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Bibliometric Analysis of Library Science Periodicals (2021–2023): Validating Bradford's Law

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ABSTRACT

Using the Bradford Law, this study analyzes the productivity of citations in the Journal of Library and Information Science Periodicals published in 2021-2023. The purpose of this study is to identify core journals that are frequently cited in scientific articles. Data was taken from the reference list containing 939 citations of articles published during the study period. The results showed that the Journal of Library and Information Science was the most frequently cited core journal, with the division of journals into three zones based on citation frequency. The Leimkuhler model was used to verify the validity of the Bradford Law in citation distribution. This study concludes that the Bradford Law is applicable and helpful in identifying core journals and citation patterns, which helps to understand citation behavior in the library and information science field. In addition, the results show that the Library and Information Science Periodical Journal plays a vital role in this discipline, as it is consistently the primary source of citations. The methodology used proved the effectiveness of the Bradford Law in analyzing journal productivity and its potential in bibliometric studies.

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1. INTRODUCTION

Journals play a fundamental role in disseminating new knowledge and the latest developments within various disciplines (Garg et al., 2018). Among various types of periodicals, scientific journals serve as the most critical medium for formal scientific communication and the permanent archive of empirical and logical thought (Sulistyo-Basuki, 2002; Suryoputro, 2012). However, the rapid growth of these publications necessitates a systematic method to evaluate their impact and relevance, especially in mapping the evolving landscape of information science (Onyancha, 2020). Therefore, conducting a citation analysis becomes imperative to assess the productivity and significance of the journals most frequently referenced by researchers.

Citation analysis is defined as the mathematical evaluation of references, which serves as an essential component of scientific communication (Tunga, 2021). Furthermore, the analysis of cited papers has become an established practice in scholarly research to identify core documents and the complex relationships between citing and cited works, where the status and citation count of a paper significantly influence how researchers engage with and assign intellectual weight to that work (Tunga & Biswas, 2023; Teplitskiy et al., 2022). In addition to uncovering these relationships, this method facilitates the information-gathering process by helping researchers locate pivotal sources within specific scientific communities (Gerow et al., 2018; Li et al., 2019; Jurgens et al., 2018). Consequently, this methodology is increasingly recognized as a vital tool for navigating the rapidly expanding volume of scholarly literature, ensuring that researchers maintain focus on high-impact and foundational studies (Bhardwaj, 2017; Rousseau, Egghe, & Guns, 2018).

Citations acknowledge previous work and track the development of ideas (Pramiastuti et al., 2020; Garfield, 2015), thereby enhancing a publication's credibility and academic value (Sofia & Usiono, 2025; Suhariyanti et al., 2025). According to Harrod's Library Glossary (1990), a citation is a formal reference pointing to the original publication where a text was issued. Building upon these individual references, citation analysis emerges as a systematic method to calculate and evaluate the frequency of these citations (Lasa, 1998). As one of the most frequently used bibliometric methods, citation analysis allows researchers to measure the impact of an article or author on the academic community by quantifying how often their work is cited (Bornmann et al., 2014). In practice, this method has been extensively utilized to evaluate scholarly productivity, research trends, and citation behavior within the library and information science community. By analyzing various metadata elements including authorship patterns and citation frequencies bibliometric studies provide critical insights into the visibility and reach of scholarly work (Prasad & Chintha, 2013; Nuryadin, Rusli, & Sumiati, 2021).

While previous bibliometric studies have extensively mapped the landscape of information science using global databases, there is a notable research gap in understanding the citation dynamics of specific regional journals that act as scholarly barometers in developing nations. Specifically, the *Berkala Ilmu Perpustakaan dan Informasi* (BIP) journal represents a critical node in Indonesian library science, yet its citation patterns and intellectual influence have not been empirically validated through rigorous mathematical frameworks. The novelty of this research lies in its specific focus on BIP during its transition toward greater international visibility between 2021 and 2023. Unlike routine applications of Bradford's Law that merely categorize journals, this study provides a dual-layer contribution: first, it explicitly identifies the "core" intellectual sources that drive Indonesian library science research, and second, it employs the Leimkuhler Model to mathematically validate the stability of these citation distributions in the digital era.

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In the context of library and information science, citation analysis is a vital tool for identifying core journals that harbor influential research (Yeoh & Kaur, 2008). Beyond its primary role in identifying key publications, this analysis provides a strategic framework for libraries to manage limited resources by prioritizing the acquisition of frequently referenced titles (Nurul Hayati, 2016). From a broader perspective, however, citation studies do not only inform budgetary decisions but also serve as a foundation for collection development policies and the evaluation of faculty research impact. Furthermore, they allow information professionals to map the evolution of a discipline, revealing emerging trends and shifting paradigms within the field (Siddique & Mahmood, 2020: Chaurasia & Chavan, 2020). As demonstrated in a thematic analysis covering twenty-five years of literature, citation analysis remains a dominant research area that enables a deeper understanding of the intellectual structure and growth of the library and information science field (Siddique & Mahmood, 2020). Consequently, understanding these citation patterns is essential for maintaining the relevance and quality of a library's scientific collection (Pramiastuti et al., 2020).

Various journals have been explored to understand citation patterns to identify core journals that are often referred to. Research by (Rahayu & Idhani, (2021) sources of information cited in Khizanah Al Hikmah journal articles are included in the category of the latest sources of information, namely from the last five years. Research by Fauzi & Purwaningtyas, (2023) IQRA journals 2017 - 2021 have a relationship with each other in which it was found that the most frequently researched topic was the library. Nashihuddin, (2020) research shows that JME is the core journal where the most cited JME article in 2018 - 2019 is the Journal on Mathematics Education. Research by (Madhugiri et al., 2013) the most cited journals in the subspecialty of neurosurgery between North America and European neurosurgery are similar among the top five core journals in both groups. Research Anugrah et al., (2018) This result shows that the Yuridika Journal is a core literature in the subject of law and a crucial scientific communication tool. Testing of the Leimkuhler model was also conducted to validate the results, and it was concluded that the Bradford Law was acceptable in this case, confirming the relevance of the method in bibliometric studies of journal productivity. This shows that citation analysis is important for finding the main journals (core journals) in Library and Information Science journals.

The analysis of both printed and electronic literature can be conducted through mathematical methods, a field of study formally known as bibliometric analysis. This discipline applies statistical techniques to evaluate authorship and publication patterns (Puspa & Endarwati, 2021). A key instrument within bibliometrics is Bradford's Law, which was first introduced by Samuel C. Bradford (Brookes, 1985). This law provides a framework for collection development and information retrieval by describing the distribution of literature within a specific field (Hjørland & Nicolaisen, 2005). Bradford's Law operates on the principle that journals in any given field coexist within three expanding zones. In this model, Zone 1 represents a small group of highly productive 'core' journals. These are followed by Zone 2 and Zone 3, which contain progressively larger numbers of journals that produce a diminishing frequency of relevant articles. By categorizing journals into these three interrelated zones, researchers can identify which publications are most essential to a discipline (Madhugiri et al., 2013; Narbaev & Amirbekova, 2026; Langfeldt et al., 2021).

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This research specifically focuses on the Journal Berkala Ilmu Perpustakaan dan Informasi (BIP), a scientific publication managed by the Gadjah Mada University Library. The journal aims to disseminate library and information science research results and conceptual ideas, covering topics from library policy analysis to information literacy (Berkala Ilmu Perpustakaan dan Informasi, 2024). Despite its significance in the development of Indonesian libraries and archives, there has been a lack of in-depth studies regarding its citation patterns. Therefore, this study employs the Bradford Law as a systematic method to evaluate the journal's contribution to the scientific literature. By identifying core sources and reference distributions, this analysis seeks to reveal the impact of BIP within the broader scholarly communication landscape.

2. METHODS

2.1. Research Design and Unit of Analysis

This study employs a quantitative bibliometric approach to calculate the productivity of the selected journals. The primary object of this research is the journal *Berkala Ilmu Perpustakaan dan Informasi* (BIP), published by the Gadjah Mada University Library throughout the 2021–2023 period.

The unit of analysis is specifically limited to journal articles cited within the papers published during this timeframe. While the initial data collection yielded a total of 1,658 citations, a rigorous filtering process was conducted to ensure the validity of Bradford's Law. This process involved excluding 719 non-periodical references, such as books, websites, and reports, to arrive at a final population of 939 journal citations. Each citation was recorded to determine its frequency, and journals were ranked by their citation counts to identify the "core journals" within the discipline.

2.2. Mathematical Framework: Bradford's Law

The Bradford Law is used to analyze the distribution of citations by dividing journals into three zones based on citation frequency. Bradford's law states that most citations come from a few core journals (Zone 1), while journals with fewer citations fall into Zone 2 and Zone 3. This division follows a distribution pattern of $1:n:n^2$, where n is a multiplier showing the ratio of journals between each zone.

2.2.1. Bradford Multiplier (k)

$k = (e^{\gamma} Y_m)^{1/p}$

Description:

γ = 0,5772 (Euler's number)

e = 2,718 (constan)

e^{γ} = 1,781

p = 3 zona

Y_m = highest frequency article (748)

Then look for r_0, r_0 is the journal number in the first zone r_0

r_0 = T(k - 1) / (k^p-1) where T = cumulative total of journals

= 106 (11,003 - 1) / ($11{,}003^3$ - 1)

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= 1060,318 / 1331,188

= 0,8

Furthermore, the journal value in each zone can be calculated as follows:

$r_0 = r_0$ x 1 = 0,8 = 1

$r_1 = r_0$ x k = 0,8 x 11,003 = 8,8 = 9

$r_2 = r_0$ x k^2 = 0,8 x $11,003^2$ = 96,85 = 97

2.2.2. Zone Calculation (r_0)

To determine the number of journals in the first zone (r_o), the following formula is applied:

$$r_o = \frac{T(k-1)}{(k^p - 1)}$$

Where T represents the cumulative total of journals. Based on the dataset:

$$r_o = \frac{106(11.003 - 1)}{(11.003^3 - 1)}$$

$$r_o = \frac{1060.318}{1331.188} \approx 0.8$$

Furthermore, the number of journals in each zone can be calculated as follows:

Zone 1 (r_1): $r_o \times 1 = 0.8 \approx 1$
Zone 2 (r_2): $r_o \times k = 0.8 \times 11.003 = 8.8 \approx 9$
Zone 3 (r_3): $r_o \times k^2 = 0.8 \times 11.003^2 = 96.85 \approx 97$

2.3. Validation via Leimkuhler Model

The results are further validated using the Leimkuhler model to confirm whether the citation distribution strictly conforms to the Bradford Law. This involves calculating constants a and b based on the cumulative number of articles cited by journals in each zone. The final mapping provides a clear representation of core journals and the citation distribution patterns within the library and information science field during the study period

3. RESULTS AND DISCUSSION

Berkala Ilmu Perpustakaan dan Informasi, established in 2003, is a registered journal with e-ISSN 2477-0361 and p-ISSN 1693-413X. This periodical journal is managed by the Library and Archives of Universitas Gadjah Mada. The publication focuses on the research process within the fields of library and information science, documentation, and archives,

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emphasizing research findings and their practical applications. Berkala Ilmu Perpustakaan dan Informasi is indexed by various national and international agencies, such as the Indonesian Scientific Journal Database (ISJD), Directory of Open Access Journals (DOAJ), Google Scholar, SINTA, and Dimensions. The journal is published twice yearly, specifically in June and December.

During its publication, Berkala Ilmu Perpustakaan dan Informasi has increased the number of articles published in each volume. The current volume publishes ten articles, which will remain the same in subsequent issues. The process of increasing the number of articles can be seen as follows: Volume 11, No 1, 2015 (5 articles), Volume 11, No 2, 2015 (7 articles), Volume 12, No 1, 2016 (9 articles), Volume 12, No 2, 2016 (10 articles), Volume 13, No 1, 2017 (10 articles), Volume 18, No 1, 2022 to Volume 19, No 2, 2023 (12 articles), and to Volume 20, No 1 (15 articles). In this case, the author discusses publications from 2021 to 2023, totaling 68 articles.

3.1. Journal berkala ilmu perpustakaan dan informasi 2021-2023 citation before filtering

Table 1. Total Citations Before Filtering

Year	Volumes	Many articles	Total Citations
2021	Vol 17 No 2 (2021)	10	505
	Vol 17 No 1 (2021)	10	
2022	Vol 18 No 2 (2022)	12	594
	Vol 18 No 1 (2022)	12	
2023	Vol 19 No 2 (2023)	12	559
	Vol 19 No 1 (2023)	12	
	Total Citations		**1658**

Source: Author's Research, 2025

From Table 1 shows the total citations from several volumes and journal numbers from 2021 to 2023 before filtering. In 2021, there were two volumes, namely Volume 17 Number 1 with ten articles and Volume 17 Number 2 with ten articles, which resulted in a total of 505 citations. For 2022, the journal published Volume 18 Number 1 and Volume 18 Number 2, each with 12 articles, and the total citations reached 594. In 2023, there were Volume 19 Number 1 and Volume 19 Number 2, also with 12 articles each, resulting in 559 citations. Overall, the total number of citations obtained during the period was 1,658.

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3.2 100 List of Most Cited Journals in Berkala Ilmu Perpustakaan dan Informasi After Filtering

Table 2. List of Journals Ilmu Perpustakaan dan Informasi Periodicals After Screening

Number	Journal Name	F
1	Berkala Ilmu Perpustakaan dan Informasi	18
2	Jurnal Ilmu Perpustakaan, Informasi dan Kearsipan	16
3	Springer	14
4	Jurnal Kajian Informasi Dan Perpustakaan	14
5	Journal of Business Research	13
6	Library Philosophy and Practice	9
7	SAGE Publications	8
8	Library & Information Science Research	8
9	Journal of Librarianship and Information Scienc	8
10	Archival Science	8
11	Taylor and Francis	7
12	PLoS ONE	7
13	Media Pustakawan	7
14	Khizanah al-Hikmah : Jurnal Ilmu Perpustakaan, Informasi, dan Kearsipan	7
15	Policy and Society	6
16	Iqra': Jurnal Perpustakaan dan Informasi	6
17	International Journal of Disaster Risk Reduction	6
18	E-Proceeding of Managemen	6
19	VISI PUSTAKA: Buletin Jaringan Informasi Antar Perpustakaan	5
20	Scientometrics	5
21	Perpustakaan Nasional RI	5
22	LIBRIA	5
23	Journal of Documentation	5
24	Journal of Cleaner Production	5
25	Deepublis	5
26	Technological Forecasting and Social Change	4
27	Record and Library Journal	4

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Number	Journal Name	F
28	Pustabiblia. Journal of Library and Information Science	4
29	Public Management Review	4
30	Procedia Computer Science	4
31	Nusantara - Journal of Information and Library Studies	4
32	Natural Hazards	4
33	Jurnal Pustakawan Indonesia,	4
34	Jurnal Administrasi Bisnis	4
35	Journal of Public Administration Research and Theor	4
36	Journal of Physics: Conference Series	4
37	IFLA	4
38	IEEE Access	4
39	Emerald Publishing Limited	4
40	Tik Ilmeu : Jurnal Ilmu Perpustakaan dan Informasi	3
41	Sustainable Leadership and Academic Excellence International Conference	3
42	SSRN Electronic Journal	3
43	Routledge	3
44	ResearchGate	3
45	Library Management	3
46	LIBRARIA: Jurnal Perpustakaa	3
47	Lentera Pustaka: Jurnal Kajian Ilmu Perpustakaan, Informasi dan Kearsipan	3
48	Jurnal Komunikasi: Malaysian Journal of Communication	3
49	Jurnal Iqra	3
50	Jurnal IPI (Ikatan Pustakawan Indonesia)	3
51	Jurnal Imam Bonjol : Kajian Ilmu Informasi Dan Perpustakaan	3
52	Jurnal Ilmu Informasi, Perpustakaan, dan Kearsipan	3
53	Jurnal Dokumentasi Dan Informasi	3
54	Jurnal Adabiya	3
55	JUPITER	3
56	Journal of the Medical Library Association	3
57	Journal of the American Society for Information Science and Technology	3
58	Journal of Library Administration	3
59	Journal of Informetrics	3

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Number	Journal Name	F
60	Journal Information	3
61	The Information Society	3
62	International Conference on Advanced Communication Technology, ICACT	3
63	Information Research	3
64	Informatio: Journal of Library and Information Science	3
65	Environmental Science and Pollution Research	3
66	Cornell University	3
67	Cambridge Dictionary	3
68	Biodiveritas Journal of Biological Diversity	3
69	Bibliotika: Jurnal Kajian Perpustakaan dan Informasi	3
70	ANUVA	3
71	Al Maktabah	3
72	The Library Quarterly: Information, Community, Policy	3
73	Jurnal Sains, Teknologi dan Industri	2
74	The International Journal of Digital Curation	2
75	VINE Journal of Information and Knowledge Management The International Information & Library	2
76	Universiteit Leiden	2
77	Universitas Indonesia	2
78	Unika Atma Jaya Jakarta	2
79	European Journal of Personality	2
80	Tourism Recreation Research	2
81	Tourism Management	2
82	The Reading Teacher	2
83	The MIT Press	2
84	Shaut Al-Maktabah: Jurnal Perpustakaan, Arsip dan IPIS: Jurnal Ilmu Perpustakaan dan Informasi Islam	2
85	School Library Research	2
86	School Libraries Worldwide	2
87	Journal of Librarianship and Scholarly Communication	2
88	Revista de Psicología Del Trabajo y de Las Organizaciones	2
89	Reference Librarian	2
90	Reading Psychology	2

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Number	Journal Name	F
91	The Journal of Technology Transfer	2
92	Pustaka Pelajar	2
93	Publication Library and Information Science	2
94	Public Health	2
95	Procedia Economics and Finance	2
96	International Journal of Library Science and Research (IJLSR)	2
97	Open Access Journal for a Global Sustainable InformationSociety	2
98	Nordic Journal of Library and Information Studies	2
99	New Media and Society Journal	2
100	Monash University Publishing	2

Source: Author's Research, 2025

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From Table 2, the total citations obtained, researchers filter back citations in journals. Based on data processing, it was found that the total number of journals in the Library and Information Science Periodical from 2021-2023 was 939 journal articles. Table 2 presents a list of the 100 most cited journals in the field of Berkala Ilmu perpustakaan dan Informasi, after filtering, with a total citation frequency showing each journal's influence and relevance. The Journal of Berkala Ilmu perpustakaan dan Informasi, topped the list with 18 citations, followed by the Journal of Library, Information and Archival Science with 16 citations. Furthermore, both Springer and the Journal of Information and Library Studies received 14 citations each, confirming the importance of these two publications in the academic community. The Journal of Business Research also showed relevance with 13 citations, reflecting the interaction between business and libraries. Meanwhile, journals such as Library Philosophy and Practice, SAGE Publications, and Archival Science also received significant attention, each with 8 to 9 citations. Overall, this list reflects the substantial contributions of various journals to the development of library and information science, as well as the growing need for research in this area.

3.3. List of journal citation frequency to simplify the process of calculating journal productivity

Table 3. Journal Citation Frequency

Number	Number of Journals	Number of Articles
1	1	748
2	2	116
3	3	33
4	4	14
5	5	7
6	6	4
7	7	4
8	8	4
9	9	1
10	13	1
11	14	2
12	16	1
13	18	1

Source: Author's Research, 2025

Table 3 presents the frequency of journal citations to calculate journal productivity based on the number of cited articles. From the table, it can be seen that one journal has a very significant number of articles with 748 citations. Furthermore, two journals have a total of 116 articles cited, while three journals have 33 articles cited. The frequency of journals continues to decrease as the number of journals increases, where four journals have 14 articles, five journals have seven articles and nine journals only have one cited article. There is also a particular case where journal number 13 has one cited article. Overall, this table

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illustrates the varying distribution of citations among different numbers of journals, with some journals being very productive and others having smaller citation contributions.

This table is important for understanding the level of productivity and relevance of journals in a given field, as well as facilitating analysis of the scientific contribution of each journal based on citation frequency. The number of citations is interesting as raw data for evaluating scientific performance, as it serves as an "indirect measure" that does not require cooperation from the respondent and does not affect the response itself, hence it is non-reactive (Smith, 1981).

3.4. Cumulative Calculation of Journals Berkala Ilmu Perpustakaan dan Informasi

Table 4. Cumulative Journal Calculation

Number	Journals	Articles	Cumulative Number of Journals	Cumulative Number of Articles	Ln Cumulative Journal	Cumulative percentage of journals
1	1	748	1	748	0	79.66
2	2	116	3	864	1.10	92.01
3	3	33	6	897	1.79	95.53
4	4	14	10	911	2.30	97.02
5	5	7	15	918	2.71	97.76
6	6	4	21	922	03.04	98.19
7	7	4	28	926	3.33	98.62
8	8	4	36	930	3.58	99.04
9	9	1	45	931	3.81	99.15
10	13	1	58	932	04.06	99.25
11	14	2	72	934	4.28	99.47
12	16	1	88	935	4.48	99.57
13	18	4	106	939	4.66	100

Source: Author's Research, 2025

Table 4 presents the cumulative count of journals and articles in the library and information science field, illustrating the distribution and contribution of each journal to the total scholarly communication. Based on the refined dataset of 939 journal citations, the first journal recorded 748 articles, representing a dominant 79.66% of the total citations. The second and third journals contributed 116 and 33 articles respectively, bringing the cumulative total to 897 articles with a cumulative rate of 95.53%. As the ranking progresses, the cumulative number of articles reaches the final population of 939 at the 106th journal, achieving a cumulative percentage of 100%. Although the contribution of journals ranked 10th to 13th appears numerically smaller, they remain essential in providing a breadth of specialized knowledge within the field. This analysis demonstrates a high concentration of citations in a small number of core journals, while confirming that every indexed publication—regardless of its individual citation frequency—collectively supports the intellectual structure and development of library and information science research.

To determine the three zones of Berkala Ilmu perpustakaan dan Informasi in 2021-2023, the Bradford multiplier calculation process was carried out using the following mathematical equation.$k = (e^{\gamma}Y_m)^{1/p}$

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Notes:

γ = 0,5772 (Euler's number)

e = 2,718 (constan)

e^{γ} = 1,781

p = 3 zona

Y_m = highest frequency article (748)

Then k = $(1{,}781 \cdot 748)^{1/3}$

= $(1332{,}188)^{1/3}$

= 11,003

Then look for r_0, r_0 is the journal number in the first zoner_0

r_0 = T(k - 1) / (k^p-1 where T = cumulative total of journal

= 106 (11,003 - 1) / ($11{,}003^3$ - 1)

= 1060,318 / 1331,188

= 0,8

Furthermore, the journal value in each zone can be calculated as follows:

$r_0 = r_0$ x 1 = 0,8 = 1

$r_1 = r_0$ x k = 0,8 x 11,003 = 8,8 = 9

$r_2 = r_0$ x k^2 = 0,8 x $11{,}003^2$ = 96,85 = 97

Bradford's Law has been seen as a neutral and objective tool for the selection of the most important sources of information in a field (Hjorland & Nicolaisen, 2005). In a short note in Nature magazine, Brookes (1985) writes that the law "appears to offer the only currently visible means of reducing the quantitative disorder in scientific documentation, information systems, and library services to a more orderly state that can be planned and organized rationally and economically.

Some commentators have suggested using Bradford's law to solve practical problems in journal collection management. The basic idea is to perform a Bradford analysis of journals, i.e., to arrange journals in Bradford zones and identify which ones belong to the core and which do not. Any Bradford analysis involves three steps:

1. Identifying many or all items (usually articles) published in this field;
2. Listing the sources (usually journals) that published those articles (items) in rank order, starting from the source that produced the most items. While maintaining the order of the sources, divide this list into groups (zones) so that the number of items made by each group of sources is approximately equal.

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3.5. Zone division using Bradford's rule

Table 5. Zone Division Results

Zone	Journals	Articles	Bradfrod multiplier	Comparison
Zone 1	1	748	-	-
Zone 2	9	387	9	9
Zone 3	97	203	10,8	97
amount	106	1338	9,9	-

Source: Author's Research, 2025

From the above calculation, the Bradford multiplier is found to be 19.8 (9.9 x 2). After knowing the Bradford multiplier, the next step is to determine the Bradford equation $1 : n : n^2$

$$1 : 9{,}9 : 9{,}9^2$$

$$1 : 9.9 : 98{,}01$$

Verification of Bradford's Law through Leimkuhler Model

Bradford testing needs to be done to determine whether the Bradford Law is accepted or not in testing the productivity of the Library Science Periodical journal, which is calculated over 3 years, namely 2021-2023. This test is carried out using the Leimkuhler Model equation. The following is the equation:R(r) = a log (1+br)

Where, R(r) is the cumulative articles that contribute to the journal ranking 1, 2, 3…. r

a = $\frac{Y0}{loglog\ e\ k}$

b = $\frac{(k-1)}{r0}$

Before entering the Leimkuhler Model equation, the Y value is calculated through the following equation:

$Y_0 = \frac{A}{P}$

Description:

Y_0 = Article number in each Bradford zone

A = cumulative number of articles

P = Journal Zone (3 zones in total)

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Then,

$Y_0 = \frac{1338}{3}$

$= 446$

After the Y value is known, then calculate the a and b values,

$a = \frac{Y0}{loglog\ e\ k}$

$= \frac{446}{loglog\ 11{,}003}$

$= \frac{446}{1{,}04}$

$= 428{,}85 = 429$

$b = \frac{(k-1)}{r0}$

$= \frac{(11{,}003-1)}{1}$

$= 10{,}003$

After the values of a and b are known, then enter the Leimkuhler Model equation.

R(r) = a log e (1+b.r)

R(r) = a log e (1 + b.r)

= 428,85 log e (1+10,003 . 106)

= 428,85 log e (1+1060,318)

= 428,85 log e (1061,318)

= 428,85 . 3,025

= 1297,27 = 1297

It can be seen from the calculation of the equation above that the value of the cumulative articles published in the 2021-2023 issue of Berkala Ilmu perpustakaan dan Informasi is at a presumptive value of 1297 using the cumulative frequency of articles (r) of 106. These results show that the presumptive value (1297) and the observed value (1338) are not much different; with a difference of 41 numbers, it can be concluded that Bradford's law is acceptable (valid).

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CONCLUSION

This study evaluates the Journal of Berkala Ilmu Perpustakaan dan Informasi throughout the 2021–2023 period by applying the Bradford Law. This analysis aims to identify core journals frequently cited in the library and information science field. The Bradford Law, which divides journal citations into three zones (core zone or zone 1, zone 2, and zone 3), is used to measure reference concentration. Out of the 939 journal citations analyzed, the Journal of Berkala Ilmu Perpustakaan dan Informasi was the most frequently referenced, placing it in the core zone, while other journals were categorized into different zones according to their citation frequency.

In this study, the calculation of citation distribution follows the pattern 1:9:97, according to the Bradford Law formula. A validity test using the Leimkuhler model was also conducted, showing that the citation distribution pattern aligned with the Bradford Law predictions. The calculation results show that the difference between the predicted value and the actual value of citations in this journal is minimal, so Bradford Law Bradford Law is declared valid in measuring the productivity of this journal.

Overall, the results of this analysis conclude that Jurnal Berkala Ilmu Perpustakaan dan Informasi is a highly productive and critical journal in the field of library science. This emphasizes the journal's importance as a vital reference in the library and information science discipline, demonstrating its significant contribution to developing and disseminating specialized knowledge in the field of library and information in Indonesia.

5. AUTHORS' NOTE (DO NOT DELETE)

The authors declare that there is no conflict of interest regarding the publication of this article. Authors confirmed that the paper was free of plagiarism.

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