Citation Analysis of *Business Research*: An International Journal in the Field of Business

Nishat Fatima

High Court of Delhi, Sher Shah Road, New Delhi-110 503
E-mail: nishat.siddique@ymail.com

ABSTRACT

The present study is citation analysis of *Business Research*. It covers 18 issues of 9 volumes of *Business Research* published bi-annually during the period 2008-2016. The analysis covers the study of citation pattern and chronological growth citations. It also covers authorship pattern of the articles and various information sources of cited material. On the basis of citation analysis, a rank list of journals is prepared and core journals in the field of Business research are identified. Similarly, core areas of research are identified. The study reveals that researchers have cited journals (77.33%) more than books, editorial works and all other sources of information. Growth in collaborative trend of writing papers is also noticed as citations contributed by two authors is (37.67%) and single authors is (33.42%) followed by three authors (21.59%). Half-life of journal's citations is found to be fourteen years. Bradford's law doesn't found fit in the study. *Academy of Management Journal* (157 citations), *Strategic Management Journal* (141 citations) and *The Journal of Finance* (136 citations) are the most cited journals. Supply chain management and advertising are the two main areas of research among researchers.

Keywords: Citation analysis, Bradford's law, half-life, business research, core journals

1. INTRODUCTION

Business research is a field of practical study in which a company obtains data and analyses it in order to better manage the company. Business research can include financial data, consumer feedback, product research and competitive analysis. Executives and managers who use this analysis of business research are able to better understand their company, the position it holds in the market and how to improve that position[1]. There are various problems faced by business related to brand image, market characteristics, market potential, and market share and so on. Business research helps entrepreneurs to face the challenges of changing business environment. It enables business to understand the social, cultural and economical framework for the success of the business. Business research helps in understanding the complex characteristics of the environments that influence the various decisions of business.

Scholars usually defines Citation analysis as the study of the impact and assumed quality of an article, a journal, an author or an institution based on the number of times works and/or authors have been cited by others[2]. The field of business research has been of interest to business professionals and researchers as topic of scholarly inquiry. Despite the growth of business research field little analysis has been done to explore the development of the field. It is important to measure the authorship pattern, types of information sources, half-life of journal's citations, applicability of Bradford's law, core journals, etc., that has shaped the evolution of this field.

The present study deals with the citation analysis of *Business Research*, a Journal of the German Academic Association for Business Research in the field of business published by Springer International Publishing. Business Research publishes high-quality articles covering both traditional fields of business administration and cross-functional, multidisciplinary research that reflects the complex character of business problems. It has started its publication in the year 2008. It is a bi-annual, open access journal available both in print and online format. It is indexed in *Google Scholar*, OCLC and Summon by *ProQuest*. The journal has been selected for citation analysis because it has grown in status and set its own standards in publishing articles devoted to developing novel perspectives or exploring new domains of research. It was interesting to study the citations of such a leading journal in the areas to measure the authorship pattern, types of information sources, age of information sources, core journals in the field, applicability of Bradford's law, etc.

2. LITERATURE REVIEWS

Regardless of how scholars view the citation, they agree on citation practices being an important object of study in scholarly communication and the sociology of science. This has resulted in studies of citations, especially on a quantitative level, having grown rapidly during the last decades, not least for evaluative purposes[3].

Gunaseka[4] conducted a citation analysis of postgraduates' theses in the field of Economics. He analysed 16 masters and 2 doctoral dissertations and found that the age of

most of the cited materials were 20 years old or less in age and the maximum citations were noted during 1991 to 2000. The study also found that most of citations were from foreign journals.

In an another study conducted by Guidry[5], *et al.* a rank list of economics journals was prepared and concluded that *Journal of Marketing Research*, *Journal of Marketing, Journal of Consumer Research* and *Marketing Science* were the most frequently used journals. McKee[6], assessed 3 leading international auditing journals through citation analysis during 2001-2006. Journals for this study incudes *Auditing: A Journal of Practice & Theory*, *Managerial Auditing Journal* and *International Journal of Auditing*. He concluded that 9 topics accounted for 80% of the articles examined.

Singh, Bebi & Garg[7] discussed the citation pattern of PhD theses in Social sciences awarded by the University of Delhi during 1995-2008. They concluded that books were the most cited information source all disciplines except economics and constitutes about 55.5% of total citations. They also concluded that most of the cited literature (86%) were contributed by single author and *Economic and Political Weekly* was the most frequently used journal among researchers. Another study conducted by Garg & Anjana[8] analysed 605 papers published in the *Journal of Intellectual Property Rights* during 1996-2012, which indicates that the inflow of papers has increased during the period of study. They found an increasing trend in number of references per paper and average reference per paper was 23. They also found that most of the papers were contributed by more than one author. Academic institutions were the largest contributors followed by research institutions and CSIR was top contributor of papers and several of the prolific institutions and authors were also affiliated from CSIR.

Meera & Ali[9] conducted a citation analysis of *Journal of American Society for Information Science and Technology* and found that journals were the most frequently cited information source, followed by books and conference proceedings. Average citation per article was 47.76, half-life of journal literature was 7 years and most of the citations were contributed by more than one author. Mittal and Pillania[10] studied the progress of research on business research in India. They found that there is growing number of research literature on the theme. Most prolific journals were, *Management Decision*, *International Journal of Human Resource Management*, *Harvard Business Review and Journal of International Marketing*. They also found that top 10% of the journals are responsible for 36% of all publications and the top 7 authors are responsible for about 15% of all publications where as the top ten institutions account for 30% of all publications.

Another study on doctoral dissertations conducted by Kumar & Dora[11] of doctoral dissertations at IIMA. They analysed the citations of the 49 doctoral dissertations over the period 2004 to 2009. Like many other studies, they also found that journals are the most cited sources, and based on the pattern of citations, this paper developed a ranking list of journals. In application of Bradford's law, he found that the top 48 journals that were ranked among the 30 most used journals contributed to more than 55% of the journal citations.

3. OBJECTIVES

The objectives of the study are to:

(a) Examine the growth of articles and citations in Business Research

(b) Identify the categories of information resources of citations in Business Research

(c) Examine the authorship pattern in the citations of source journal

(d) Find out the core journals in the field

(e) Find out the core areas of research

(f) Find out half-life of journal's citations and check the applicability of Bradford's law.

4. METHODOLOGY

Data for this study consists of citations appended to the contributed research papers published in *Business Research* during the period 2008-2016. Each citation was examined to know the subject area of citation`, type of information source of citations, chronological growth of citations, numbers of authors who have contributed to each research paper. For conducting the study, details regarding each citation such as title of article, number of authors, year of publication, name of journals, etc., was scanned and the relevant information was recorded and analysed for making observations. A database was prepared in MS-Excel, containing all the information related to each citation. Once the database was completed the information contained in it was grouped, tabulated and analysed.

5. DATA ANALYSIS AND INTERPRETATION

5.1. Citation Pattern of Research Papers

An attempt was made to calculate the amount of literature that has been produced by the journal during the year 2008-2016. Total 98 articles with 6233 citations were published in these 9 years. Along with this, total citations per volume, average citation per article has been calculated and the results have been shown in Table 1. No significant variation was observed in number of articles published every year, the annual output ranged between 10 to 12 articles per year. As far as citations are concerned, total number of citations per volume and average citation per article varies significantly. Highest number of average citations per article in *Business Research* was found to be 73.75 in the year 2016, which is the same year when the number of articles is

<div style="display: flex;">

<div>

Table 1. Citation pattern of research papers

Volume No.	Year	No. of articles	No. of citations	Average citations per article
1	2008	12	514	42.83
2	2009	10	593	59.3
3	2010	10	553	55.3
4	2011	10	701	70.1
5	2012	10	705	70.5
6	2013	11	712	64.73
7	2014	12	854	71.17
8	2015	11	716	65.09
9	2016	12	885	73.75
Total		**98**	**6233**	
Average citation				**63.6**

also maximum whereas the minimum average citation per volume is 42.83 in the year 2008 which is its first year of publication; in this year though the number of total articles were same, yet the citations are less and consequently less was the average.

5.2. Distribution of Cited References among Different Information Sources

Dispersion of source literature is shown in Fig. 1. It is evident that researchers have preferred journals as the source of information, it occupies the first position as reference with total 4820 citations, i.e., 77.33% of the total cited references. On second position, come books with 719 citations (11.54%). Rest of the 11.13% is distributed among other information sources which are editorial works, websites, working papers, conferences/symposium/workshops, and other resources (handbooks, reports/technical reports, thesis/dissertations, magazines, encyclopedia, newspaper, etc.)

5.3. Authorship Pattern of Citations

Analysis of citations in *Business Research*, in relation to the number of authors is presented in Table 2. It reveals that nearly one third of total citations, i.e.,
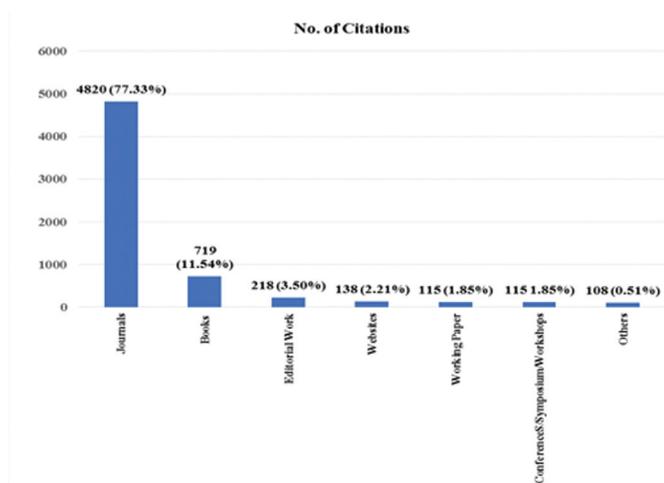
Figure 1. Categories of information sources.

</div>

<div>

Table 2. Authorship pattern of citations

No. of authors	No. of citations	Cumulative citations	Percentage
Single authors	2083	2083	33.42
Two authors	2348	4431	37.67
Three authors	1346	5777	21.59
More than three authors	456	6233	7.32
Total	**6233**		**100**

33.42%, were contributed by single author while the rest of it is contributed by more than one author. Maximum cited material is contributed by two authors, accounting for 2348 citations (37.67%), followed by three authors' contribution accounting for 1346 citations (21.59%) and finally 456 citations (7.32%) are contributed by more than three authors. More number of collaborative papers indicates that the collaborative nature of research is growing. Complexity and scale of modern investigation explains the need for the collaboration.

5.4. Half-life of Journals' Citations

Half-life is calculated by counting the number of year in which 50% of the active literature is reached when counted from the base year[12]. To estimate the half-life, median age of journal's citation is calculated. The half-life was found to be approximately fourteen years. This indicates that authors in Business Research have used current literature. As the table reveals 50% of journal's articles fall under the category of year 2001-2010 which means that half-life of journal citations is about 14 years (Table 3).

Table 3. Half-life of citations

S. No.	Cited years	No. of citations (%)	Cumulative citations (%)
1.	<1960	010 (0.21)	010 (0.21)
2.	1951-1960	034 (0.71)	044 (0.91)
3.	1961-1970	077 (1.60)	121 (2.51)
4.	1971-1980	232 (4.82)	353 (7.33)
5.	1981-1990	530 (11.00)	883 (18.33)
6.	1991-2000	1226 (25.45)	2109 (43.78)
7.	2001-2010	2242 (46.54)	4351 (90.33)
8.	2011-2016	466 (9.67)	4817 (100.00)

5.5. Applicability of Bradford's Law

From the data analysis, it has been found that 864 journals have been cited by the authors. For testing the Bradford's law journal's citations have been divided into three zones. The study identified 19 journals as the nucleus journals that were cited most by the researchers of the citing journal (Table 4).

From analysis, it was found that, first 19 journals covered 1628 articles (33.78%), next 86 journals covered 1610 articles (33.40%) and rest 759 journals covered

</div>

</div>

Table 4. Scatter of Bradford's Law

No. of journals	No. of citations	Total citations	Cumulative citations	Rank	Log rank
1	157	157	157	1	0.000
1	141	141	298	2	0.301
1	136	136	434	3	0.477
1	114	114	548	4	0.602
1	109	109	657	5	0.699
1	101	101	758	6	0.778
1	99	99	857	7	0.845
1	96	96	953	8	0.903
1	93	93	1046	9	0.954
1	75	75	1121	10	1.000
2	63	126	1247	11	1.041
2	60	120	1367	13	1.114
1	56	56	1423	15	1.176
2	53	106	1529	16	1.204
1	51	51	1580	18	1.255
1	48	48	1628	19	1.279
1	43	43	1671	20	1.301
1	42	42	1713	21	1.322
1	40	40	1753	22	1.342
2	38	76	1829	23	1.362
2	34	68	1897	25	1.398
1	31	31	1928	27	1.431
1	29	29	1957	28	1.447
2	28	56	2013	29	1.462
2	27	54	2067	31	1.491
3	26	78	2145	33	1.519
4	25	100	2245	36	1.556
1	24	24	2269	40	1.602
2	23	46	2315	41	1.613
3	22	66	2381	43	1.633
4	21	84	2465	46	1.663
2	20	40	2505	50	1.699
3	19	57	2562	52	1.716
6	18	108	2670	55	1.740
4	17	68	2738	61	1.785
5	16	80	2818	65	1.813
4	15	60	2878	70	1.845
3	14	42	2920	74	1.869
5	13	65	2985	77	1.886
8	12	96	3081	82	1.914
2	11	22	3103	90	1.954
9	10	90	3193	92	1.964
10	9	90	3283	101	2.004
17	8	136	3419	111	2.045
9	7	63	3482	128	2.107
17	6	102	3584	137	2.137
30	5	150	3734	154	2.188
35	4	140	3874	184	2.265
78	3	234	4108	219	2.340
144	2	288	4396	297	2.473
424	1	424	4820	441	2.644

remaining 1582 articles (32.82 articles). Bradford's zone is also depicted in the Table 5. Here the observed distribution is 19:86:759 for a total of 864 journals and the expected distribution is 19:19(6.68):19(6.68)². Bradford's multiplier, i.e., 6.68 in the expected distribution is obtained by dividing the number of journals of a particular zone by number of journals of preceding zone as depicted in Fig. 2.

Expected distribution = 19: 19(6.68): 19(6.68)²

% of error = (993-864)/864 = 14.93%

The % of error is 14.93% which is not a good approximation. Hence Bradford's law doesn't fits in this data set.

Table 5. Bradford's zones in articles of business research

Zones	No. of articles (%)	No. of journals (%)	Bradford multiplier	Average
1	1628 (33.78)	019 (2.20)		
2	1610 (33.40)	086 (9.95)	4.53	**6.68**
3	1582 (32.82)	759 (87.85)	8.83	
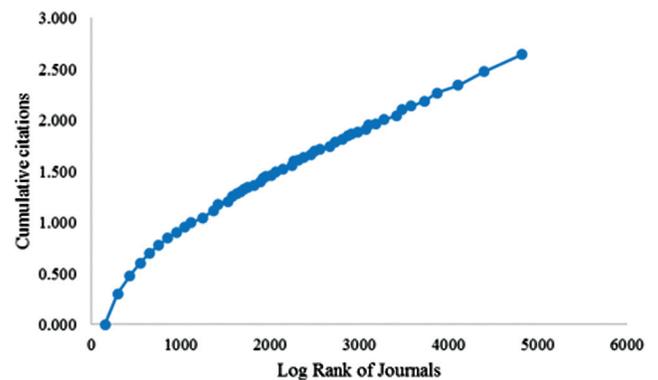
Figure 2. Bradford bibliograph.

5.6. Core Journals in Business Research

In the present study, total 864 journals have been cited for 4820 citations out of total 6233 citations. It was not difficult to analyse the journals which were cited most frequently as 1671 citations out of 4820 journal citations are from 20 journals. It is worth to note that these first 20 journals in the rank list cover nearly 35% of total journal citations. Rest 65% is scattered amongst 844 journals. Table 6 provides an overall rank list of cited journals in which top twenty journals are arranged

Table 6. Rank list of cited journals

S. No.	Journals	Place of publication	Frequency
1.	*Academy of Management Journal*	United States	157
2.	*Strategic Management Journal*	United Kingdom	141
3.	*The Journal of Finance*	United States	136
4.	*European Journal of Operational Research*	Netherlands	114
5.	*Management Science*	United States	109
6.	*Journal of Marketing Research*	United States	101
7.	*Administrative Science Quarterly*	United States	99
8.	*Journal of Financial Economics*	Netherlands	96
9.	*Academy of Management Review*	United States	93
10.	*Journal of Accounting Research*	United States	75
11.	*Journal of Accounting and Economics*	Netherlands	63
12.	*The Accounting Review*	United States	63
13.	*Journal of Management*	United States	60
14.	*Organization Science*	United States	60
15.	*Journal of Marketing*	United States	56
16.	*Journal of Business Ethics*	Netherlands	53
17.	*Marketing Science*	United States	53
18.	*Journal of Management Studies*	United Kingdom	51
19.	*American Economic Review*	United States	48
20.	*Journal of Banking & Finance*	Netherlands	43

in descending order of citation frequency. *Academy of Management Journal* (US) got the first rank for being cited most number of times with 157 citations, followed by *Strategic Management Journal* (UK), *The Journal of Finance* (US), *European Journal of Operational Research* (Netherlands), and so on.

5.7. Core Areas of Research in Source Journal

Table 7 shows the core areas researched by the writers in Business Research. Core areas show the interest of researchers in particular field. The analysis reveals that most of research was conducted on various aspects of Supply chain management (115 citations), followed by Advertising (109 citations), Business Process Management (89 citations), Decision Making (71 citations), Control (69 citations), Pricing (66 citations), Tax (65 citations), and Revenue Management (58 citations).

Table 7. Core areas of research

Area of research	Total no. of citations
Supply chain management	115
Advertising	109
Business process management	89
Innovation	89
Top management team	74
Decision making	71
Control	69
Pricing	66
Tax	65
Revenue management	58

6. CONCLUSIONS

Citation analysis of all 98 articles in 18 issues of 9 volumes of *Business Research* published during 2008-2016 has been presented in the study. It was found that there is growth in average citation per article since volume 1, however there is decline in average citation per article in year 2013 and 2015. Maximum number of citations (883) were found in the year 2016, whereas the minimum citations (513) were found in the year 2008. Maximum number of contributions were from two authors, followed by one author. Journals occupied first place as the source of information explored by the researchers as nearly 80% citations are from journals. Half-life of journal citations was found to be 14 years. On enquiring about Bradford's law, it was found that the law dosen't fits in the data of *Business Research*. List of 20 Core journals was prepared and maximum citations were from *Academy of Management Journal* and main area of research in the field of business research was found to be Supply Chain Management.

REFERENCES

1. Mirnada, Kay. What is business research? http://smallbusiness.chron.com/business-research-43341.html (accessed on 4 November 2016).

2. Research guides. Citation analysis guide: Citation analysis. http://guides.lib.umich.edu/c.php?g=282982&p=1887443 (accessed 20 March 2016).

3. Hellqvist, B. Referencing in the humanities and its implications for citation analysis. *J. American Soc. Info. Sci. aTech.*, 2010, **61**(2), 310-18.

4. Gunasekera, Chamani. Citation analysis of masters theses: As a tool for collection development in academic libraries. *J. Univ. Lib. Asso. Sri Lanka,* 2013, **17**(2), 88-103.

5. Guidry, Julie Anna, *et al*. Surveying the cites: A ranking of marketing journals using citation analysis. *Marketing Edu. Rev.*, 2004, **14**(1), 45-59.

6. McKee, T.E. Citation snapshot of three leading international auditing journals. *Managerial Audit. J.*, 2010, 25(8), 724-33.

7. Singh, K.P.; Bebi & Garg, K.C. Citation analysis of PhD theses submitted to the University of Delhi in social sciences during 1995-2008. *SRELS J. Info. Manag.*, 2014, **51**(6), 363-68.

8. Garg, K.C. & Anjana, A.K. *Journal of Intellectual Property Rights*: A bibliometric study. *DESIDOC J. Lib. Info. Tech.*, 2014, **34**(1), 66-73.

9. Meera & Ali, Syed Anas. *Journal of American Society for Information Science and Technology (JASIST)*: A citation analysis. *ISST J. Advances Librarianship*, 2015, **6**(1), 7-20.

10. Mittal, Satish K. & Pillania, Rajesh. Business research in India. *J. Manag. Develop.*, 2014, **33**(2), 68-74.

11. Kumar, H.A. & Dora, Mallikarjun. Citation analysis of doctoral dissertations at IIMA: A review of the local use of journals. *Lib. Colle. Acqu. Tech. Ser.*, 2011, **35**(1), 32-39.

12. Sen, B.K. Symbols and formulas for a few bibliometric concepts, *J. Documentation*, 1999, **55**(3), 325-34.

CONTRIBUTOR

Nishat Fatima is working as Assistant Librarian with High Court of Delhi, New Delhi. She received a Bachelor Degree in Commerce from University of Delhi, Delhi and BLIS from Jamia Millia Islamia, New Delhi. She received MLIS and MPhil (LIS) from University of Delhi, Delhi. She is UGC JRF qualified.