
Summary

Quantitative research impact assessment has relied primarily upon analyses of citations between published academic documents (mostly journal articles) in citation indexes (e.g., Scopus, Web of Science). For practical reasons these can only cover a limited subset of the scientific literature. There are also other academic activities and outputs that are essential to the progress of science but rarely result in formal publications—such as teaching, scholarly discussions and presentations—which may sometimes cite research in ways that would be undetectable through traditional citation indexes.

Web sources are increasingly used in research and scholarly communication and it may be possible to extend bibliometric methods beyond conventional citation indexes to the web. This book chapter discusses the use of web metrics for assessing the impact of academic research—whether artifacts, articles, researchers or institutions and argues that web impact metrics could potentially supplement conventional impact metrics by including new or unique
types of sources of impact (e.g., presentations, syllabi or digitised books), emerging types of scientific outputs (e.g., online videos or science blogs).

The first part of chapter describes different methods to capture web impact, including hyperlinks, web citation, URL citations and hybrid approach (Web/URL citation). These methods have been used to collect web impact evidence by a web crawler or by queries to commercial search engines and have commonly been compared with conventional counterparts (e.g., WoS or citations) to assess whether these web metrics are relevant for research evaluation.

The next section reviews previous attempts to extract and use formal citations from web databases and digital libraries including CiteSeer, Google Scholar, Google Book and reports previous results about using them as an alternative citation impact metrics. It has been discussed that Google Scholar citation metrics (citations counts, h-indexes, etc.) and Google Books citations from a huge number of digitised books can be used for monitoring research performance, especially in the social sciences, arts and humanities, when traditional citation indexes are not available or have insufficient coverage.

The chapter also introduces new types of web impact including citations from online syllabi and course reading lists which reflect the educational impact of research, download counts of academic publications which may be an indicator of reading and usage rather than formal citation counts. The last section of chapter briefly discusses emerging social web impact metrics or Altmetrics which can potentially be used outside standard academic sources and indicators such as social bookmarks, tweets or online readership of scientific publications or views of online academic videos.
The chapter concludes that there are many ways in which research impact can be assessed using the web and the practical applications of web extracted metrics for research assessment include calculating indicators for objects outside of traditional citation indexes, from scientific publications to scholars and institutions. However, web impact indicators suffer from a generic lack of quality control compared with scholarly citations, and hence should be used cautiously in research evaluation.