Visualizing Grey Literature Using a Bibliometric Approach

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Introduction

Grey literature finds its way into a topically diverse body of research and acquiring an overview of that body of literature – especially for the uninitiated - can be challenging; however, visualization techniques can provide insights into what is a rather large, complex bibliometric network (Van Eck & Waltman, 2014).

There are a number of bibliometric studies involving grey literature. Most of the previous bibliometric studies examine particular disciplines (e.g., Pelzer & Wiese, 2003), institutions/ organizations (e.g., Cordes, 2004), countries (e.g., Schöpfel, 2008), and more rarely a larger body of scholarship (e.g., Di Cesare et al., 2008). This study seeks to explore how and where grey literature is mentioned (i.e., referenced) within traditional scholarly literature from a topical perspective using visualizations.

Research Questions

- How has the mentioning of grey literature in traditional scholarly literature changed over time?
- What is the disciplinary distribution of articles mentioning grey literature?
- What is the context of the term "data" in articles mentioning grey literature?

Methods

- Articles were obtained from a phrase search of Web of Science Core Collection (1900-2017) using "gr?y literature*"
- Publications were refined to "Articles" and "Reviews." Two additional sets were obtained by refining the initial set to just "Articles" plus excluding "systematic review*" and by refining again to include the word "data."
- A map of science was created from Web of Science Core Collection using VOSviewer (Van Eck & Waltman, 2014).
- Maps of science (Overall and Articles Mentioning Grey Literature) were compared.
- Articles containing the word "data" were qualitatively characterized to gain insights into the context and usage within articles mentioning grey literature.

Results

There were 1,456 articles and 2,326 reviews mentioning grey literature in Web of Science. Figure 1 shows the temporal changes with respect to the number of articles and reviews. The earliest publication was from 1982. The number of reviews exceeded articles for the first time in 2005.

Figure 1. Articles Mentioning Grey Literature.

A large proportion of the 2,326 reviews (~60%) mentioned systematic reviews. When "systematic review*" was removed, there were 1,047 articles and 942 reviews.

Figure 2 is a map of science of the 1,047 articles that included the phrase grey literature in the title, abstract, or keywords. Figure 3 is an overall map of science based on 31 million articles from Web of Science (1980-2017) for comparison. In both cases, the categories shown are based on Web of Science Categories.

Figure 4 is a topical visualization based on titles and abstracts of the 1,047 articles that mentioned grey literature. Of the 1,047 articles, 403 contained the keyword "data" within title or abstract.

A qualitative analysis of the 403 articles found that 50% of the articles mentioned data in the context of grey literature (e.g., used data from grey literature) and was often in the context of grey literature and other sources being searched, though some mentioned grey literature as the only data source.

Figure 2. Map of Science (Articles Mentioning Grey Literature)

Figure 3. Map of Science (Overall)

Figure 4. Topical Visualization of Articles Mentioning Grey Literature

Limitations

- Only searched Web of Science Core Collection
- Ambiguities of keyword searching
- Visualizations are subject to interpretation

Discussion/Summary

- Grey literature is increasingly being mentioned in articles and reviews, especially after 2005.
- Systematic reviews represented a large proportion of the articles mentioning grey literature.
- Articles concentrated in public, environmental, and occupational health; environmental studies; information science/library science; and medicine.
- There were few articles found in the areas of engineering or STEM generally.
- Data was mentioned in relation to grey literature in about 20% of the articles and often in the context of using data for subsequent analyses.
- Articles that use "grey literature" may not always use that phrase in the title, abstract, or keywords.

Future Work

- Further characterize data usage in articles mentioning grey literature.
- Broaden search by including keywords associated with specific types of grey literature.
- Examine grey literature sources searched in the systematic and other reviews.

References

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