

Bibliometric literature review: An opportunity for marketing scholars

Marco Galvagno*

The purpose of this editorial is to point out two main issues: the role of the literature review in scientific research and the opportunity to perform it by bibliometric methods. I want to engage in this discussion because I agree with what Chiara Orsinger (2016: p.7) wrote in her editorial: “the marketing field has gathered a relevant body of knowledge” and “it is sometimes difficult for marketing scholars to gain a synthetic view” of the field or specific topic.

My reasoning is inspired by two assertions:

1. “a science without literature reviews quickly would cease to be a science” (Benson *et al.*, 1992: p. 65); and
2. a literature review is a scientific work and like all the scientific works it should be systematic and reproducible (Fink, 2005).

An effective literature review is a fundamental portion of any academic research project, yet one of the most difficult to arrange (Baker, 2000, Torraco, 2005). Scientific research is *cumulative* in nature, and could be considered fruitful if it increases the knowledge on a certain topic. To increase that knowledge, a researcher needs to know and understand the literature in the field, identify gaps, and address those gaps (Lee, Grenley, 2009). An effective literature review creates the basis for making a contribution to previous knowledge by providing a background for subsequent research, and through identifying topics that require more enquiries (Webster, Watson, 2002; Parè *et al.*, 2015).

* Associate Professor, Department of Economics and Business, University of Catania.
E-mail: mgalvagno@unict.it.

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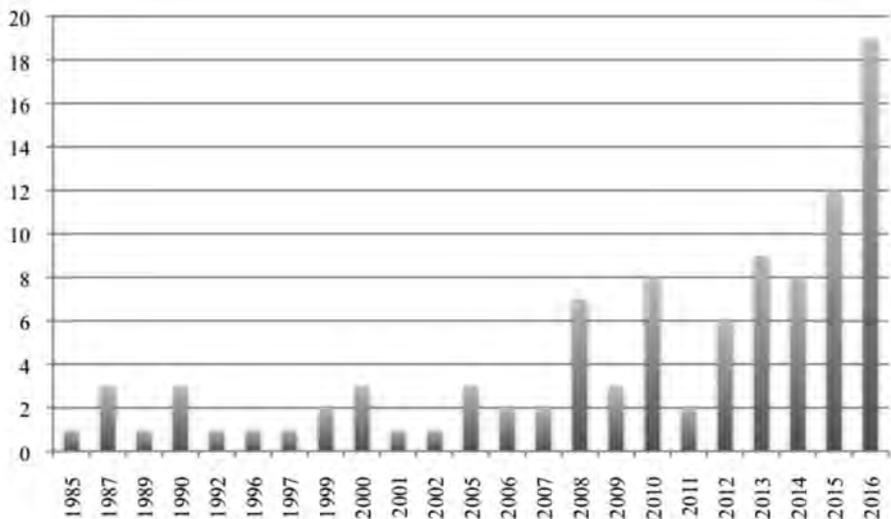
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Within a field like marketing, that takes advantage from multidisciplinary traditions, literature reviews are far more sophisticated and difficult to accomplish, and at the same time more frequent (Figure 1). In general, there are at least four approaches to literature reviews: narrative, systematic, meta-analytic, and bibliometric (Cronin *et al.*, 2008; Parè *et al.*, 2015; Petticrew, Roberts, 2006; Sylvester *et al.*, 2013). Narrative and systematic reviews are traditional ways of doing a review and are based on a qualitative method through which the writer describes, summarise, and criticises a body of literature by selecting the most relevant studies. The main difference between the two resides in the way the author selects the articles to review.

Specifically, the systematic literature review adopts a more rigorous and structured method of selection compared to the narrative review. This kind of review can be found in a book chapter, in a PhD dissertation, in a specific section of a scientific article or research project, or can stand alone in an original research article (so-called “review article”).

Figure 1 – Number of review articles in marketing journals between 1985 and 2016 (median year: 2012)



Source: Clarivate Analytics SSCI Index, 2017.

The case of review-article is particularly important, because it is not a first step in the process of producing a specific research, but it is a contribution on its own. The contribution of a review article is to create a well-founded starting point for all other researchers that are interested in a particular topic, by stressing certain important issues, such as gaps,

unexplored areas, opportunities, disagreements, or trends; and is particularly useful when a topic has accumulated a conspicuous body of knowledge to be synthesised or when a topic is new and there is a need to find directions to further develop it (Parè *et al.*, 2015). Although qualitative review articles are rather common, it is useful to remind that they have two significant weaknesses: the difficulty to present all the most relevant contributions, and the impossibility to replicate the study because the author usually does not provide any explanation of how the selection process was conducted. The result is that, in most cases, literature reviews are opportunistic and biased because they report only the literature that is readily available and/or pertinent to the purpose or point of view of the writer.

To overcome those limitations, scholars have started to apply quantitative methods to conduct a literature review, and specifically: meta-analysis and bibliometrics. Meta-analysis is suited only for quantitative studies and is based on a statistical method that summarises and integrates a large collection of works on the same construct, in order to detect patterns and relationships between findings (Orsingher, 2016; Schmidt, 2008). Conversely, bibliometrics can be used with every kind of study and is a combination of classification and visualization methods of analysis of aggregated bibliographic data produced by other scientists working in a field, in order to describe and summarise all relevant literature¹.

The main difference between the meta-analytic and bibliometric review is that the former can provide a very thorough analysis, while the latter has a more macro focus and discovers patterns in the knowledge base of the literature. Many research fields (e.g., information systems, innovation) have rapidly embraced bibliometric methods, while others have been slower (Zupic, Cater, 2015). Marketing scholars, in particular, have traditionally used narrative, systematic, or meta-analytic methods to perform literature reviews, and only in recent years have started to use bibliometrics (e.g. Chabowski *et al.* 2011a, 2011b, 2013; Di Guardo *et al.*, 2012; Galvagno, 2011a, 2011b; Galvagno, Dalli, 2014; Gurzki, Woisetschlaeger, 2017; Hoffman, Holbrook, 1993; Jones, Runyan, 2016; Kim, McMillan, 2008; Leone *et al.*, 2012; Mendes *et al.*, 2017; Samiee, Chabowski, 2012; Seyedghorban *et al.*, 2016).

We need to consider, for example, that more than half of the articles with a bibliometric review in the marketing field have been published in the last two years².

1. Another use of bibliometrics is to evaluate scientific productivity at an individual, institutional, or national level (Pinto, Fernandes, 2015).

2. A search on Clarivate Analytics SSCI Index of those article with the terms “bibliometric(s)” and “review” within title, abstract or keywords returned 31 articles published in marketing journals between 1985 and 2017, with a median year of publication of 2015.

Because of this growing interest in using bibliometric methods in marketing, in the following I will present a brief overview of these methods with the intent to stimulate the interest of those colleagues that are not aware about it, and encourage them to start to use it in their works.

Bibliometrics is based on the idea that science has a structure that can be empirically defined by a measure based on the link between documents, authors, or journals. The three main bibliometric methods are *citation analysis*, *co-citation analysis*, and *bibliographic coupling*.

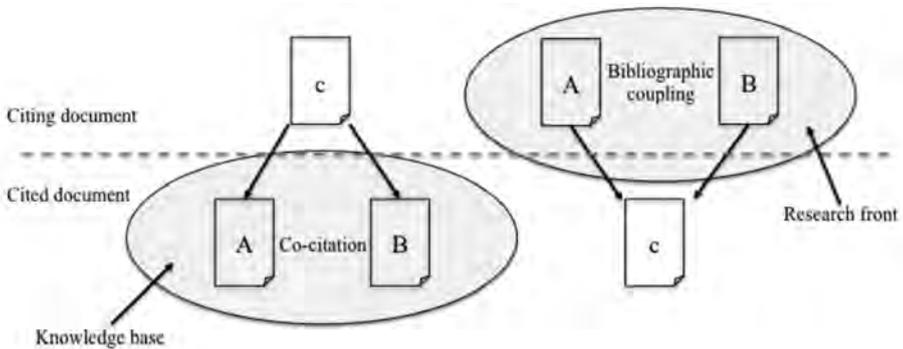
Citation analysis (Garfield, 1964, 1970) uses the number of citations of an article (author or journal) as a measure of its influence. If an article (author or journal) is well cited, it is considered important. The basic hypothesis is that researchers cite articles they consider important for the development of their own research. As a result, the most cited articles (authors or journals) are probably those that exert, or have exerted, a great influence on that particular research topic compared to the less-mentioned ones (Sharplin, Mabry, 1985). Citation analysis is therefore able to provide information on the relative influence of publications, but lacks the ability to identify interconnections between publications and/or their authors (Zupic, Cater, 2015). For example, the Web of Science™ has a built-in citation report and a function that helps classify research outputs in different ways.

Co-citation analysis (Small, 1973) uses the number of times two documents (authors or journals) are cited together in the reference list of other publications to construct similarity measures between them. Co-citation is defined as the frequency with which two documents are cited together (Small, 1973). Essentially, if two documents are both cited by a third document, the latter connects the first two. Therefore, the frequency with which two documents are cited together is a measure of their similarity. An implicit assumption is that two documents often cited together are related because of they study the same topics, use the same theoretical framework or methodology, or answer the same research questions. When analyzed over a wide period of time, co-citations can provide a fairly precise indication of the structure of a scientific field and its evolution.

Bibliographic coupling (Kessler, 1963), while operating on the same principle, is considered the mirrored image of co-citation. In fact, it links items that reference the same set of cited items. Bibliographic coupling starts from the assumption that, although not directly citing one another, there is some connection among items that share several bibliographic references. Specifically, this method is based on three steps: 1) finding a set of recent documents, 2) computing the similarity between pairs of documents using bibliographic coupling counts, and 3) allocating citing documents to clusters using the similarity values (Boyack, Klavans, 2010).

The main difference between co-citations and bibliographic coupling lies in the fact that the former is a dynamic analysis, whereas the second is a static one. While the number of co-citations of two articles changes over time, the number of references shared by two articles is the same. For this reason a co-citation analysis will depend on the time in which it is performed, while a bibliographic coupling will not. Another difference between the two techniques is the publication year of the analysed documents. Co-citation analysis could be made on publications that have a minimum citation threshold; therefore it is a method that underestimates the most recent publications, but helps to delineate the knowledge base of a field (Figure 2). Bibliographic coupling could be implemented on articles published very recently and allows the identification of the research fronts of that field (Boyack, Klavans, 2010).

Fig. 2 – Co-citation and bibliographic coupling



Source: adapted from Zupic and Cater, 2015.

Whatever is the method chosen by scholars³, the data retrieved have to be subsequently analysed and reduced by means of various dimensionality reduction techniques, and represented graphically in order to discover the intellectual structure of the field or topic reviewed. The final step of bibliometric analysis is to interpret the findings. Analysed documents (authors or journals) need to be thoroughly examined to reach valid conclusions (e.g. using co-word analysis or content analysis). Conclusions, for instance, could be related to the structure of a certain field (or topic) and/or to its evolution over time.

Performing a bibliometric review involves several discrete activities, which can be grouped into five main steps, as prescribed by Zupic and Cater (2015):

3. See Boyack, Klavans (2010) for a comparison among different bibliometric methods.

- Step 1. *Research design*: choose the research question(s) and the bibliometric method (e.g. citation, co-citation, bibliographic coupling);
- Step 2. *Extract required data*: select the database (e.g. SSCI, Scopus, Ebsco) and export the data (e.g. query, journal selection, citation threshold);
- Step 3. *Data analysis*: choose a bibliometric software (e.g. Bibexcel, Sitkis, VosWiever, CiteSpace II), produce similarity matrix (e.g. correlation, co-occurrence, cosine, association strength), identify subgroup with the chosen technique (e.g. EFA, MDS, cluster analysis, network analysis);
- Step 4. *Visualisation*: choose the desired visualisation method (e.g. MDS, network analysis, VOS);
- Step 5. *Interpretation*: explain and critically interpret findings.

Even if conducting a bibliometric review could be difficult and time-consuming, it is worth it and has many advantages over other approaches. First, it offers a comprehensive view of a certain topic or field by adding scientific rigour into the literature review. In this light, the results it offers are fully replicable and are not influenced by the researchers' cognitive barriers or biases. Second, it focuses on objective indicators. In particular, the technique is based on citation or co-citation frequencies, on the premise that the references of any scientific work are indicative of the theoretical and empirical bases on which the new scientific contribution rests (White, Griffith, 1981). Third, it is able to describe and discovers the intellectual structure of a field or a topic (both the knowledge base and/or the research fronts), so that scholars can position their work, as well as identify potential new topics and gaps useful to formulate new research questions (Sinkovics, 2016). Fourth, a well done stand-alone literature review becomes a much-cited piece of work⁴ (Ketcham, Crawford, 2007), which is not so bad!

Inevitably, it should be noted that bibliometric methods have some limitations. One concerns the choice of the bibliographic data, which is not completely neutral as it is based on queries with specific keywords chosen by the author. Another limitation is the use of bibliographic databases, which exclude almost all books and book chapters. A third limitation depends on citation metrics that could be biased due to individual or team self-citations, thus representing a manipulation. Despite those limitations bibliometric studies have proved to be robust enough (Archambault *et al.*, 2009; Boyack *et al.*, 2011; van Raan, 2005).

To summarise, bibliometric literature reviews are useful for senior researchers to synthesise previous knowledge and inspire new studies, and

4. As anecdotal evidence consider that four out of ten of the most cited papers from the *European Journal of Marketing* in the last 3 years are literature reviews (source: <http://www.emeraldinsight.com/action/showMostCitedArticles?journalCode=ejm>).

also for PhD students or junior researchers to gain insight into appropriate topics for a future work. Of course writing a bibliometric literature review is a skill that needs to be learned, but marketing scholars – and all social scientists – have an advantage in doing this because the methods are similar to those normally used within their research activity.

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