normalized Impact per paper (SNIP)

- The **SNIP** measures contextual citation **impact** by weighting citations based on the total number of citations in a subject field. It's the ratio of 3 years Scopus based IF by Database Citation Potential.

1. Collect papers citing 1-3 year old papers in target journal in 2009



2. Collect reference lists of citing papers

3. Count number of references in citing papers to any (in any journal) 1-3 year old papers

4. Citation Potential = average number of references to any 1-3 year old papers

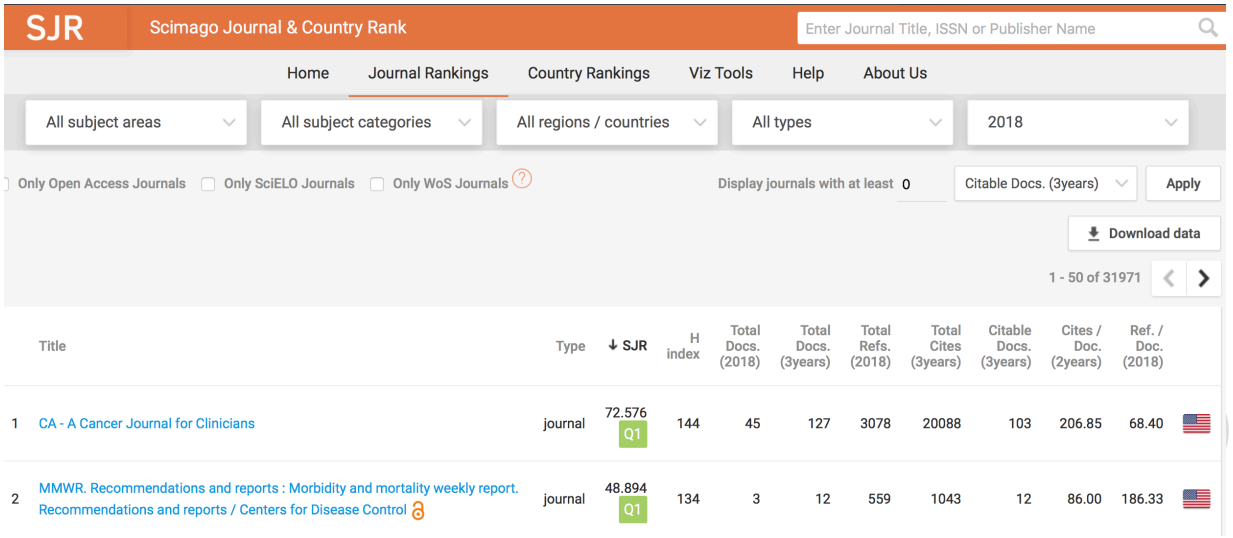
SCOUPS MEASURES

- **Highest Percentile:** CiteScore Percentile indicates the relative standing of a serial title in its subject field based on the CiteScore metric. The Percentile and Ranking are relative to a specific Subject Area. The Source table only displays the Subject Area where the source performs the best.
- **% Cited:** The percentage of the documents published in the last 3 years that have received at least 1 citation in the selected year.
- **Citations:** This is the total number of citations received by the documents published in the previous 4 years.
- **Documents**: This is the total number of documents published in the serial title in the 4 years.
- **SNIP:** Source Normalized Impact per Paper indicates the average citation count per paper but also takes into account the likelihood of being cited within the journals' subject category. Unlike the CiteScore metric, SNIP is adjusted to account for differences in citation behaviour between different academic disciplines, so you can use this number to compare journals in different subject fields.
- **SJR:** Scimago Journal Rank differs from SNIP in that it assigns a higher value/weight to citations from more prestigious journals. Subject field, quality and reputation of the citing journal have a direct effect on the value given to a citation. Like SNIP, SJR also normalizes for differences in citation behaviour between subject fields.

SCIMAGO JOURNAL RANK (SJR)

- Based on the **eigenvector centrality** measure used in network theory. Such measures establish the **importance of a node** in a network based on the principle that connections to high-scoring nodes contribute more to the score of the node.

https://www.scimagojr.com/



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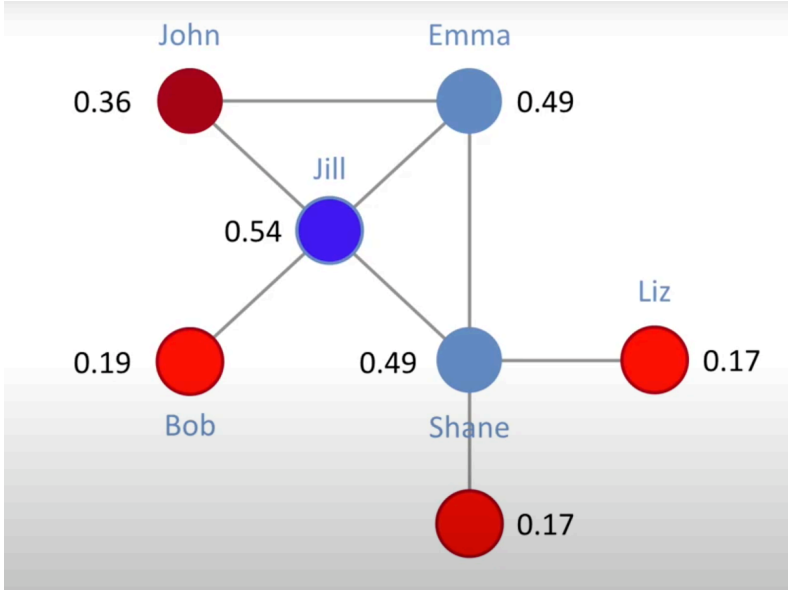

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