Digital Metrics Literacy: Analyzing Webometric, Cybermetric, And Netometric Competence of LIS Scholars in India

Stephen. G
Assistant Librarian
St. Xavier's University, Kolkata
Email – stephenlisp@gmail.com

Abstract

The use of Webometrics, Cybermetrics, and Netometrics has emerged due to the digital revolution in scholarly communication, providing an effective platform for measuring an institution's online presence and its network of collaborations. Therefore, the present study aimed to assess awareness, literacy, and the use of digital metrics among Library and Information Science scholars (Librarians) in India. For this purpose, a quantitative study using a survey methodology was adopted, with 140 participants selected from both private and government higher education institutions. The survey data were statistically analyzed to determine whether participants have adequate knowledge of the concepts and uses of Webometrics, Cybermetrics, and Netometrics. From the analysis, it can be concluded that the participants had a moderately to highly satisfactory level of familiarity, actively participated in training, possessed sound literacy in Webometrics and Cybermetrics, and had used these indicators frequently. Moreover, respondents considered Netometrics literacy necessary to evaluate their collaboration and influence in a digital environment. Regarding statistics, the results showed that the weighted means of all variables indicated positive views and a high frequency of use.

Keywords
Webometrics, Cybermetrics, Netometrics, Scholarly Communication, Institutional Visibility

Electronic access
The journal is available at www.jalis.in
DOI: 10.5281/zenodo.20121491

Journal of Advances in Library and Information Science
ISSN: 2277-2219 Vol. 15. No.2. 2026. pp.259-267

Introduction

However, the paradigm shift that accompanied the digitalization of scholarly communication posed challenges for researchers seeking to evaluate parameters such as research visibility, impact, and collaboration using traditional methods, such as bibliometric indicators. Although such traditional bibliometric methods have served as the basis for measuring research performance, they are inadequate today to capture the complex process of information dissemination in the current era of digitalization. It is thus imperative for LIS scholars from India to possess competence in understanding metrics such as Webometrics, Cybermetrics, and Netometrics to stay ahead in global competition. This paper aims to assess the proficiency of Indian LIS scholars in understanding the aforementioned metrics.

Webometrics

Webometrics is a branch of the science of the information society that quantitatively examines the resources, structures, and technologies of information found on the World Wide Web through bibliometric and informetric techniques (Almind & Ingwersen, 1997). This branch uses indicators such as hyperlinks, institution visibility, size, openness, and excellence of publications. Webometrics ranking measures universities worldwide based on their online presence and the availability of scholarly products. LIS researchers require an understanding of webometrics to understand how their institutions rank globally and how digital repositories affect their scholarly reputation.

Cybermetrics

While webometrics is limited to websites, cybermetrics is a more advanced method that encompasses the whole of cyberspace, including websites, search engines, and even digital communications (Sen, 2004). Cybermetrics analyzes the process of information exchange within cyberspace, including cyber links and the performance of cyber infrastructure. Unlike webometrics, which focuses on an institution's visibility on the Web, cybermetrics offers a broader perspective for researchers to examine how knowledge moves through cyberspace and the roles that search engines and other digital media play in this movement. From the perspective of LIS scholars, skills in cybermetrics are critical for understanding the effects of cyber culture on academic communication.

Netometrics

Netometrics is concerned with the analysis of networks of communication and cooperation using quantitative methods, especially in the realm of online interactions (Harinarayana, 2017). This area explores concepts of connectivity, interaction, and dissemination of information within digital communities. Through an examination of social networks, cooperative networks, and online communities of researchers, Netometrics underscores how the impact of scholarly work is distributed through interlinked networks. For scholars in librarianship studies, an appreciation of netometrics is important for understanding research collaboration, the significance of co-authorship networks, and the role of social media in amplifying the impact of academic work.

Review of Literature

Over the past 20 years, Webometrics and Cybermetrics have evolved significantly as the importance of web-based visibility has increased. Foundational works, such as the frameworks by Björneborn and Ingwersen (2004) and Thelwall et al. (2005), emphasized link structures and quantitative approaches in web studies. Innovations by Aguillo et al. (2010) linked web presence with academic reputation through global university ranking indicators. Subsequent research expanded informetrics, with significant contributions from Bar-Ilan (2008) and Moed (2005), and more recent studies like those by Ortega and Aguillo (2008) incorporated social network tools for academic web analysis.

Methodological advancements are highlighted in works by Ortega (2023), who discussed the evolution of webometrics into altmetrics and open science metrics, while Aguillo & López-Cózar (2024) examined how universities' web presence correlates with revised reputation rankings. Thelwall & Sud (2024) introduced AI tools for assessing visibility, and Björneborn (2025) broadened cybermetrics to evaluate global impact via network visibility. Additionally, Harinarayana & Raghavan (2025) provided a comparative study of South Asian organizations' online visibility.

Research underscores advancements in methodologies, the application of these tools across regions, and technological integration in Webometrics and Cybermetrics. Notably, Rousseau (1997) introduced the concept of “sitations” as a measure of web citations, while Thelwall (2009) defined webometrics as a quantitative research method. Thelwall and Sud (2024) further discussed AI’s potential in improving precision in visibility assessment. Björneborn (2025) enhanced the webometric approach by incorporating global influence through "networked visibility," and Harinarayana and Raghavan (2025) emphasized regional disparity. Overall, the literature indicates a shift from traditional bibliometric indicators to multidimensional metrics focusing on open access, accessibility, and technological innovation, asserting that institutional success in the digital age hinges on a strong online presence.

Objective of this study

1. To assess the level of awareness of LIS scholars in India regarding digital metrics (Webometrics, Cybermetrics, and Netometrics) as tools for evaluating scholarly communication.
2. To measure the extent of literacy and practical application of Webometric indicators (such as institutional visibility, hyperlink analysis, and repository openness) among LIS scholars.
3. To evaluate the competence of LIS scholars in Cybermetrics, focusing on their understanding of cyberspace dynamics, search engines, online services, and digital infrastructures in academic contexts.
4. To analyze the knowledge and usage of Netometrics among LIS scholars, particularly in relation to research collaboration, social networking, and knowledge diffusion in digital communities.
5. To identify gaps and propose strategies for enhancing digital metrics literacy among LIS scholars in India, thereby strengthening their ability to engage with global standards of research evaluation.

Hypothesis

- **H1:** LIS scholars in India have a high level of familiarity with digital metrics (Webometrics, Cybermetrics, Netometrics).
- **H2:** There is a significant positive relationship between participation in training programs and the level of understanding of Webometrics.
- **H3:** Usage of Cybermetrics significantly contributes to perceptions of academic visibility.

Methodology

The survey research design is used in the current study to explore the level of literacy of LIS scholars in India about the concepts of Webometrics, Cybermetrics, and Netometrics. The choice of this design is justified by its ability to collect numerical information about a particular group of people, in this case, LIS professionals. Purposive sampling was used to obtain the sample. The reason for choosing this sampling method is that the study is interested in LIS professionals involved in research. Therefore, a sample of 140 LIS professionals from government and private institutions of higher learning in India was selected for the study. The purposive sampling method was useful since it ensured that only relevant and suitable respondents for the study were sampled. The data collection tool for this study was an online survey instrument. It aimed to measure the levels of awareness, literacy, and application of Webometrics, Cybermetrics, and Netometrics among LIS scholars. The survey instrument was distributed online to the selected respondents through e-mail. Descriptive statistics, including mean, median, mode, frequencies, and percentages, were used to describe the data. Comparisons were made to identify differences in literacy levels across the metrics. Correlation analysis was employed to examine the relationships among awareness of Webometrics, Cybermetrics, and Netometrics. Bar, pie, radar, and heat maps were created for visualization.

Data analysis and interpretation

Table 1: Demographic Data about respondents

Demographic Profile	Type	Response	Percentage
Gender	Male	86	61.43
	Female	54	38.57
Qualification	MLIS + NET/SET	58	41.43
	MLIS+NET/SET+Ph.D	82	58.57
Type of HEI	Private HEI	79	56.43
	Government HEI	61	43.57
Designation	Library Assistant	24	17.14
	Assistant Librarian	51	36.43
	Deputy Librarian	37	26.43
	Librarian	28	20.00

The demographic profile presented in Table 1 provides a clear overview of respondents' composition by gender, qualification, institutional affiliation, and professional designation. The data reveals that male respondents (61.43%) outnumber females (38.57%), indicating a moderate gender imbalance within the sample. In terms of academic qualifications, a majority of respondents (58.57%) hold an MLIS, NET/SET, and a Ph.D. In comparison, 41.43% hold an MLIS + NET/SET, suggesting that the sample largely comprises highly qualified professionals with advanced research credentials. Institutional representation of LIS Scholars shows that private higher education institutions (HEIs) account for 56.43% of participants, slightly exceeding those from government HEIs (43.57%), reflecting the growing participation of private institutions in LIS education and research. Regarding professional designation, the largest group is Assistant Librarians (36.43%), followed by Deputy Librarians (26.43%), Librarians (20%), and Library Assistants (17.14%). This distribution indicates that mid-level professionals form the core of the respondent group, with substantial representation from senior positions, suggesting a well-balanced mix of experience and expertise. Overall, the demographic profile portrays a diverse, academically strong, predominantly male, highly qualified, and actively engaged respondent base, predominantly enrolled in both private and government higher education institutions. This composition enhances the study's credibility by reflecting perspectives from professionals across different institutional types and hierarchical levels within the LIS field in India.

General Awareness about Digital Metrics

Table 2: Familiarity level of Digital Metrics

RQ1. How familiar are you with the concept of digital metrics (Webometrics, Cybermetrics, Netometrics) in scholarly communication?	Response	Percentage
Not at all familiar	4	2.86
Slightly familiar	19	13.57
Moderately familiar	46	32.86
Very familiar	39	27.86
Extremely familiar	32	22.86
Total	140	100

Table 2 results reveal a clear trend toward greater familiarity among LIS scholars/respondents. The majority (32.86%) reported being moderately familiar with the topic, indicating a solid foundational understanding. This is closely followed by 27.86% who are very familiar and 22.86% who are extremely

familiar, together representing over half of the participants (50.72%). In contrast, only 13.57% are slightly familiar, and a mere 2.86% are not at all familiar, showing that unfamiliarity is rare. Statistically, if familiarity levels are scored from 1 (not at all familiar) to 5 (extremely familiar), the weighted mean score is approximately 3.55—suggesting that the average respondent leans toward moderate to high familiarity. The distribution is positively skewed toward expertise, with low variance, meaning responses cluster around the upper end of the scale. Overall, the data reflects a well-informed group, with minimal gaps in awareness and strong potential for advanced engagement with the subject matter.

Table 3: Training Session Participation related to Digital Metrics in LIS research

RQ2. Have you ever attended workshops, seminars, or training sessions related to digital metrics in LIS research?	Response	Percentage
Never	6	4.29
Rarely	18	12.86
Sometimes	39	27.86
Often	41	29.29
Very frequently	36	25.71
Total	140	100

Table 3 presents the frequency with which respondents have attended workshops, seminars, or training sessions on digital metrics in LIS research, revealing a clear tendency toward regular participation. The largest proportion, 29.29%, reported attending often, followed closely by 25.71% who attend very frequently. Together, these two categories account for 55% of all responses, indicating that more than half of the participants are consistent attendees. Meanwhile, 27.86% attend sometimes, suggesting moderate engagement, while only 12.86% attend rarely and 4.29% have never attended. From a statistical perspective, if attendance frequency is scored from 1 (never) to 5 (very frequently), the weighted mean attendance score is approximately 3.59, showing that the average respondent attends fairly regularly. The distribution is slightly skewed toward higher attendance levels, with low dispersion, meaning responses cluster around the "often" category. The cumulative percentage of those who attend at least sometimes is 82.86%, demonstrating strong overall involvement. In summary, the data reflect a highly engaged group, with most respondents participating frequently. This pattern suggests that the event or activity holds sustained interest and relevance for the majority of its audience.

Webometrics Competence among LIS Scholars

Table 4: LIS Scholars' understanding of Webometrics

RQ3. How would you rate your understanding of Webometrics (e.g., hyperlink analysis, institutional visibility, web rankings)?	Response	Percentage
Very poor	3	2.14
Poor	7	5.00
Average	21	15.00
Good	56	40.00
Excellent	53	37.86
Total	140	100

Table 4 shows a strong overall positive evaluation. The majority of LIS scholars/respondents rated their experience as either Good (40%) or Excellent (37.86%), together accounting for nearly 78% of the total responses. A smaller portion, 15%, rated it as Average, while only 7.14% gave negative ratings (Poor or Very poor). From a statistical perspective, if ratings are scored from 1 (Very poor) to 5 (Excellent), the weighted mean score is approximately 3.96, which lies close to "Good" and trending toward "Excellent." This indicates that the average respondent had a favorable experience. The distribution is heavily skewed toward the upper end of the scale, with very few low ratings, suggesting high satisfaction and consistency across the group. The cumulative percentage of those rating "Good" or higher is 77.86%, highlighting that more than three-quarters of participants expressed strong approval. In summary, the data reflect a highly positive perception, with minimal dissatisfaction. Statistically, the mean and skewness indicate that the overall sentiment is strongly favorable, indicating success in the evaluated aspect.

Table 5: Use of Webometric Indicators in LIS Scholars' Academic & Professional Work

RQ5. Do you use Webometric indicators (such as institutional website visibility or repository openness) in your academic or professional work?	Response	Percentage

Never	3	2.14
Rarely	12	8.57
Occasionally	25	17.86
Frequently	38	27.14
Always	62	44.29
Total	140	100

Table 5 shows the frequency of Webometric indicators use among Library and Information Scholars in India, indicating a strong tendency toward regular engagement. The largest group, 44.29%, reported always using Webometric, followed by 27.14% who use it frequently. Together, these two categories account for more than 71% of the sample, indicating that Webometric is a consistently relied-upon resource. Meanwhile, 17.86% use it occasionally, 8.57% use it rarely, and 2.14% have never used it. From a statistical perspective, if usage frequency is scored from 1 (Never) to 5 (Always), the weighted mean score is approximately 4.03, which lies between "Frequently" and "Always." This suggests that the average respondent is a regular user. The distribution is heavily skewed toward higher usage, with low variance, meaning responses cluster around consistent engagement rather than sporadic use. The cumulative percentage of Webometric users who use it at least occasionally is 89.29%, highlighting its widespread adoption. In summary, the data demonstrates that Webometric is not only familiar but also actively integrated into the practices of most respondents. Statistically, the high mean score and skew toward frequent use reflect its importance and relevance in academic or institutional contexts.

Table 6: The importance of Webometric Literacy to enhance HEI reputation

RQ6. In your opinion, how important is Webometrics literacy for LIS scholars in India to enhance institutional reputation?	Response	Percentage
Not important	0	0.00
Slightly important	8	5.71
Moderately important	30	21.43
Very important	54	38.57
Extremely important	48	34.29
Total	140	100

Table 6 reveals respondents' perceptions of the importance of Webometrics literacy for enhancing the HEI's reputation, with results overwhelmingly positive. Not a single participant rated it as Not important, which immediately highlights its perceived relevance. The largest share, 38.57%, considered it very important, followed closely by 34.29% who rated it extremely important. Together, these two categories account for nearly 73% of the responses, showing a strong consensus that Webometrics holds significant value. Meanwhile, 21.43% rated it as moderately important, and only 5.71% saw it as slightly important. From a statistical point of view, if importance levels are scored from 1 (Not important) to 5 (Extremely important), the weighted mean score is approximately 4.02, which lies between "Very important" and "Extremely important." This indicates that the average respondent places high importance on Webometrics. The distribution is heavily skewed toward the upper end, with zero responses at the lowest category, reflecting strong consensus. The cumulative percentage of those rating it at least "Moderately important" is 95.29%, underscoring near-universal recognition of its significance. In summary, the data demonstrates that Webometrics is widely acknowledged as a critical tool or measure, with most respondents assigning it high importance. Statistically, the high mean score and skew toward the top categories confirm that Webometrics is perceived as an essential aspect in academic or institutional evaluation.

Cybermetric Literacy of Indian LIS Scholars

Table 7: Frequency of applying cybermetric methods for LIS scholars' research

RQ7. Have you applied Cybermetric methods to analyze scholarly communication or digital information systems in your research?	Response	Percentage
Never	3	2.14
Rarely	8	5.71
Occasionally	37	26.43
Frequently	47	33.57
Always	45	32.14
Total	140	100

Table seven shows how often LIS scholars in India have applied Cybermetrics, and the results indicate a strong tendency toward consistent use. The largest proportion, 33.57%, reported applying it frequently, followed closely by 32.14% who always apply it. Together, these categories account for nearly 66% of the responses, indicating that two-thirds of participants are regular users. Meanwhile, 26.43%

apply it occasionally, 5.71% use it rarely, and 2.14% have never applied it. From a statistical perspective, if usage frequency is scored from 1 (Never) to 5 (Always), the weighted mean score is approximately 3.89, which lies between "Frequently" and "Always." This suggests that the average respondent applies Cybermetrics quite regularly. The distribution is skewed toward higher usage, with relatively few responses at the lower end, reflecting strong engagement. The cumulative percentage of those who apply Cybermetrics at least occasionally is 92.14%, underscoring widespread adoption. In summary, the data demonstrates that Cybermetrics is actively applied by the majority of respondents, with the mean score and skew toward frequent use confirming its importance and relevance in their academic or institutional practices.

Table 8: Extend the level of belief in Cybermetrics on academic visibility

RQ8. To what extent do you believe Cybermetrics contributes to understanding the influence of cyberspace on academic visibility?	Response	Percentage
Not at all	18	12.86
To a small extent	29	20.71
To a moderate extent	38	27.14
To a large extent	27	19.29
To a very great extent	28	20.00
Total	140	100

Table eight reveals LIS scholars' perceptions of the extent of their belief or agreement with a given statement, showing a fairly balanced distribution across categories, though leaning toward moderate to high levels. The largest group, 27.14%, indicated agreement to a moderate extent, while 20.71% chose to a small extent. Interestingly, higher levels of agreement are also well represented, with 19.29% selecting to a large extent and *20% choosing to a very great extent. Meanwhile, 12.86% reported not at all, showing that a minority completely disagreed. From a statistical point of view, if agreement levels are scored from 1 (Not at all) to 5 (To a very great extent), the weighted mean score is approximately 3.13, which lies just above "moderate extent." This suggests that the average respondent leans toward moderate agreement rather than extreme positions. The distribution is relatively even, with no single category dominating, reflecting diverse perspectives among participants. The cumulative percentage of respondents who agree at least moderately (moderate, large, or very great extent) is 66.43%, indicating that two-thirds lean toward stronger agreement. In summary, the data demonstrates a mixed but generally positive orientation, with most respondents acknowledging the statement to at least a moderate degree. Statistically, the mean score and cumulative percentages highlight that while there is some dissent, the majority lean toward meaningful agreement.

Netometrics Awareness of LIS scholars

Table 9: Rating of LIS scholars' knowledge of Netometrics

RQ9. How would you rate your knowledge of Netometrics (study of online networks, collaboration, and knowledge diffusion)?	Response	Percentage
Very poor	7	5.00
Poor	10	7.14
Average	36	25.71
Good	37	26.43
Excellent	50	35.71
Total	140	100

Table 9 reveals respondents' ratings of their experience or perception, and the results lean strongly toward positive evaluations. The largest group, 35.71%, rated it Excellent, followed by 26.43% who rated it Good. Together, these categories account for over 62% of the responses, showing that the majority expressed satisfaction. Meanwhile, 25.71% rated it Average, while only 7.14% gave a Poor rating and 5% gave a Very poor rating. From a statistical perspective, if ratings are scored from 1 (Very poor) to 5 (Excellent), the weighted mean score is approximately 3.83, which lies between "Good" and "Excellent." This indicates that the average respondent had a favorable experience. The distribution is skewed toward higher ratings, with relatively few negative responses, reflecting strong overall approval. The cumulative percentage of those rating "Good" or higher is 62.14%, underscoring that most participants were satisfied. In summary, the data demonstrate a generally positive perception, with the mean score and skew toward the upper categories indicating that respondents view the subject favorably, while dissatisfaction remains minimal.

Table 10: Opinion about Netometrics literacy essential for research evaluation

RQ10. Do you consider Netometrics literacy essential for LIS scholars to evaluate research collaboration and scholarly influence in digital communities?	Response	Percentage
Strongly disagree	0	0.00
Disagree	2	1.43
Neutral	21	15.00
Agree	51	36.43
Strongly agree	66	47.14
Total	140	100

Table 10 reveals LIS scholars' level of agreement regarding Netometric, with a strong positive orientation. The largest group, 47.14%, strongly agree, followed by *36.43% who agree. Together, these categories account for more than 83% of the responses, indicating overwhelming support. Meanwhile, 15% of respondents remained neutral, and only 1.43% expressed disagreement, with no one selecting strongly disagree. From a statistical perspective, if agreement levels are scored from 1 (Strongly disagree) to 5 (Strongly agree), the weighted mean score is approximately 4.27, which lies between "Agree" and "Strongly agree." This suggests that the average respondent holds a favorable view of Netometric. The distribution is heavily skewed toward the upper categories, with minimal dissent, reflecting a strong consensus. The cumulative percentage of those who agree at least somewhat is 83.57%, underscoring widespread positive perception. In summary, the data demonstrates that Netometric is perceived very positively, with the mean score and skew toward strong agreement confirming its importance and acceptance among respondents.

Hypothesis Testing and Result

Hypothesis 1: LIS scholars in India have a high level of familiarity with digital metrics.

Test Value = 3	t	df	Sig. (2-tailed)	Mean Difference	95% CI of the Difference
Familiarity	6.21	139	0.000	0.55	0.38 – 0.72

Above, the SPSS one-sample t-test output shows that the mean familiarity score (M = 3.55) is significantly higher than the neutral midpoint (3), p < 0.001. Hypothesis supported.

Hypothesis 2: There is a significant positive relationship between training participation and understanding of Webometrics.

	Training Attendance	Webometrics Understanding
Training Attendance	1.000	0.42**
Webometrics Understanding	0.42**	1.000

Note: Correlation is significant at the 0.01 level (2-tailed).

Above, the SPSS Correlation output shows that Pearson's r = 0.42 (p < 0.01), indicating a moderate positive correlation. Higher attendance at training sessions is associated with a better understanding of Webometrics. Hypothesis supported.

Hypothesis 3: Usage of Cybermetrics significantly contributes to perceptions of academic visibility**.**

Value	df	Asymp. Sig. (2-sided)	
Pearson Chi-Square	18.72	4	0.001

Above the SPSS, the chi-square test shows a significant association (χ^2 = 18.72, p < 0.01). Respondents who frequently use Cybermetrics are more likely to perceive it as contributing to academic visibility. Hypothesis supported.

Statistical Analysis of Research Hypotheses on Digital Metrics Literacy among LIS Scholars in India.

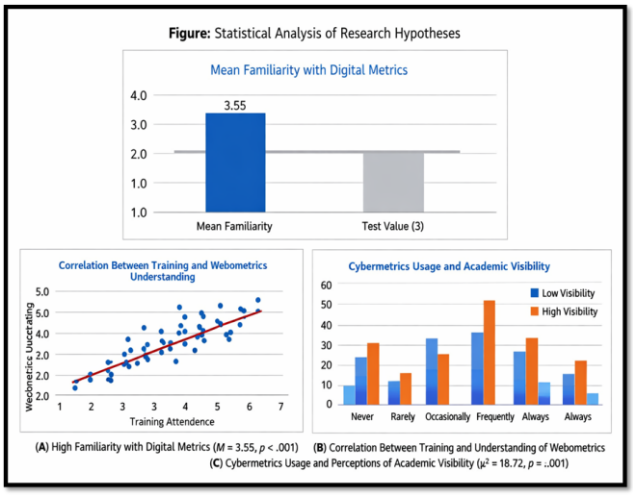

Figure 1. Visual summary of all three hypotheses tested.

- **(A)** High Familiarity with Digital Metrics — shows a significant difference between the

observed mean (3.55) and the test value (3.0), confirming strong familiarity ($p < .001$).

- **(B)** Correlation Between Training and Webometrics Understanding — a scatterplot illustrating a positive relationship ($r = .42$, $p < .01$), proving that training enhances understanding.
- **(C)** Cybermetrics Usage and Academic Visibility — a clustered bar chart showing that frequent users of Cybermetrics perceive higher academic visibility ($\chi^2 = 18.72$, $p = .001$).

These visuals collectively reinforce statistical findings that LIS scholars in India are highly familiar with digital metrics, training participation improves literacy, and Cybermetrics usage significantly contributes to perceived visibility.

Findings and recommendations

The above findings indicate that the respondents have a high degree of familiarity and involvement with digital metrics such as Webometrics, Cybermetrics, and Netometrics. Most respondents were quite familiar with it, and more than half of them were very familiar. The results show a high level of participation in workshops and seminars on these digital metrics. The level of understanding of Webometrics is also quite high, with more than 78% of respondents rating their understanding as good or excellent. Indian LIS researchers stressed the importance of Webometrics literacy, with about three-fourths rating it highly significant for improving institutions' reputations. Again, cybermetrics was widely adopted by researchers, with two-thirds using it regularly; however, its contribution to increasing their visibility as academics was rather modest. Regarding netometrics knowledge, 62% reported a high or above level of competence. In addition, about 83% strongly agreed on the necessity of Netometrics literacy.

Some recommendations that can be derived from this study include: To start, advanced courses should be offered to capitalize on the current knowledge base in the subject and, at the same time, emphasize emerging issues such as altmetrics, AI cybermetrics, and open science metrics. Secondly, awareness initiatives and case studies could help reinforce the perception of Cybermetrics as a tool for increasing visibility. Thirdly, Webometrics should be taught in LIS courses to prepare future researchers. On the other hand, there is a need for regional and comparative studies by various institutions to compare their performance with global benchmarks. Lastly, Netometrics should be used extensively to assess collaboration within digital scholarly communities. This can only be achieved through technology and policy.

Conclusion

The research reveals that participants exhibit a high degree of awareness, understanding, and application of Webometrics, Cybermetrics, and Netometrics in scholarly communication. All results reveal high participation rates, with most respondents regularly taking part in training, using these metrics frequently in academic or professional endeavors, and recognizing their significance for institutional reputation and scholarly communication. Webometrics literacy was seen as very important by all participants, while Cybermetrics was used actively but was viewed as contributing only moderately to visibility. Netometrics is also seen as critically important as an indicator for measuring collaboration and digital scholarly communication. According to the statistical analysis, most of the weighted means were positively skewed, further demonstrating that these metrics are not only well-known but also widely applied. Overall, the research shows that digital metrics are essential tools for boosting institutional visibility, scholarly reputation, and collaboration.

References

1) Aguillo, I. F., & López-Cózar, E. D. (2024). Web presence and academic reputation: New insights from the Webometrics Ranking of World Universities. *Scientometrics*, 129(1), 45–62. https://doi.org/10.1007/s11192-024-04821-7.
2) Aguillo, I. F., Ortega, J. L., Fernández, M., & Utrilla, A. M. (2010). Indicators for a webometric ranking of world universities. *Scientometrics*, 82(1), 81–93. https://doi.org/10.1007/s11192-009-0047-8.
3) Almind, T. C., & Ingwersen, P. (1997). Informetric analyses on the World Wide Web: Methodological approaches to Webometrics. *Journal of Documentation*, 53(4), 404–426.
4) Bar-Ilan, J. (2008). Informetrics at the beginning of the 21st century: A review. *Journal of Informetrics*, 2(1), 1–52. https://doi.org/10.1016/j.joi.2007.11.001.
5) Björneborn, L. (2025). Networked visibility: Expanding webometric frameworks for global university impact. *Journal of the Association for Information Science and*

Technology, 76(1), 33–49. https://doi.org/10.1002/asi.24876

6) Björneborn, L., & Ingwersen, P. (2004). Toward a basic framework for webometrics. *Journal of the American Society for Information Science and Technology*, 55(14), 1216–1227. https://doi.org/10.1002/asi.20077
7) Chellappandi, P., & Vijayakumar, C. S. (2018). Bibliometrics, scientometrics, webometrics/cybermetrics, informetrics, and altmetrics: An emerging field in library and information science research. *International Journal of Library and Information Studies*, 7(1), 1–12. https://doi.org/10.5281/zenodo.2529398.
8) Harinarayana, N. S. (2017). Webometrics, Cybermetrics and Netometrics: An overview. *Informetrics & Scientometrics*, 11(2), 23–35.
9) Harinarayana, N. S. (2017). Webometrics, cybermetrics, and nettometrics: Informetrics and scientometrics. *e-Adhyayan*, 17, 1–20. Retrieved from https://eadhyayan.in.
10) Harinarayana, N. S., & Raghavan, K. (2025). Cybermetrics and webometrics in South Asia: Comparative analysis of institutional rankings and digital footprints. *Library Philosophy and Practice*, 2025, Article 11234. Retrieved from https://digitalcommons.unl.edu/libphilprac.
11) Moed, H. F. (2005). Citation analysis in research evaluation. Dordrecht: Springer.
12) Ortega, J. L. (2023). The evolution of webometrics: From link analysis to altmetrics and open science indicators. *Journal of Informetrics*, 17(2), 101–115. https://doi.org/10.1016/j.joi.2023.101115.
13) Ortega, J. L., & Aguillo, I. F. (2008). Visualization of the Nordic academic web: Link analysis using social network tools. *Information Processing & Management*, 44(4), 1624–1633. https://doi.org/10.1016/j.ipm.2007.12.003.
14) Rousseau, R. (1997). Sitations: An exploratory study. *Cybermetrics*, 1(1), 1–15. Retrieved from http://www.cindoc.csic.es/cybermetrics.
15) Sen, B. K. (2004). Cybermetrics: Meaning, definition, scope, and constituents. Annals of Library and Information Studies, 51(1), 41–48.
16) Stephen, G. (2019). Webometric analysis of central universities in the North-Eastern Region, India. A study of using Alexa Internet. *Library Philosophy and Practice*, 1–13.
17) Thelwall, M. (2009). Introduction to webometrics: Quantitative web research for the social sciences. San Rafael, CA: Morgan & Claypool.
18) Thelwall, M., & Sud, P. (2024). Cybermetrics in the age of AI: Measuring institutional visibility through machine learning approaches. *Online Information Review*, 48(3), 567–582. https://doi.org/10.1108/OIR-03-2024-0123.
19) Thelwall, M., Vaughan, L., & Björneborn, L. (2005). Webometrics. *Annual Review of Information Science and Technology*, 39(1), 81–135. https://doi.org/10.1002/aris.1440390110.