Alternative Metrics for Book Impact Assessment: Can *Choice* Reviews be a Useful Source?

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Abstract

This article assesses whether academic reviews in *Choice: Current Reviews for Academic Libraries* could be systematically used for indicators of scholarly impact, uptake or educational value for scholarly books. Based on 451 *Choice* book reviews from 2011 across the humanities, social sciences and science, there were significant but low correlations between Choice ratings and citation and non-citation impact metrics. The highest correlations found were with Google Books citations (.350) in science and with WorldCat library holdings counts in the humanities (.304). Books recommended by Choice reviewers for undergraduates were mentioned more often in online course syllabi than were other recommended books. Similarly, books recommended for researchers, faculty members and professionals or graduates tended to receive more Google Books citations than did books recommended for undergraduates. In conclusion, metrics derived from Choice academic book reviews can be used as indicators of different aspects of the value of books but more evidence is needed before they could be used as proxies for peer judgements about individual books.

Conference Topic

Webometrics; Altmetrics

Introduction

Impact assessment in book-based subject areas is more challenging than for article-oriented fields because the major current citation indexes are dominated by academic journal articles, and are therefore inadequate for assessing the research impact of books (Hicks, 1999, Archambault, Vignola-Gagné, Côté, Larivière, & Gingras, 2006, Nederhof, 2006; Huang & Chang, 2008). In recognition of the need to include citations from books (Garfield, 1996), the Thomson Reuters Book Citation Index (BKCI) and Scopus now index selected books, but their coverage seems to be too low to make a difference for impact assessment and they are restricted to just a few publishers and books that are mainly in English (Torres-Salinas et al., 2014). The way that the books are indexed also creates other issues for book impact assessment (Leydesdorff & Felt, 2012; Gorraiz, Purnell, & Glänzel, 2013).

Another important issue is that some academic books, such as textbooks and introductory science books, are primarily written for teaching (Gurung, Landrum, & Daniel, 2012) and other books, such as novels and literary works, may have cultural influence (White, Boell, Yu et al., 2009) or play a public engagement role (Kousha & Thelwall, in press). Moreover, education may be seen as particularly important in the humanities and a core part of its value to society (e.g., Nussbaum, 2012). All of these are unlikely to be reflected by citation counts. Peer review can be used to evaluate the impact of books but it is time-consuming. For instance, in some book-based fields (e.g., history and law) in the 2008 UK Research Assessment Exercise (RAE) reviewers had to assess the research merits of up to 100 books each (Kousha, Thelwall, & Rezaie, 2011). Hence not all of the submitted books may have been examined in detail (Taylor & Walker, 2009). Peer review is also subjective, perhaps

most strongly in the humanities where books are most common. Although critical evaluation is a core skill in the humanities (Small, 2013), it also seems to thrive on controversy and disagreements (Bauerlein, 2002). Moreover, the opinions of reviewers could be more subjective about the teaching or cultural benefits of books than about their research contributions (Weller, 2001).

In response to the weakness of citations for book impact assessment, there have been attempts to assess wider impacts of books (see below), using scholarly book reviews, library holdings statistics, and publisher prestige as well as with altmetrics (Priem, Taraborelli, Groth, & Neylon, 2011). Book reviews are somewhat similar to post-publication reviews for academic articles in systems like Faculty of 1000 (Hunter, 2012; Li & Thelwall, 2012; Mohammadi & Thelwall, 2013; Waltman & Costas, 2014), and both could be useful as additional quality control mechanisms for the critical analysis of published works (Crotty, 2012). The current study explores an alternative source for book impact assessment, *Choice: Current Reviews for Academic Libraries*, which is owned by the American Library Association, and compares it with citation and non-citation metrics. Choice has published reviews of academic books by editors, experts and librarians across different subject areas for about 50 years and is therefore a substantial and successful source of book reviews aimed at librarians making library purchasing decisions. Despite publishing about 7,000 book reviews per year that are relevant to academic libraries, it appears to be an untapped resource in terms of book impact assessment.

Metrics for Book Impact Assessment

Citation Metrics

Web of Science (WoS) and Scopus: Citations to books can be manually extracted from article reference lists (e.g., Cullars, 1998; Krampen, Becker, Wahner & Montada, 2007) or through cited reference searches in WoS (e.g., Bar-Ilan, 2010; Butler & Visser, 2006) or Scopus (Kousha, Thelwall, & Rezaie, 2011), which now includes tens of thousands of books. However, these methods are time-consuming and do not include many citations from books to books. Book to book citations can give different results from article to book citations, especially in book-based fields such as in the humanities and some social sciences (Cronin, Snyder, & Atkins, 1997, Archambault, et al., 2006).

Book Citation Index: The Thomson Reuters Book Citation Index now indexes the references in about 60,000 books and monographs (Book Citation Index, 2014) and is an optional addition to WoS. Nonetheless, only about 3% of BKCI-indexed books are in non-English languages and about 75% of their publishers are from the USA and England (Torres-Salinas et al., 2014). Added to the absence of aggregated citation counts for edited volumes, its use for evaluative purposes would be problematic (Leydesdorff & Felt, 2012; Gorraiz, Purnell, & Glänzel, 2013).

Google Books: Although Google Books (GB) is not a citation index, it can be used to extract citations from digitised books for book impact assessment. GB citations to academic books are more plentiful than citations in traditional citation databases (Scopus and BKCI) in the humanities and in some social sciences but not in science (Kousha & Thelwall, 2009; Kousha, Thelwall, & Rezaie, 2011; Kousha & Thelwall, 2014). For instance, in one study the median number of GB citations was three times higher than the median number of Scopus citations to 1,000 books in the 2008 UK RAE in seven fields (Kousha, Thelwall, & Rezaie, 2011).

Non-Citation Metrics

Book Reviews: Scholarly book reviews are significant academic outputs (Hartley, 2006), especially in some humanities fields, such as history, literature and philosophy (Zuccala &

Van Leeuwen, 2011). One early study found a high correlation (0.620) between the number of reviews in the Book Review Index and the number of library holdings in the OCLC database for 200 novels (Shaw, 1991), suggesting that both indicators may reflect a common factor, such as the popularity of the novels. Another study found that sociology books with more positive reviews tended to attract more citations (Nicolaisen, 2002), although the strength of association between the number of book reviews and citations varies between disciplines (Gorraiz, Gumpenberger, & Purnell 2014). Low but significant Spearman correlations have also been found between the numbers of Amazon book reviews and citation metrics (Kousha & Thelwall, in press).

Libcitations: National or international library holdings statistics can give useful information about potential usage of, or interest in, books (Torres-Salinas & Moed, 2009; White, Boell, Yu et al., 2009). White, Boell, Yu et al. (2009) argued that libcitation statistics could be used as an indication of the cultural benefit of books, especially in the social sciences and humanities. Several follow up studies have found significant, but low, correlations between library holdings statistics and citation metrics for books (Linmans, 2010; Zuccala & Guns, 2013; Kousha & Thelwall, in press), suggesting that library holdings reflect diverse kinds of influence, such as teaching and cultural impacts, that cannot be traced through citations.

Publisher Prestige:

In the absence of credible citation-based indicators for the impact assessment of books, publisher prestige has been proposed as an alternative (Donovan & Butler, 2007). Attempts to estimate the prestige of publishers through surveys of academics have shown that the perception of prestige varies by field (Garand & Giles, 2011; Giménez-Toledo, Tejada-Artigas & Mañana-Rodríguez, 2013). In addition to reputational surveys, BKCI indicators (Torres-Salinas et al., 2012), Scopus citations and matching library holdings data from WorldCat.org (Zuccala, Guns, Cornacchia, & Bod, in press) have also been used to rank academic book publishers.

Syllabus Mentions:

Academics may write textbooks for teaching or monographs that are widely used in teaching rather than, or in addition to, research (Gurung, Landrum, & Daniel, 2012). This kind of teaching contribution may be undervalued or unrewarded (Boyer, 1990; Jenkins, 1995; Healey, 2000) but evidence of inclusion in academic syllabi can reflect some aspects of teaching scholarship success (Albers, 2003; Thompson, 2007). In response, an attempt has been made to capture citations from online course syllabi for WoS-indexed articles across multiple fields, with the results suggesting that online syllabus mentions can be a useful indicator in some social sciences fields (Kousha & Thelwall, 2008).

Research Questions

The following research questions are designed to assess whether ratings and recommendation information in *Choice: Current Reviews for Academic Libraries* could be useful for the impact assessment of academic books.

1. Do Choice book ratings correlate with citation metrics or with other non-citation metrics for books?
2. Are Choice audience recommendations reflected in citation and non-citation metrics? For instance, do books recommended for undergraduates have more syllabus mentions than books recommended for researchers?

Methods

Choice Reviews

The recommendations for 451 book reviews from a free sample issue of *Choice Reviews Online* published in 2011 were extracted from the *Humanities*, *Social & Behavioral Sciences*, and *Science & Technology* categories but omitting reviews for the *Reference* section. The books were selected, with permission of *Choice*, from the collection of free sample reviews. The recommendation levels assigned to Choice reviews (see http://www.ala.org/acrl/choice/about) were converted into a number, from 1 for 'Not recommended' to 5 for 'Essential'.

- *Essential:* A publication of exceptional quality for academic audiences and a core title for academic libraries supporting programs in relevant disciplines.
- *Highly recommended:* A publication of high quality and relevance for academic audiences.
- *Recommended:* A publication containing good content and coverage and suitable for academic audiences.
- *Optional:* A publication that, due to limited value or deficiencies, is marginal for academic audiences.
- *Not recommended:* A poor quality publication or one not suitable for academic audiences.

Choice reviewers include extra information about usefulness for different academic audiences, such as undergraduates, researchers, faculty members and, professionals (Table 1). This information was used for further analyses.

Table 1. Examples of audience recommendations in Choice book reviews.

Audience recommendations	*Examples*
Mainly for undergraduates	*Essential.* Upper-division undergraduates through faculty. *Highly recommended.* Lower-division undergraduates through faculty. *Recommended.* Undergraduate and graduate studies. Optional. Upper-division undergraduates and above.
Mainly for graduates, researchers, professionals and academics	*Essential.* Graduate students, faculty, and professionals. *Highly recommended.* Research libraries and scholars. *Recommended.* All academic and professional audiences. *Optional.* Graduate students, researchers, and faculty.

Google Books Citations

For GB citations, Google Books API searches were used in the previously developed and tested software *Webometric Analyst* (http://lexiurl.wlv.ac.uk, "Books" tab) to extract citations from digitised books indexed by Google Books (for method details see: Kousha & Thelwall, 2014). To locate GB citations in other digitised books, we searched for the first author last name and the first (up to) ten terms of the book title as a phrase search, combined with the publication year.

Lurz "Mindreading animals: The debate over what animals know about other" 2011

For books with three or less words in their titles we added the publisher to the query:

Benford "Performing mixed reality" 2011 "MIT Press"

Syllabus Mentions

For syllabus mentions, an automatic method was used to search for mentions of the 451 books in public online course syllabi indexed by the Bing search engine. *Webometric Analyst* software and a set of rules were used to identify the syllabus mentions in academic websites and to exclude false matches in order to give accurate, although not comprehensive, results. This method was developed to capture academic syllabus mentions for books rather than articles (cf. Kousha & Thelwall, 2008). The first author last name was combined with the book title as a phrase search and either "syllabus" or "course description", with the results of the two combined and false matches automatically filtered out. The automatic syllabus citation extraction method applied in this study seems to give high accuracy (over 90%), although it misses results from non-academic institutions and syllabi stored in password protected databases and systems (see also Kousha & Thelwall, in press).

Barnett "Empire of humanity a history of humanitarianism" "course description"|Barnett "Empire of humanity a history of humanitarianism" "syllabus"

WorldCat Library Holdings

For library holdings, we manually searched for the 451 books in WorldCat online (http://www.worldcat.org) and recorded the number of library holdings for each one.

Mendeley Readers

For Mendeley reader counts, we used the Mendeley API in *Webometric Analyst* with queries combining the last name of the first author, the book title and the publication year for 451 books in the data set (for method details see: Mohammadi & Thelwall, 2014). This returns the number of users of the social reference sharing site Mendeley that have added the book to their personal library.

Amazon.com Reviews

The numbers of customer reviews were automatically extracted from the main Amazon.com URLs for each of the 451 books via *Webometric Analyst* (for method details see: Kousha & Thelwall, 2014 in press).

Sources not used

Not all book impact metrics were collected for the books in the data set. Publisher prestige was not collected because there is not a recognised source of this evidence and it varies by field. WoS/BKCI and Scopus citations were also not collected because Google Books citations have been shown to be superior for book impact assessment in most fields (Kousha & Thelwall, 2009; Kousha, Thelwall, & Rezaie, 2011; Kousha & Thelwall, 2014).

Results

Roughly three-quarters of books with Choice reviews had at least one GB citation (Table 2), and this is higher in the social sciences (80%, median: 3) than in science (68%, median: 2). Moreover, about 45% of the books had one or more academic syllabus mentions and the median number of syllabus mentions is higher in science (1) compared to the humanities (0)

and the social sciences (0). About 30% of the Choice books had at least one Amazon review and all 451 books had at least one WorldCat library holding (median: 394). Nevertheless, only 1.5% of books had at least one Mendeley reader. Follow-up manual investigations with Mendeley searches confirmed that this very low number was not a technical artefact but genuinely reflected the virtual absence of the Choice books from this site. The low Mendeley coverage confirms previous results that, although academic journal articles often have many Mendeley readers (e.g., 78% with one or more readers in the medical sciences, see Thelwall & Wilson, in press), the same is not true for books and monographs (Kousha & Thelwall, in press; see also: Hammarfelt, 2014), suggesting that Mendeley is currently not useful for book impact assessment.

Overall, it seems that GB citations are plentiful enough for book citation impact assessment and academic syllabus mentions, libcitations and Amazon reviews may be common enough to be used to indicate different types of impact, such as teaching, cultural or public interest.

Table 2. Google Books citations, syllabus mentions, libcitation, Amazon reviews and Mendeley reader counts for 451 books with Choice reviews published in 2011 in three broad fields.

Choice subjects	*No. of books*	*Google Books No. (% with GB cites*) median (mean)*	*Syllabus No. (% with syllab.*) median (mean)*	*Libcitation No. (% with holdings*) median (mean)*	*Amazon Rev. No. (% with reviews*) median (mean)*	*Mendeley No. (% with readers*) median (mean)*
Human.	136	474 (69.8%) 2 (3.5)	120 (39.7%) 0 (0.9)	62098 (100%) 356 (456.6)	105 (35.2%) 0 (0.8)	31 (3.7%) 0 (0.2)
Social Sci.	234	1278 (79.9%) 3 (5.5)	349 (45.7%) 0 (1.5)	130018 (100%) 442 (555.6)	951 (34.2%) 0 (4.1)	90 (3.4%) 0 (0.4)
Sci. & Tech	81	367 (67.9%) 2 (4.5)	149 (50.6%) 1 (1.8)	41585 (100%) 391 (513.4)	174 (27.2%) 0 (2.15)	194 (3.7%) 0 (2.4)
Total	451	2119 (74.7%) 2 (4.7)	618 (44.8%) 0 (1.4)	233701 (100%) 394 (518.2)	1230 30.8%) 0 (2.7)	315 (1.5%) 0 (0.7)

*% of books with at least one Google Books citation, academic syllabus mention, WorldCat libcitation, Amazon review and Mendeley reader.

Table 4 compares the metrics between those for books with Choice reviews claiming teaching utility (mainly for undergraduates) and those for books with reviews claiming benefits for graduates, researchers, faculty members and professionals. Books with research or other academic relevance have higher GB citation impact (median 3) than books with benefits for undergraduates (GB median 2). In contrast, books with more teaching utility for undergraduate studies tended to have more academic syllabus mentions (median 1 and 55% with one or more syllabus mentions) than books for academic audiences (median zero and 34% with one or more syllabus mentions). Hence, it seems that Choice reviews are broadly capable of distinguishing between the different types of audiences for books.

Table 3. A comparison of book metrics based on Choice book reviews with different rating recommendation levels.

Recommendation	*No. of books*	*Google Books No. (% with GB cites*) median (mean)*	*Syllabus No. (% with syllab.*) median (mean)*	*Libcitations No. (% with holdings*) median (mean)*	*Amazon Rev. No. (% with reviews*) median (mean)*	*Mendeley No. (% with readers*) median (mean)*
Essential/highly recommended	150	768 (88%) 3 (5.1)	186 (48.6%) 0 (1.2)	85256 (100%) 482.5 (568.4)	440 (40%) 0 (2.9)	51 (5.3%) 0 (0.34)
Other	301	1351 (68.1%) 2 (4.5)	432 (42.8%) 0 (1.4)	148445 (100%) 359 (493.2)	790 (26.2%) 0 (2.6)	264 (2.9%) 0 (0.9)

Table 4. A comparison of book metrics based on Choice recommendations for undergraduates and other academic audiences (graduates, researchers, faculty).

Audience recommendation	*No. of books+*	*Google Books No. (% with GB cites) median (mean)*	*Syllabus No. (% with syllab.) median (mean)*	*Libcitation No. (% with holdings) median (mean)*	*Amazon Rev. No. (% with reviews) median (mean)*	*Mendeley No. (% with readers) median (mean)*
Undergraduates	240	1098 (70.1%) 2 (4.7)	420 (55%) 1 (1.7)	122497 (100%) 394.5 (510.4)	649 (29.6%) 0 (2.7)	267 (5.4%) 0 (1.1)
Graduates, faculty, researchers, profess.	203	1006 (79.8%) 3 (4.9)	197 (34%) 0 (0.9)	108260 (100%) 405 (533.3)	579 (33%) 0 (2.85)	48 (2%) 0 (0.2)

+.Eight books with "Not recommended" Choice reviews were excluded.

There are low but significant positive Spearman correlations between Choice ratings and various citation and non-citation indicators (Table 5). Thus, in general, books with more GB citations, academic syllabus mentions, library holdings or Amazon reviews tended to be recommended more highly by book reviewers. The correlation is highest between Choice ratings and libcitations (0.201). This may reflect academic libraries ordering books based on Choice reviews and recommendations, especially in the United States (About Choice magazine, 2015).

Table 5. Spearman correlations between Choice ratings and other metrics across all fields (n=451).

Metrics	*Choice rating score*	*GB citations*	*Syllabus mentions*	*Libcitations*	*Amazon reviews*
Choice rating score	1	**.142****	**.103***	**.201****	**.141****
GB citations		1	.171**	.189**	.196**
Syllabus mentions			1	.121*	.073
Libcitations				1	.222**
Amazon reviews					1

**. Significant at p=0.01

*. Significant at p=0.05

There are disciplinary differences in the strength of association between Choice ratings and the other metrics (Tables 6-8). The highest correlation is between Choice ratings and GB citations in Science & Technology (0.350), but this correlation is much lower in Social & Behavioural Sciences and in the Humanities category. Hence, it seems that science books with more positive reviews tend to be more cited in other books and so Choice reviews may be a useful indicator for assessing the research contribution of scientific books. This is a surprising finding given that books are not as highly valued in science as in the humanities.

In the Humanities category there is a low and statistically insignificant correlation between Choice ratings and GB citations but this may reflect the weak association between citations and research quality in the humanities more than a lack of correlation between Choice ratings and research value or impact. The higher association between Choice ratings and libcitations (0.304) suggests that books with higher review ratings tend to be more often acquired by academic libraries but that this does not translate into citations. This may represent 'cultural benefits' of humanities books (Belfiore & Upchurch, 2013; White, Boell, Yu et al. 2009) and supports a previous finding that Outstanding Academic Titles in Choice are more likely to be purchased by academic libraries and have slightly higher library usage than non-Choice books (Levine-Clark, & Jobe, 2007). In Humanities there is also a low but significant correlation between Choice ratings and academic syllabus mentions (0.131), suggesting that in some teaching based fields, Choice reviews may reflect the educational merits of books. In Social & Behavioural Sciences, however, there is no relationship between Choice ratings and either citation or non-citation metrics. A possible explanation is that in the social sciences books have very different patterns of scholarly usage in research and teaching and the relationship between the number of book reviews and citations could therefore differ between subject areas (Gorraiz, Gumpenberger, & Purnell 2014).

Table 6. Spearman correlations between Choice rating scores and other metrics in Science & Technology (n=81).

Metrics	*Choice rating score*	*GB citations*	*Syllabus mentions*	*Libcitations*	*Amazon reviews*
Choice rating score	1	**.350****	.090	**.274****	**.297****
GB citations		1	.097	.326**	.250*
Syllabus mentions			1	.196	-.019
Libcitations				1	.028
Amazon reviews					1

Table 7. Spearman correlations between Choice rating scores and other metrics in Humanities (n=136).

Metrics	*Choice rating score*	*GB citations*	*Syllabus mentions*	*Libcitations*	*Amazon reviews*
Choice rating score	1	.144	**.131***	**.304****	.089
GB citations		1	.145	.193*	.170*
Syllabus mentions			1	.045	.025
Libcitations				1	.118
Amazon reviews					1

Table 8. Spearman correlations between Choice rating scores and other metrics in Social & Behavioural Sciences (n=234).

Metrics	*Choice rating score*	*GB citations*	*Syllabus mentions*	*Libcitations*	*Amazon reviews*
Choice rating score	1	.081	.095	.123	.123
GB citations		1	.193**	.127	.179**
Syllabus mentions			1	.117	.116
Libcitations				1	.314**
Amazon reviews					1

Limitations

This study tested only 451 books with Choice reviews from a free issue of *Choice Reviews Online* published in 2011 and a larger data may give different results. The sample of 451 is from the most public part of Choice, its free samples, and so is atypical in that regard. The small sample size was also not enough for a fine grained analysis of individual subject areas and this is an important limitation for the correlation tests because citation practices and educational norms (e.g., typical class sizes and the role of textbooks) can vary substantially between fields in a way that would systematically reduce correlation results when the fields are grouped together. Another limitation is that the data only included GB citations from books to books and so would miss citations from articles to books. Hence, a future study might use cited reference searches in WoS or Scopus order to check whether stronger relationships can be found.

Discussion and Conclusions

This study seems to be the first to assess whether the book reviews in *Choice: Current Reviews for Academic Libraries* reflect the value of books and could be used for indicators of value or impact. The analysis of a small sample of 451 books published in 2011 found weak but often significant relationships with other indicators, suggesting that Choice should be particularly helpful for books that have uses that do not necessarily attract citations.

In answer to the first research question, books that were highly rated in Choice received more GB citations, academic syllabus mentions, libcitations and Amazon reviews than did lower rated books. In answer to the second research question, books recommended for undergraduates (e.g., textbooks) received more academic syllabus mentions, reflecting teaching influence of books, and books recommended for researchers, faculty and professionals received more citations than did books recommended for undergraduates, indicating the ability of Choice reviews to distinguish between the different audiences for books.

The low (but statistically significant) Spearman correlations between Choice ratings and all citation and non-citation indicators suggest that Choice reviews are either somewhat subjective, or (more likely) do not reflect exactly the same aspects of the value of a book (e.g., teaching, research, cultural or social impacts) as any of the other indicators. Hence, the evidence presented here is insufficient to claim that Choice recommendations are reliable indicators of audience or value at the individual book level. Nevertheless, the correlations will be weakened by the broad categories used (e.g., 200 library holdings might be a spectacular success for a monograph on Old Norse but a failure for one on Shakespeare's women). In addition, the correlations will also be weakened by the fact that the other indicators are not direct *measures* of anything (e.g., educational value) but are indirect (not cause-and-effect) reflections and so strong correlations should not be expected. Hence, the low correlations are not evidence that Choice book reviews have little value but probably reflect the complex multifaceted nature of the value of books and the difficulty in finding indicators to effectively reflect those values. In this context, Choice book reviews are a promising new source of post-publication peer review evidence of the value of books. They are a welcome additional source of evidence for the particularly challenging task of book impact assessment and when positive reviews are used for impact assessments of scholarly outputs by evaluators, funders or perhaps even national research assessments (e.g., PBRF, 2013).

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