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Citation Analysis Of Library And Information Science Doctoral Theses Submitted At Aligarh Muslim University, Aligarh

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ABSTRACT

Aligarh Muslim University (AMU), Aligarh has a rich history in library science education, with the Department of Library Science offering various degrees. This study focuses on the citation patterns and obsolescence of doctoral theses from the Department of Library and Information Science, AMU. It examines the distribution of citations across journals and books and their half-life. The study analyzed 9,882 citations of 51 doctoral theses. The findings showed that journals are the most cited source (55.71%), followed by books (20.23%), online resources (10.06%), and other document types. The half-life of journal citations is 10.27 years. This study provides information about citation behavior and obsolescence patterns in library and information science research at the Aligarh Muslim University, and highlights the important role of journals and the lasting impact of books.

Keywords: Citation Analysis; Scholarly Influence; Research Trends; Obsolescence; Half-life of Citations; Doctoral Theses; Journals; Books; Online Resources; Conference Documents; Cumulative Citations

INTRODUCTION

Aligarh Muslim University (AMU), Aligarh is a prestigious institution in Aligarh, Uttar Pradesh, India. The Department of Library Science was established by the Aligarh Muslim University in the year 1950-51 with the introduction of 'Certificate Course in Library Science'. Full-time lecturers were appointed for 'Bachelor of Library Science' (1958-59) and 'Master of Library Science' (1970-71). In 1986-87, the B.A. level faculties of Arts and Social Sciences included Library Science as an auxiliary subject. M.Phil./Ph.D. programme has been started by the department from 1990-91 for further research and development.

A valuable area to be researched is citation analysis of PhD Theses which can provide information on scholarly influence, research trends and impact. This can help us to know how well they have influenced knowledge and which sources have had a greater influence on them in relation to their academic project.

When something becomes outdated or irrelevant over time it is said to be obsolescent. Within Library & Information Science it refers to the decrease in relevance of academic resources such as books journals articles as new research emerges. Obsolescence is contributed to by quick technological advancements, new knowledge, paradigm shifts or changes in theories, constant updating of textbooks and reference materials and limited lifespan of some types of information like data, statistics and news articles. This leads to the decline in existing literature as well as its relevance within a given discipline.

This research examines the relevance and longevity of academic materials within the rapidly evolving academic landscape. The findings will be shared with the library community to inform resource management strategies, support research endeavors, and contribute to ongoing discussions on the impact of scholarly

work.

1 NATURE OF THE STUDY

The study confines itself to analyzing the patterns of citation used and degrees of obsolescence found within doctoral dissertations from the Department of Library and Information Science at the Aligarh Muslim University, Aligarh. It covers theses available on Shodhganga until February 2022, including a total of 51 theses and 9,882 citations.

2 SCOPE OF THE STUDY

This paper only examines age distribution and half-life calculations for journal and book citations. The aim of this study is to uncover how different types of academic documents become more or less relevant over time by analyzing their citation dynamics.

3 OBJECTIVE

The present investigation has been conducted with the following objectives:

i. To find out total citations available in Doctoral Thesis in Aligarh Muslim University (AMU), Aligarh;
ii. To Classify citations based on document type;
iii. To find out the relevance and longevity of resources;
iv. To Calculate the half-life of Journal citations to determine the obsolescence rate;
v. To Calculate the half-life of Book citations to determine the obsolescence rate;
vi. To evaluate the scientific impact of sources by analyzing frequency and age distribution.

4 METHODOLOGY

For this research, all citations from the references at the end of chapters and footnotes in 51 PhD theses from Library and Information Science Department at Aligarh Muslim University available on Shodhganga until February 2022 were studied. A total of 9882 citations were received from these, of which 5505 were from journals and 1999 from books. A comprehensive database was created using MS Excel to capture these citation details that facilitated further analysis as well as generation of tables. The age of each citation was determined by comparing the publication date of the cited document to the submission year of the cited thesis. To calculate the half-life of journal literature, a graph was constructed showing duration on the X-axis and the cumulative number of citations on the Y-axis.

5 LITERATURE REVIEW

Gilyarevskii et al., (2021) study examines the half-lives of journals from 1997 to 2018, focusing on those in the Journal Citation Reports (JCR) for both Science and Social Sciences. It highlights the positive values of Cited Half-Life (CdHL) and Citing Half-Life (CgHL) across various journals, indicating their relevance over time. The research shows that half-life values vary by scientific discipline, with social sciences and humanities generally exhibiting higher values than hard sciences. A correlation is established between half-life values and other bibliometric indicators, such as journal impact factors and the number of citable items. **Gilyarevskii et al., (2020)** explores the dynamics of journal indicators, specifically the Cited Half-life (CdHL) and Citing Half-life (CgHL). The study investigates the behavior of Cited Half-life (CdHL) and Citing Half-life (CgHL) indicators in Journal Citation Reports (JCR) from 1997 to 2018. The authors developed methods to determine weighted average values for these indicators, clarifying previous hypotheses about journal distribution by half-life periods. The results showed a positive trend in half-life indicators, particularly for journals consistently appearing in the JCR. This suggests that permanence in the JCR correlates with more stable citation dynamics. The findings have significant implications for researchers and editors, helping assess the longevity and impact of academic journals and guide decisions on publication and citation metrics. **Libkind et al., (2020)** explores the use of bibliometric indicators, citing half-life and citing half-life, and their limitations in assessing journal impact over extended periods. The authors highlight the need for improved methodologies to estimate half-life indicators. The paper proposes strategies to estimate half-life indicators more effectively, comparing existing methodologies with innovative approaches. It also emphasizes the importance of analyzing half-life indicators by subject categories, considering

how different academic disciplines influence citation behaviors. The paper's findings will be based on a comprehensive review of existing research on half-life indicators, challenges with JCR data, methodological advancements, subject category analysis, and the implications of bibliometric indicators in academia. **Arao et al., (2017)** analyzed the half-life and obsolescence of literature in the Literature Science area using bibliometric analysis from dissertations and theses from the Post-Graduate Program in Literature Science at the Federal University of Rio de Janeiro. The research found that master's and doctoral students prefer books as their primary research source, highlighting the importance of traditional literature. The study found that literature in this field remains relevant for an extended period, with a relatively long half-life of 14 years for 2007/2008 and 15 years for 2011/2012. The study also highlighted the increasing use of digital resources in literature surveys. **Davis & Cochran, (2015)** examines citation practices over time, focusing on the age of cited materials in scholarly literature. The study analyzed data from 13,455 journals from 1997 to 2013, finding a mean cited half-life of 6.5 years, with an increase of 0.13 years per annum. The paper discusses technological advancements, cultural and structural factors, and the concept of "obliteration by incorporation," which refers to older contributions becoming fully integrated into the literature, reducing the need for further citation. The study highlights the interplay of technological, cultural, and structural factors influencing citation behaviors in scholarly work.

6 DATA ANALYSIS

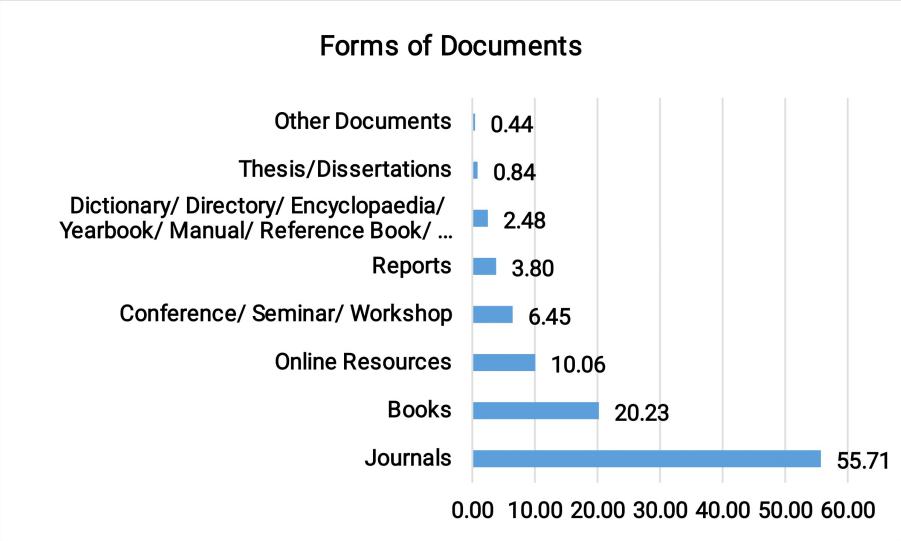
6.1 Distribution of Cited Documents

Table 1 and Figure 1 provide detailed information about the citation patterns of different types of documents in Aligarh Muslim University, Aligarh. Journals are the most cited form of documents, with a total of 5,505 citations, accounting for 55.71% of the cumulative citations. This cited number shows that journals are more valuable as a reliable source of information. While books rank second in terms of citations with a total of 1,999 citations, accounting for 20.23% of the cumulative citations. This figure here shows that books are cited less frequently than journals. The third most cited category is online resources, with 994 citations, contributing 10.06% to the cumulative citations. This shows the increasing reliance on internet-based sources for research and information. Thus conference/seminar/workshop documents have been cited 637 times, representing 6.45% of the cumulative citations, indicating that presentations and materials from conferences and seminars are valuable in supporting research or providing reference information. Reports, such as research reports or government reports, have 376 citations, contributing 3.80% to the cumulative citations. While reference materials, including dictionaries, encyclopaedias, yearbooks and manuals, have 245 citations, contributing 2.48% to the cumulative citations, indicating that these sources are less frequently used but are still valuable for providing background information or definitions. Similarly, theses/dissertations have been cited 83 times, representing only 0.84% of the cumulative citations, indicating that these works are not cited frequently, possibly due to their specific focus or limited availability. Finally, other documents, which include various types not specified in the previous categories, have 43 citations, contributing 0.44% of the cumulative citations. These documents include unpublished work or non-traditional sources.

Table 1 Forms of Documents

Forms of Documents	Citations	Cumulative Citations	Citations %
Journals	5505	5505	55.71
Books	1999	7504	20.23
Online Resources	994	8498	10.06
Conference/ Seminar/ Workshop	637	9135	6.45
Reports	376	9511	3.80
Dictionary/ Directory/ Encyclopaedia/ Yearbook/ Manual/ Reference Book/ Standard	245	9756	2.48
Thesis/Dissertations	83	9839	0.84
Other Documents	43	9882	0.44
Total	**9882**		**100**

Figure 1 Forms of Documents



6.2 Obsolescence/ Half-Life of Journals

The formula for calculating the half-life of documents is given by Sen, (1999) is used for the analysis. The half-life is an integer number consisting of whole years and fractions of years, such as 9.921 and can be represented as

$$T=Y+y \qquad (1)$$

Where Y is the total number of years and y is the year fraction. This fraction of the year can be determined with the formula

$$y=\frac{a-b}{c-b}$$

Here, a represents half (50%) of all citations, b represents the cumulative total citations for the sub-critical year, and c represents the cumulative total citations of the critical year. The next year of sub-critical year is the critical year. Adding the value of y in equation (1), we get

$$T = Y + \frac{a-b}{c-b} \qquad (2)$$

Therefore, Equation (2) is the formula for determining the half-life.

Table 2 and Figure 2 present data on the age distribution of journal citations in 51 doctoral theses awarded by the Department of Library and Information Science at Aligarh Muslim University, Aligarh available on Shodhganga as of February 2022. The data reveal that out of a total of 5505 journal citations, 1221 (22.18%) citations were up to 5 years old, 1458 (26.48%) citations were between 6 to 10 years old, and 1297 (23.56%) citations were between 11 to 15 years old. Additionally, 603 (10.95%) citations were between 16 to 20 years old, 301 (5.46%) citations were between 21 to 25 years old, and 168 (3.05%) citations were between 26 to 30 years old. Furthermore, 90 (1.63%) citations were between 31 to 35 years old, 62 (1.13%) citations were between 36 to 40 years old, 46 (0.84%) citations were between 41 to 45 years old, and 36 (0.65%) citations were between 46 to 50 years old. The table also indicates that out of the total citations, 83 (1.5%) citations were older than 50 years, and the half-life of journal citations at Aligarh Muslim University, Aligarh was calculated as 10.27 years.

$$T = Y + \frac{a-b}{c-b}$$

$$a=\frac{5505}{2}$$

$$=2752.5$$

Say= 2753

Y=10

b=2679

c=2954

$$T=10+\frac{2753-2679}{2954-2679}$$

= 10+0.269

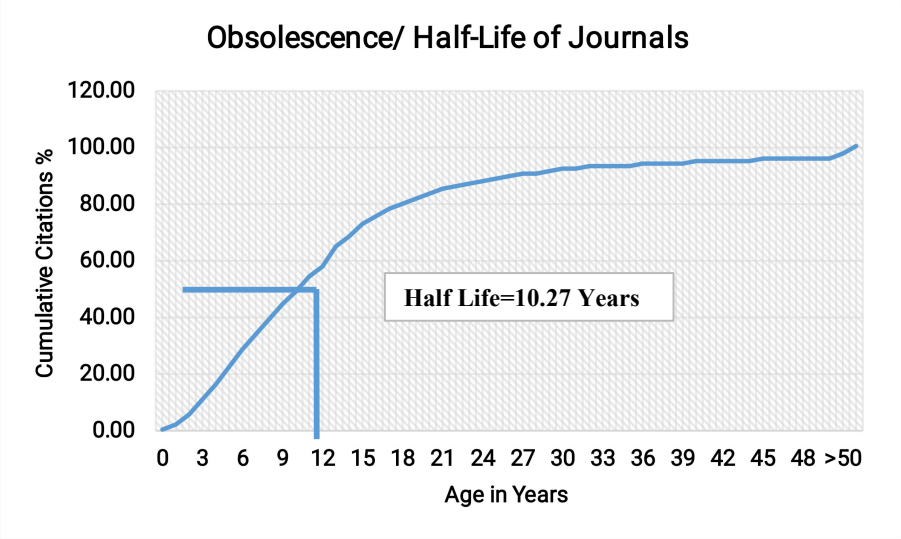
=10.27

Table 2 Obsolescence/ Half-Life of Journals

Age in Years	No. of Citations	% of Citations	Cumulative Citations	Cumulative %
0	19	0.35	19	0.35
1	94	1.71	113	2.05
2	197	3.58	310	5.63
3	253	4.60	563	10.23
4	308	5.59	871	15.82
5	350	6.36	1221	22.18
6	336	6.10	1557	28.28
7	288	5.23	1845	33.51
8	279	5.07	2124	38.58
9	294	5.34	2418	43.92
10	**261**	**4.74**	**2679**	**48.66**
11	**275**	**5.00**	**2954**	**53.66**
12	219	3.98	3173	57.64
13	389	7.07	3562	64.70
14	206	3.74	3768	68.45
15	208	3.78	3976	72.23
16	166	3.02	4142	75.24
17	130	2.36	4272	77.60
18	111	2.02	4383	79.62
19	97	1.76	4480	81.38
20	99	1.80	4579	83.18
21	97	1.76	4676	84.94
22	54	0.98	4730	85.92
23	59	1.07	4789	86.99
24	55	1.00	4844	87.99
25	36	0.65	4880	88.65
26	44	0.80	4924	89.45
27	35	0.64	4959	90.08
28	35	0.64	4994	90.72
29	29	0.53	5023	91.24

30	25	0.45	5048	91.70
31	30	0.54	5078	92.24
32	21	0.38	5099	92.62
33	17	0.31	5116	92.93
34	12	0.22	5128	93.15
35	10	0.18	5138	93.33
36	11	0.20	5149	93.53
37	15	0.27	5164	93.81
38	10	0.18	5174	93.99
39	12	0.22	5186	94.21
40	14	0.25	5200	94.46
41	6	0.11	5206	94.57
42	12	0.22	5218	94.79
43	10	0.18	5228	94.97
44	11	0.20	5239	95.17
45	7	0.13	5246	95.30
46	8	0.15	5254	95.44
47	8	0.15	5262	95.59
48	11	0.20	5273	95.79
49	6	0.11	5279	95.89
50	3	0.05	5282	95.95
>50	83	1.51	5365	97.46
ND	140	2.54	5505	100.00
	5505	100.00		

Figure 2 Obsolescence/ Half-Life of Journals



6.3 Obsolescence/ Half-Life of Books

Table 3 and Figure 3 present data on the age distribution of journal citations in 51 doctoral theses provided by the Department of Library and Information Science at Aligarh Muslim University, Aligarh which were available

on Shodhganga as of February 2022. The data shows that out of a total of 1999 book citations, 216 (10.81%) citations were from books up to 5 years old, while 345 (17.26%) citations were between 6 to 10 years old, and 356 (17.81%) citations were between 11 to 15 years old. Additionally, 250 (12.51%) citations were between 16 to 20 years old, while 52 (7.60%) citations were between 21 to 25 years old, and 141 (7.05%) citations were between 26 to 30 years old. Similarly, 95 (4.75%) citations were from books older between 31 to 35 years, while 73 (3.65%) citations were from books older between 36 to 40 years, 78 (3.90%) citations were from books older between 41 to 45 years, and 62 (3.10%) citations were from books older between 46 to 50 years. The table also shows that 149 (7.45%) citations were from books older than 50 years. The half-life of book citations in Aligarh Muslim University, Aligarh was 16.42 years.

$$T = Y + \frac{a-b}{c-b}$$

$$a = \frac{1999}{2}$$

$$=999.5$$

Say= 1000

Y=16

b=978

c=1030

$$T=16+\frac{1000-978}{1030-978}$$

$$= 16+0.423$$

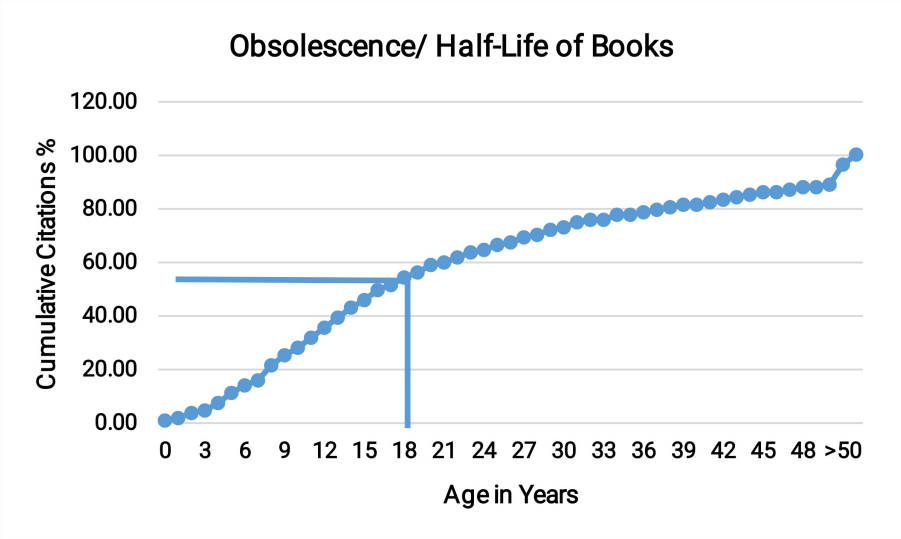
$$=16.27$$

Table 3 Obsolescence/ Half-Life of Books

Age in Years	No. of Citations	% of Citations	Cumulative Citations	Cumulative %
0	4	0.20	4	0.20
1	25	1.25	29	1.45
2	28	1.40	57	2.85
3	35	1.75	92	4.60
4	54	2.70	146	7.30
5	70	3.50	216	10.81
6	59	2.95	275	13.76
7	41	2.05	316	15.81
8	104	5.20	420	21.01
9	75	3.75	495	24.76
10	66	3.30	561	28.06
11	76	3.80	637	31.87
12	67	3.35	704	35.22
13	80	4.00	784	39.22
14	72	3.60	856	42.82
15	61	3.05	917	45.87

16	**61**	**3.05**	**978**	**48.92**
17	**52**	**2.60**	**1030**	**51.53**
18	48	2.40	1078	53.93
19	32	1.60	1110	55.53
20	57	2.85	1167	58.38
21	31	1.55	1198	59.93
22	36	1.80	1234	61.73
23	33	1.65	1267	63.38
24	24	1.20	1291	64.58
25	28	1.40	1319	65.98
26	29	1.45	1348	67.43
27	29	1.45	1377	68.88
28	23	1.15	1400	70.04
29	36	1.80	1436	71.84
30	24	1.20	1460	73.04
31	21	1.05	1481	74.09
32	23	1.15	1504	75.24
33	13	0.65	1517	75.89
34	23	1.15	1540	77.04
35	15	0.75	1555	77.79
36	16	0.80	1571	78.59
37	16	0.80	1587	79.39
38	10	0.50	1597	79.89
39	17	0.85	1614	80.74
40	14	0.70	1628	81.44
41	9	0.45	1637	81.89
42	16	0.80	1653	82.69
43	17	0.85	1670	83.54
44	22	1.10	1692	84.64
45	14	0.70	1706	85.34
46	15	0.75	1721	86.09
47	19	0.95	1740	87.04
48	10	0.50	1750	87.54
49	10	0.50	1760	88.04
50	8	0.40	1768	88.44
>50	149	7.45	1917	95.90
ND	82	4.10	1999	100.00
	1999	**100.00**		

Figure 2 Obsolescence/ Half-Life of Books



7 FINDINGS

The study found that journals received the highest number of citations at 5,505 (55.71%), whereas books and online resources were cited 1,999 (20.23%) and 994 (10.06%) times, respectively. Conference, seminar and workshop materials were cited 637 (6.45%) times, whereas reports and reference materials were cited 376 (3.80%) and 245 (2.48%) times, respectively. Theses and dissertations were cited 83 (0.84%) times while other documents were cited 43 (0.44%) times. The half-life of journal citations is 10.27 years. This means that half of the journal citations are from sources published within the last 10.27 years. Book citations have a half-life of 16.42 years. This implies that half the book citations are from sources published within the last 16.42 years.

8 DISCUSSION

In the academic research of AMU's Library and Information Science program, a key finding is that journal articles are trusted more than other reference materials, which shows how important journals are for providing up-to-date information. Books have a longer shelf life than journal articles, as indicated by their relatively long half-life. In addition, this data shows an increase in the use of online materials, which reflects the growth of digital information resources.

9 CONCLUSION

The study provides an insight into citation behaviors and obsolescence patterns exhibited by PhD thesis works done under library and information science at Aligarh Muslim University, Aligarh. This is evident from high prevalence of citations made to journals hence proving their importance for scholarly communication. The half-life of references which has been proven by these results help assess its durability and relevancy over time among academic writings or papers pertaining to it. Thus, these findings can be used by universities or researchers towards evaluating their own outputs on quality and impact.

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