



The structure and evolution of business-to-business marketing: A citation and co-citation analysis

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ABSTRACT

The field of business-to-business (B2B) marketing has grown considerably in the past four decades. However the state of knowledge about its structure and evolution remains limited. Who are the key players and what are the key papers in B2B marketing? What main research topics have been investigated over time? This article answers these questions by applying bibliometric methods for the first time to the existing body of scholarly B2B research. The key findings reveal a highly dynamic discipline in the 1970s and 1980s, when new knowledge was being intensively exchanged among an increasing number of B2B researchers. Since that time, the pace of development has slowed, and diversification in the discipline manifested itself in a distinctive number of core research subfields. Yet initial research topics such as organizational buying behavior, where much research is still undone, are to a large extent not addressed by modern B2B scholars.

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1. Introduction

Almost every scholar active in business-to-business (B2B) marketing holds intuitive beliefs about the evolution of the field, the development and connections across its main research fronts, and the most influential publications, authors, and journals. Yet these insights tend to be subjective, supported by virtually no confirmation with objective, data-based bibliometric approaches such as citation and co-citation analyses. Unlike other disciplines of similar maturity, literature generated by the scientific B2B community has not yet been analyzed systematically to reveal its intellectual development. This gap is astonishing, because a better understanding of a field's past enables researchers to assess its current structure and define avenues for research with greater sophistication (Culnan, 1986).

In the case of B2B marketing, retrospective studies are limited to general literature reviews, such as those published in a special issue of *Journal of Business Research* that outline the accomplishments of four B2B research outlets: *Industrial Marketing Management* (IMM), *Advances in Business Marketing and Purchasing* (ABMP), *Journal of Business and Industrial Marketing* (JBIM), and *Journal of Business-to-Business Marketing* (JBBM) (Johnston & Lewin, 1997; LaPlaca, 1997; Lichtenthal, Wilson, & Long, 1997; Plank, 1997). Some more comprehensive reviews, such as those provided by Webster (1978), Reid and Plank (2000), and LaPlaca and Katrichis (2009), examine the

contents of B2B articles and classify them into topic areas, which again depends to a certain extent on the subjective views of their authors (Ramos-Rodriguez & Ruiz-Navarro, 2004). These studies show that the most frequently published research area in B2B marketing is organizational buying behavior (OBB), a primary focus of research activity when the field began (LaPlaca & Katrichis, 2009). Since then, various lines of B2B research have emerged to enlarge the field so much that investigations based solely on B2B publications cannot describe it accurately. For example, B2B researchers might draw regularly on publications that appear outside the discipline or on authors who function in parallel fields, yet these sources do not appear in literature reviews (White & McCain, 1998), despite their potential influence. This article focuses on how intra- and extra-disciplinary publications and their authors have influenced the growth of B2B marketing; therefore, it enhances prior research based on literature reviews and provides greater objectivity.

2. Literature review and research objectives

To attain a more in-depth analysis of the structure and evolution of B2B marketing, the present article applies citation and co-citation analyses for the first time to this particular subfield of marketing. To date there have been only a few bibliometric studies in marketing, including Hamelmann and Mazze (1973), who investigated the citation patterns among *Journal of Marketing* (JM), *Journal of Marketing Research* (JMR), and several other selected business and economics journals. Subsequent studies continued the examination of the field of marketing (e.g., Goldmann, 1979; Jobber & Simpson, 1985; Tellis, Chandy, & Ackerman, 1999), though the only subfields primarily investigated were advertising and consumer research (Cote, Leong, &

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Cote, 1991; Hoffman & Holbrook, 1993; Pasadeos, Phelps, & Kim, 1998; Pasadeos & Renfro, 1985). Studies dealing with the latter were the first to alter the unit of analysis, from journals to single articles, and conducted the first author co-citation analysis in marketing research (Cote et al., 1991; Hoffman & Holbrook, 1993). Yet only two other co-citation analyses are known to the authors to have appeared in the field of marketing to date (Pasadeos et al., 1998; Roth & Gmür, 2004). Not only does the present study extend the overall usage of this type of analysis within marketing, but it also offers a distinctive focus on the uninvestigated subfield of B2B marketing. The goals of the paper are thus twofold: to detect the most influential articles (and implicitly the most influential authors) and journals within the field, and to identify the main research fronts of B2B marketing and their interrelations, from the perspective of its members.

3. Methodology and data

3.1. Stepwise bibliometric approach

Citation and co-citation analyses are widely used bibliometric methods that support empirical investigations of the structure and scholarly activity of various disciplines (Üsdiken & Pasadeos, 1995). In line with this study's research objectives, the method featured a stepwise approach, similar to McCain's (1990), together with a previously conducted citation analysis. First, the reference lists of B2B articles from general marketing journals (Theoharakis & Hirst, 2002) and of all articles from the three leading B2B journals (IMM, JBIM, and JBBM; LaPlaca, 2008) were obtained from the Social Science Citation Index or collected manually for four multi-year periods (1972–1978, 1987–1991, 1998–2000, and 2007–2009 [through July]). Second, a citation analysis of these data revealed the publications, authors, and journals most cited by B2B scholars (objective 1). Third, co-citations across the 300 most cited authors were measured and weighted to detect their affinity as perceived by the citers (Gmür, 2003; White & Griffith, 1981). The outcome was an author \times author similarity matrix, which served as the basis for further multivariate and social network analyses. Fourth, to depict the structure of the discipline (objective 2), the results of the analyses were mapped, such that clusters of co-citations represented different B2B subject areas (McCain, 1990; Small, 1973; White & Griffith, 1981). In contrast with literature reviews, such an analysis can reveal interrelations across different schools of thought and offers greater objectivity, because it is the outcome of a composite judgment of many citing authors (Bayer, Smart, & McLaughlin, 1990; White & Griffith, 1981). Therefore the analysis itself does not influence the outcome, because the allocation of authors to research areas is no longer based on the subjective, single views of the study authors (Ramos-Rodriguez & Ruiz-Navarro, 2004).

3.2. Citation analysis

The basic assumption underlying citation analysis is that citations reveal an influence of the cited paper on the citing paper (Culnan, 1987). Thus the sum of citations to a certain paper, author, or journal from a representative sample (i.e., B2B articles) offers an acceptable surrogate of that paper's, author's, or journal's influence on a corresponding research subject or field (Culnan, 1986). The comparison of the four periods investigated relies on a citation value (CV), calculated as the ratio of individual citations to the total citations in a specified period. Because publications are normally cited once per article,³ the denominator for this unit of analysis equals the total number of investigated works. For authors or journals, the total number of citations equals the sum of all references, because multiple citations are possible in this case. Such multiple citations may distort assessments of their influence, so the

analysis includes only authors for which the number of citing articles represents at least 30% of the sum of received citations (see also Waugh & Ruppel, 2004). For example the author Locke was eliminated in the first period, because his 12 citations result from only two articles. In total, 5 (9, 17, 27) authors were excluded from the analysis in the first (second, third, fourth) period. Although self-citations were not omitted from the calculations (Üsdiken & Pasadeos, 1995), they were weighted by 0.5 to limit the loss of information that would accompany their elimination (Glänzel & Thijs, 2004).

3.3. Co-citation analysis

A co-citation analysis is a form of bibliometric network analysis that, according to White (1990) and McCain (1990), can reveal the intellectual structure of scholarly research fields. It records the frequency with which two authors are cited together by a citing sample paper and thereby indicates their perceived affinity (Bellardo, 1980; Small, 1973). Clusters of closely related co-cited authors epitomize certain subject areas, research specialties, or schools of thought within the discipline (McCain, 1990) and can be interpreted as the field's view of itself (White & Griffith, 1981). Consequently this analysis provides an appropriate means of exploring the intellectual structure of a scientific discipline (Nerur, Rasheed, & Natarajan, 2008; White & Griffith, 1981). Many studies have validated the results of co-citation analyses as the structure they provide largely corresponds with the judgments of researchers in the field and other experts, such as research price committees (for assessments of citation analyses, see Gordon, 1982; Summers, 1984; Wade, 1975; for co-citation analyses, see Lenk, 1983; McCain, 1986; Mullins, Hargens, Hecht, & Kick, 1977; Small & Greenlee, 1980).

The determination of co-citation clusters can rely on various methods, which differ mainly in terms of the applied similarity value. Possible values include absolute co-citation counts, Pearson's correlation coefficients, and factor loadings (Nerur et al., 2008; Small & Griffith, 1974; White & McCain, 1998). In line with the research objectives of this study, it employs a similarity value introduced by Gmür (2003) that, compared with other values, offers especially well-balanced networks with distinctive clusters. To obtain a macroscopic view on the discipline, the single author was selected as the unit of analysis; by notating several publications according to their author, it becomes possible to reveal more information within the limited space of a network picture. Each author's name then represents all or part of his or her body of work and thus the major conceptual theme that this author (together with his or her co-authors) adopts (McCain, 1986; Nerur et al., 2008; White & Griffith, 1981). This approach offers broader insight into the field's structure than would an equal number of single publications (as the unit of analysis) depicted in a network picture.

To facilitate the comparison, the input for the co-citation analysis in all four periods is a similar absolute number of authors. Based on the CV the 300 most cited authors are selected. This threshold has proven sufficient as input for co-citation analyses in prior studies of similarly sized research fields, such as accounting, to identify the five to ten most influential lines of research per period (Chen & Paul, 2001; Meyer, Schäffer, Gmür, & Perrey, 2006). In case of a tied ranking of the 300th author, the cutoff value is altered to best match the threshold. Therefore the numbers of authors for the four periods are 304 (1972–1978), 320 (1987–1991), 293 (1998–2000), and 312 (2007–2009). Regarding the similarity value, Gmür (2003) has shown that absolute co-citation counts between authors are not suitable for generating clearly defined clusters; therefore this study uses a relative co-citation value, the CoCit score, as the measure of similarity between authors A and B. The absolute co-citation count is put in relation to each author's individual citation counts as follows:

$$\text{CoCit}_{AB} = \frac{(\text{Cocitation}_{AB})^2}{\text{Minimum}(\text{Citation}_A : \text{Citation}_B) \times \text{Mean}(\text{Citation}_A : \text{Citation}_B)}$$

where A = Author A and B = Author B.

³ Negligible exceptions include different editions of a single monograph.

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