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Citation Analysis of Economics Thesis Submitted to Goa University

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Abstract:

Research may be applied or fundamental, quantitative or qualitative, whatever be the type of research, its purpose is to discover answers to question through the application of scientific procedures. The present study aims to citation analysis of the Ph.D. thesis submitted to Goa University in the Department of Economics for the period 1995 -2019. Total 27 theses submitted during this period are taken up for the study. The total citations generated is 5405. From this study, it is found that Books are the most preferred source of information used by research scholars in the field of economics. The citations pertained to journals, books, reports, working papers, newspapers, websites etc.

Keywords: Citation analysis, Authorship pattern, Economic Theses, Goa University.

Introduction

Citation analysis is one of the most widely used methods of bibliometrics. Citation analysis is used to examine and measure the frequency, pattern, and cited bibliographical sources. It is used to link other researchers' scholarly works. Citation analysis is the popular method to find out the core journal in the subject. It also reveals the authorship pattern, country-wise publications, year-wise cited documents, institutions productivity and other parameters of scientific activities. Theses and dissertations are well known to be rich and unique sources of information. Thus, it helps to identify the quality of bibliographical references used in the doctoral theses

Diodato and Gellatly defined citation as "A wide bibliometrics that studies the citations to and from documents. Such studies may focus on the documents themselves matters as their authors, the journals (if the documents are journaling articles) in which the articles appear, the organizations or countries in which the documents are produced; the purpose of the citations".

List of the references is an essential part of any research that point to prior publications. While writing the manuscript a list of references is used in its preparation. Usually, citations and references are used interchangeably. According to Smith reference is an acknowledgement given by one document to another and citation is an acknowledgment that one document receives from another. A citation is a relationship between the cited and citing document (s) and this relationship is called citation analysis.

Citation counts measure the impact of scientific activity. It is used to study the characteristics of recorded knowledge. It is a popular method to identify the core references in a particular subject. Researcher can evaluate and interpret citations received by articles, authors, institutions, etc. to identify the quality of the information sources

The research performance evaluation systems revolve around the concept of quality. The purpose of evaluation research performance is to identify areas for improvement in the quality of research. Citation analysis is one of a methodology that have been proposed and utilised to compliment standard research performance evaluation. A bibliographic reference

or a footnote listed at the end of a paper is referred to as a citation. It expresses a connection between the citing document and cited document. Citation analysis is a major area of bibliometrics research, which uses various methods to establish the relationship between authors and their work. The reservoir of archived knowledge from which authors retrieve known ideas and, in turn, produce new research ideas is represented by citation. This information can be provided both within and across disciplinary lines. Citation count and Impact factors can be easily manipulated. Citation impact is a metric for determining how influential an article is in its field. An article that is widely read and cited has influenced other researchers within the field.

Review of Literature

Harwade and Dankhade (2002) in their bibliographic study, form-wise distribution of citations showed that books accounted for 42.77% of citations, journals (32.81%), Ph.D. theses (14.70%), newspapers (4.50%), and others (5.22%). The findings also revealed that single-authored publications are highest in number, with a half-life span of 22 years for journals.

Schneder (2004) found that Bibliometrics is the most active field of library and information science. Citation analysis study is the major portion of it. Bibliometrics is a subfield of information science – Bibliometrics is the study of documents and their bibliographic reference and citation structure. Bibliometrics methodologies have been used to examine the intellectual structure of several disciplines.

Chikate and Patil (2008) examined and analysed 6257 citations appended to 27 theses submitted to the University of Pune in the discipline of library and information science during the period 1982 and 2005. They found 42% of the citations are from journal articles, 25% of the journal articles are from LIS journals and the remaining from other 33 subject areas.

Vallmitjana and Sabate (2008), conducted a bibliometric study using citations from PhD dissertations of chemistry to ascertain types of documents most frequently used in the research process and most frequently consulted journals and obsolescence rate of the journals etc. The analysis covered 46 doctoral theses presented at the Institute Químico de Sarriá (IQS) from 1995 to 2003. The results obtained from 4,203 citations revealed that the most

frequently used documents were scientific papers, which accounted for 79% and 33 journals met 50% of the informational needs, The age of 50% citations was not older than 9 years.

Shi-Jian Gao, et al. (2009) study deals with the citation analysis of 56 PhD theses submitted at Wuhan University in China during 2005. The authors analysed, reviewed, and compared the characteristics of the literature cited in the four disciplines. The disciplines are Library and Information Science, Biology, Photogrammetry, and Remote Sensing, and Stomatology. The results revealed that out of 10,222 total citations Biology and Stomatology were cited literature mainly in English language publication whereas, in the field of Library and Information Science, the cited literature came primarily from Chinese sources. In Photogrammetry and Remote Sensing, citations were almost evenly split between English and Chinese sources.

Nasir, Umar, and Khan (2010) analysed 4500 citations from 41 PhD theses in History submitted to Aligarh Muslim University during 1990-2010. The findings of their study reveal that books had the highest number of citations, accounting for 72.5% of the total citations. The majority of the documents were in the English language (45.52%), followed by the Persian language (32.46%), and the Urdu language (13.6%). It was found that 77.41% of the articles were produced by single authors. The 'Journal of Bihar Research Society' occupied the first rank with the highest citations (6.44%).

Sudhier (2010) tested the Bradford law on the journal citations of 79 doctoral theses in physics submitted to the Indian Institute of Science, Bengaluru for the period 2004-08. Out of the total 11,319 references, 690 were periodical references. Physical Review-B with 9.53 percent citation, followed by Physical Review-A with 7.69 percent citation and the scholars preferred Astrophysical Journal with 5.47 percent citation. For verification of Bradford law Leimkuhler model was employed. with a value of k as 12.6 the law was found valid for the journal distribution.

Trayambakrao and Sonwane (2012) examined 2876 citations contained in 34 PhD. theses in economics submitted to Dr. Babasaheb Ambedkar Marathwada University and Books were the most preferred form of citations with 57.86 percent of citations. 72.81% of the citation were found single-authored. The web citations was remained 0.9% only

Singh and Bebi (2013) highlighted the authorship pattern, forms of literature cited, country-wise scattering of citations, distribution of Indian and foreign citations of 25 PhD theses in

sociology submitted to the University of Delhi during 1995-2010. There were 5766 citations appended to 25 theses. A ranked list of journals identified 30 core journals which disclosed that Economic and Political Weekly was the most (137 time) cited journal. Maximum citations were book citations with 67.2 percent citations and about 45 percent citations were from India. 83.94 percent of the citation were single-authored.

Wardikar (2013) explained the Application of Bradford's Law of Scattering to the Literature of Library and Information Science: A Study of Doctoral Theses Citation Submitted to the Universities of Maharashtra. The study deals with 798 periodicals containing 5467 references collected from 138 theses during the period 1982-2010. *Annals of Library Science and Documentation* has ranked first with 207 citations followed by *College and Research Libraries* which ranked second with 184 citations, and the *Herald of Library Science* has ranked third with 160 citations. The applicability of Bradford's Law in various methods was tested. The relationship of each zone in the present study is 15:55:728. This does not fit into Bradford's distribution. Therefore Leimkuhler model was employed for the verification of Bradford's Law of Scattering, it was found that the law finds valid for the data set. The percentage of error is found to be the most negligible (0.043%).

Veerabasavaiah and Padmavathi (2014) in their study entitled 'Citation analysis of doctoral theses in Education submitted at the Bangalore University, Bangalore, during 2003-2012' carried out an analysis of 6688 citations from 42 doctoral theses. They observed that the highest number of theses (12, 28.57%) was submitted during 2009, followed by 11 theses (26.19%) in 2010 and 5 theses (11.91%) in 2004. Their study revealed that journals were the most preferred sources of information used by the researchers in the field of Education, accounting for 39.43% of citations, followed by theses/dissertations (37.93%), reports (9.20%), and websites (5.05%). The single authorship was most preferred (54.04%), followed by two authors (27.08%). Their study revealed that most of the cited journals were published from the U.S.A., followed by India and the UK. The most cited journal was the 'Journal of the Applied Psychology' (5.20%), followed by 'Indian Education Review' (3.68%), 'Journal of Educational Research' (2.85%), and 'Child Development' (2.81%).

Gohain (2014) studied that 30 PhD theses of chemical sciences submitted to Tezpur University, Assam for the award of doctoral degree during the period 2008-2012. The main purpose of this study was to identify the type and form of literature cited, the authorship pattern of the citations, and compiled a rank list of core journals in chemical sciences. The

study revealed that 78.83% of total citations are cited by the journals, followed by books with 15.57% citations. Journals were the most preferred sources of information cited by researchers in the field of chemical sciences. The Journal of American Chemical Society has ranked first with 617 citations, followed by the Journal of Molecular Catalysis a: Chemical has ranked second with 569 citations, and Macromolecules has ranked third with 543 citations. Out of the total number of 8658 journal citations, 39.89% are by more than three authors, followed by two authors with 22.28%. Hence it is concluded that most of the citations were contributed by more than three authors in authorship pattern that mean the collaborative research is prevailing in chemical sciences.

Amritpal and Rattan (2015) analysed 17 doctoral theses in library and information science submitted to Punjabi University, Patiala till 2013. The findings of the research revealed that journal citations were the maximum 48.43 percent and 59.41 percent of references were single-authored. More than 49 percent of the book citations were of Indian origin. Journal citations were more recent than book citations. College and Research Libraries was the most referred journal by the LIS researchers and the data of journal distribution fitted well with Bradford distribution.

Ramanjaneyulu, H (2015) revealed that citation analysis is a major area of bibliometrics research, which uses various methods to establish the relationship between authors and their work. Citation analysis is a technique of bibliometrics. It is an important research tool for understanding the subject, in which we analyse the structure and direction of the subject. It measures the utility of documents and the relationship between their author and their documents. Citation analysis in any research activity has become one of the popular methods to study subject relationships, authorship patterns, impact, publication trends, and to identify core journals in a particular subject field or for a particular scientific community. In this paper, an attempt is made to present a pattern of citations in the theses presented to Sri Krishnadevaraya University in the subjects namely Commerce, Economics, Management, and Political Science during 1982-2009.

Arockiasamy and Dorairajan (2015) in their study they found that journal articles were the most preferred source of citations. The most frequently cited journal was the Journal of Indian History and the Journal of History of Tiruchirapalli. The study covers 84 doctoral theses submitted to the Department of History at Bharathidasan University, Tiruchirapalli.

This study will serve a purpose in the collection development policy of the library to cater to the needs of the research scholars. The period of the study was 1988-2011.

Bapte and Gedam (2016) carried out the study to find out the nature of special issues published in DJLI, the current trends in authorship patterns, and to find out leading subject facets. The data of citing articles have been collected by visiting the journal's website published in DJLIT during 2010-2015. The information thus gathered is systematized and analysed through MS-Excel to derive results. Quantitative technique and the method of content analysis have been adopted for the present study. They found that the authorship pattern shows the trend is increasing towards collaborative research. The top ten subject facets show the research area favoured by the authors. Nevertheless, 'Usage Study' and 'Scientometrics' are mostly preferred areas. The various usage studies conducted imply that the professionals are interested in knowing the reaction of the users, professionals towards particular technology or development taking place in the library environment. Scientometrics has traditionally been popular with the authors.

Mahajan and Kumar (2018) examined 36 PhD theses of history submitted to Punjab University, Chandigarh during the period 2000-2012. It was revealed that there was 8488 citation contained in 36 theses. Books were the most cited form of a citation with 54.16 percent of citations. The use of electronic resources was 1.6 percent only. There was the dominance of single authorship over multiple authors. The journal Economic & Political Weekly was ranked one among the researchers of history. The half-life period of book and journal citations was 35 and 21 years, respectively. More than 58 percent of books and 64.47 percent of journals were of Indian origin. Bradford's law of scattering fitted well to this study.

Siddiqui and Gautam (2018) studied the 312 theses in Education submitted to Charan Singh University, Meerut between the periods of 1971-2015. The total citations generated 45326. They studied the rate of collaborative authorship (books) by analysing the citation pattern, to determine the use pattern of different types of documents like books, periodicals, journal articles, reports, conferences, thesis/dissertation etc. and to a ranked list of cited journals in Education. They found that Research Scholars have not used any uniform pattern while citing the research papers or other such resources. It has been noticed that the researchers have also committed mistakes such as missing the year of publications, name of publisher, and at some places and the place of publication is missing.

Singh and Chauhan (2019) conducted the study to identify the principal forms of information sources used by research scholars in the field of Psychology, To compile a rank list of the core journals in the field of Psychology and to study the rate of collaborative research. They found that Researchers in Psychology cited the maximum literature (24.87%) published during 1991 - 2000. Books (40.53) and journals (42.71%) are the most preferred source of information for the research scholars of Psychology.

Scope of the study

The present study is based on the 5405 citations appended at the end of the 27 PH.D. thesis in Economics submitted to Goa university between the period 1995 to 2019.

Objectives of the study:

- To find out the sources of information cited by the researchers.
- To identify the core journals cited by the researchers
- To study the credibility of Guide
- To study the block-wise distribution of the thesis
- To rank the list of cited journals in economics
- To determine the usage pattern of different documents like Journals, books, reports, working papers etc.

Methodology:

The study is built on the total 5405 citations collected from the end of chapters of 27 PhD theses accessed from the Goa University from the year 1995 to 2019. The thesis was accessed from UGC (University Grant Commission) Inflibnet’s Shodhganga repository.

Data analysis and Interpretation

Table No. 1 Guide wise Distribution of the Thesis

Sr. No.	Name of the Guide	No. of Thesis	Citations	C/T	Rank
1.	Sudarsan, P. K	12 (44.44)	2309 (42.71)	1.92	1
2.	Silvia M. De Mendonca	8 (29.62)	2256 (41.73)	2.82	2
3.	Pranob Mukhopadhyay	4 (14.81)	497 (9.19)	1.24	3
4.	Shahi, MA	2 (7.40)	257 (4.75)	1.28	4
5.	Deshpande, S.P	1 (3.70)	86 (1.59)	0.86	5
	Total	27	5405	2.00	

Guide-wise distribution of the thesis is presented in table 1. From this table, it is noted that Dr. Sudarsan P.K guided 44% of Ph.D. students and produced the highest thesis and received 43% of citations, subsequently by Dr. Silvia M De Mendonca by guided 30% of students and received 42% of citations. Whereas 15% thesis is guided and 9% of the citations were received by Dr. Pranob Mukhopadhyay during the study period in economics and allied subjects.

Further, it is noted here that, on average 5.4 theses were produced by these guides, only Dr. Sudarshan PK and Dr. Silvia M De Mendonca produced more than the average thesis during the last twenty-four years.

The average rate of citation per thesis is 2.00, but the rate of citation per thesis varied from 0.86 to 2.82. Among the citations per thesis, the highest citation per thesis is having Dr. Silvia M De Mendonca with 2.82, followed by 1.92 and 1.28 with Dr. Sudarshan PK and Dr. Shahi MA during the time of study.

Table No. 2 Growth of Publications

Year of Thesis	No. of Thesis	Percentage	Cumulative Publication of Thesis	Exponential Growth Rate	CAGR
1997	2	7.40	-	0.00	2.97%
1999	1	3.70	3	0.5	
2004	2	7.40	5	2	
2006	1	3.70	6	0.5	
2007	1	3.70	7	0.5	
2008	3	11.11	10	03	
2009	3	11.11	13	03	
2011	1	3.70	14	0.33	
2012	1	3.70	15	1	
2013	1	3.70	16	1	
2014	1	3.70	17	1	
2015	1	3.70	18	1	
2017	7	25.92	25	7	
2018	1	3.70	26	0.14	
2019	1	3.70	27	1	
Total	27			21.97	

Table 2 shows that the Exponential Growth Rate of publications of Thesis published by the Department of Economics, Goa University, Goa during the period 1996 to 2019 (24 years). The highest degree of progression of the thesis was found in the year 2017 with 7 thesis publications and it decreased to 0.14 and 1 in the next two years. It is also revealed

that, the total exponential Growth Rate is to be 21.97 and CAGR calculated from twenty-four years is to be 2.97%

Table No. 3 Block wise Distribution of Thesis

Year	No. of Thesis	Total No. of Citations	Average
1995-2000	3	441 (8.15)	1.47
2001-2005	2	388 (7.17)	1.94
2006-2010	8	2165 (40.05)	2.70
2011-2015	5	1185 (21.92)	2.37
2016-2019	9	1226 (22.68)	1.36
	27	5405	2.00

Table 3 displays the productivity of the economic thesis during the five-year block starting from 1996 to 2019. Three theses are produced in first five years in between 1995 to 2000 and got 8.15% of citations, in the subsequent block it came down to two theses from the year 2001 to 2005 with the 7.17% citations. Thesis productivity shoots up to eight theses in the block of 2006 to 2010 with 40.05% of citations, again it got reduced to five theses in the block of 2011 to 2015 with the dip of almost 50% of citations i.e.: -22%. In the last four-year block from 2016 to 2019 highest nine theses were produced and almost 23% of the citations it received during the study period of the past twenty-four years.

Table No. 4 Form wise Distribution of Citations

Type of Citations	Number of Citations	Percentage
Journals	1085	20.07
Books	2413	44.64
Reports	995	18.40
Working papers	414	7.65
Newspapers	42	0.77
Websites	270	4.99
Others	186	3.44

Table 4 reveals the type of citations in the area of Economics and published as sources of information in the total twenty seven theses produced by the Department of Economics, Goa University, Goa. Distribution of citations are in six main types of citations, 44.64% of the sources are from the books written by different authors on the subject of Economics and other related subjects, followed by journals with 20.07% and various reports having cited with 18.40%. Working papers, newspapers, websites and other publications are less than 5%. It is interesting to note that, in the era of the Internet websites are cited very few times in these theses.

Table No. 5 Value of Group Co-effective for Collaborative Authors Publications

	Total No. of Publications	% from total Publications	Value of Gp
Total No. of Author's Publications	5405		
Total No. of Single Author Publications	2940	54.39	
Total No. of Co-Author Publications	2465	45.60	2.19
Two Author's Publications	1877	34.72	0.34
Three Author's Publications	464	8.58	0.08
More than Three Author's Publications	124	2.29	0.02

Value of group co-effective for collaborative author's publications is listed in Table 5. the 5405 citing articles of the various economic thesis of Goa University published during the year 1996 to 2019, there was highest 54.39% citation were written by the single authors, 45.60% belonged to co-author's. Therefore, the extent of collaboration was not much popular among the economists. The value of the group coefficient was only 2.19. The degree of collaboration among the co-authors was a minimum 0.02 in citations written by more than three authors and a maximum 0.34 in two author publications. Thus, among the collaborative publications, the authors mainly prefer to work jointly.

It is also discovered that the degree of author collaboration in these Economic Theses is 0.45. The collaborative index witnessed 0.83, a little higher than the degree of the author's collaboration during the period of analysis.

**Table No. 6
Place wise Distribution of Authors and Publishers**

Indian Authors	2773 (39.47)
Foreign Authors	4251 (60.52)
Total	7024
Publisher wise Distribution of Publications	
Indian Publishers	1944 (42.65)
Foreign Publishers	2614 (57.34)
Total	4558

Table 6 exhibits the nationality of the authors of different publications referred to in the economic thesis produced by the Goa University. 60.52% of the authors referred to foreign author's books, book chapters, articles or any other reference material in their thesis. It shows that economists are more interested in the foreign author's write-up rather than their Indian authors. Same as in the case of Publishers also Indian publisher books or journals or any other reference material used during the study period is very less i.e.:- 42.65% compared to foreign publisher reference material 57.34% throughout the research. It is observed from this table that, research scholars have made up their mind that, foreign authored publications and foreign country publisher books are more worthy than the Indian authors write up.

Table No. 7
Preferred Source of Journals

Rank	Title of the Journals	Total No. of Citations	Zones
1	Economic and Political Weekly (EPW)	134	Zone 1 (367 Citations)
2	Indian Journal of Industrial Relations	86	
3	Indian Journal of Labour Economics	58	
4	World Economy	45	
5	Journal of Development Economics	44	
6	American Economic Review	35	Zone 2 (357 Citations)
7	Management and Labor Studies	34	
8	Indian Economic Journal	33	
9	Economic Journal	28	
10	Journal of Political Economy	24	
	World Development	24	
11	Econometrica	23	
12	Management and Change	21	
13	Journal of International Economics	16	
14	Indian Journal of Commerce	14	
15	Journal of International Business Studies	13	
16	International Marketing Review	12	
	Psychological Studies	12	
17	World Bank Economic Review	11	
	3 journals having each 10 citations	30	Zone 3 (361 Citations)
	3 journals having each 9 citations	27	
	2 journals having each 8 citations	16	
	Economic Letters	7	
	4 Journals having each 6 citations	24	
	3 journals having each 5 citations	15	

	9 journals having each 4 citations	36	
	12 journals having each 3 citations	36	
	44 journals having each 2 citations	88	
	139 journals having each 1 citation	139	

Table 7A Bradford's Law of Scattering

Zones	Total Number		Percentage	Cumulative Number	
	Citations	Journals		Citations	Journals
1	367	05	3.38	367	05
2	357	20	32.90	724	25
3	361	214	33.27	1085	239

All the 239 journals are arranged according to their decreasing order of citation frequency and divided into three zones so that, each zone contains according to their decreasing frequency of citations and divided into three zones so that, each zone contains an approximately equal number of citations. The scattering of the citation according to Bradford's zones is represented in above table 7A.

Bradford's law serves as general guidelines to librarians in deciding the number of primary academic journals in the related subject field.

Zone-1: Core journals in economics subject, is relatively few in number but they have produced nearly one-third of all the citations.

Zone-2: contained a little less number of journal citations but published in more number of journals compared to zone one journals.

Zone-3: In this zone, the similar amount of citations as in the second zone, but the still greater number of journals compared to zone two journals.

It is known from the above table 7 that, there are 5 journals in the first zone which are having primary and most productive journals dedicated to economics subject by sharing 3.38% of the total cited journals. The second zone is represented by 20 journals and shared 32.90% of the total journals in the group, and the third zone is represented by 214 journals and shares slightly more compared to the second zone i.e.- 33.27% of the total cited journals. According to Bradford, the zones identified will form an approximately geometric series in the form of 1:n: n². The relationship of each zone in the current paper is in the ratio of 5:25:239. The above table shows the same results and hence the journal data fits well with Bradford's Law of Scattering.

Table No. 8 Top Ten Journals in Economics

Title of the Journals	Total No. of Citations	Percentage	h-index	Country of Origin
Economic and Political weekly	134	24.58	54	India
Journal of Industrial Relations	86	15.77	29	USA
The Indian Journal of labour Economics	58	10.64	13	Switzerland
World Economy	45	8.25	68	UK
Journal of Development Economics	44	8.07	142	Netherlands
American Economic Review	35	6.42	297	USA
management and Labor Studies	34	6.23	-	-
The Indian Economic Journal	33	6.05	-	-
the Economic Journal	28	5.13	160	USA
World Development	24	4.40	175	UK
Journal of Political Economy	24	4.40	186	USA

Table 8 discloses the top ten journals in economics subject. In this top ten list of journals, Economic and Political Weekly journal published more than 24% of the total top ten journals followed by 16% and 11% publications are coming from Journal of Industrial Relations and The Indian Journal of Labour Economics respectively. These top three journals got more than 50% of the citations.

49.54 is the average number of citations during the study period and only the top three journals are having more than average citations i.e.:- Economic and Political Weekly (EPW), Journal of Industrial Relations and Indian Journal of Labour Economics.

Among the listed top ten journals, 297 is the highest h-index in this list got by the American Economic Review and the lowest is 13 of the Indian Journal of Labour Economics. The average h-index of these journals is 124.8. These top ten journals are published from different countries of the world, by publishing 4 journals the United States of America got first place in the top ten journals list.

Conclusion:

The study can be concluded that citations are not provided as per the standard format styles. The ranking of the core journals will help the researchers to choose the journals of greater importance for their study and for the librarians to select those journals for the library. The Indian Journal of Economic and political weekly is the highest cited journal.

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