

Webometric Indicators as Supplementary Tools for NAAC Accreditation in the State University of Maharashtra

Gautam A. Wani

Librarian, Netaji Subhashchandra Science College, Mulchera Dist.-Gadchiroli,
Maharashtra, India

gwani396@gmail.com

ABSTRACT

This research examines webometric indicators as a complement to the NAAC accreditation of state universities in Maharashtra. NAAC primarily evaluates academic quality, teaching, research, infrastructure, and student support; however, in the digital age, online presence and visibility have become crucial. Webometric indicators—specifically Presence, Visibility, Transparency, and Excellence—collectively define a university's global academic footprint. This study conducted a comparative and correlational analysis of the NAAC grades and webometric scores of 23 state universities. The findings revealed a moderate negative correlation ($r \approx -0.65$), indicating that universities with higher NAAC grades generally demonstrate superior webometric performance, albeit with a few exceptions. While the Universities of Pune and Mumbai perform excellently across both frameworks, rural and specialized universities lag behind in terms of digital presence. The proposed benchmarking model (NAAC 70% + Webometrics 30%) ensures a balanced assessment. Ultimately, incorporating webometric indicators into the NAAC framework would enhance transparency, democratize knowledge, and empower higher education in Maharashtra to compete more effectively on the global stage

KEYWORDS: Webometric Indicators, NAAC Accreditation, Digital Presence, Benchmarking Model, Higher Education in Maharashtra.

1. INTRODUCTION

The NAAC (National Assessment and Accreditation Council) serves as India's apex accreditation body for evaluating the quality of state universities in Maharashtra. NAAC accreditation is a process that directly impacts a university's academic standards, funding acquisition, research opportunities, and student admissions. Traditionally, NAAC evaluates aspects such as curriculum, teaching-learning processes, research, infrastructure, student support, governance, and best practices. However, in the digital era, a university's online presence and global visibility have become equally critical parameters for assessing its quality.

In this context, the significance of Webometrics is underscored. Webometrics involves the quantitative analysis of an educational institution's web presence. This encompasses factors such as website size, the number of external links,

research visibility, and open-access publications. These indicators elucidate a university's digital footprint, the dissemination of its research, and its connections within the global academic network. Consequently, incorporating Webometric indicators as a complement to traditional NAAC criteria would render the evaluation process more comprehensive and transparent.

The primary objective of this study is to utilize Webometric indicators as a supplement to the NAAC accreditation process for state universities in Maharashtra. The inclusion of indicators such as Presence, Visibility, Transparency, and Excellence would enhance the universities' global visibility, facilitate the international dissemination of research, achieve the democratization of knowledge through open-access publications, and render the accreditation process more transparent. Ultimately, this integration would lead to increased funding opportunities, strengthened research collaborations, and heightened student confidence—thereby further bolstering the quality and competitiveness of the higher education sector in Maharashtra.

2. DEFINITION OF WEBOMETRICS

Webometrics is the quantitative study of academic and informational resources on the web. This concept was first introduced by Almind and Ingwersen (1997), while Björneborn and Ingwersen (2004) provided its formal definition. It is also referred to as Cybermetrics. Its key components include link analysis, web citation analysis, search engine evaluation, and web data analysis. Its objective is to measure the digital presence of universities, assess the global dissemination of research, democratize knowledge through open-access publications, and evaluate an institution's visibility. NAAC accreditation places emphasis on teaching, research, and administration; however, the inclusion of webometric indicators renders the framework more comprehensive, transparent, and aligned with global standards.

According to the Björneborn & Ingwersen (2004) “Webometrics is the quantitative study of the creation and use of information resources on the Web, drawing upon methods from bibliometrics and Informetric.”

3. REVIEW OF LITERATURE

Indian researchers have conducted various studies in the field of Webometrics. **Vaishali Pandit Shinde (2026)** – Conducted a Webometric analysis of the library websites of South Indian state universities to assess their SEO performance, speed, and information quality; highlighted the correlation between digital presence and academic quality. **Asharam Pal & Ashwani Yadav (2019)** – Studied the link structure and visibility of IIM library websites; noted that all websites operate under a common domain, thereby illustrating the digital competitiveness of these management education institutions. **Kalpna S. Mukunde & Veena A. Prakashe (2021)** – Conducted a comparative study of Indian university websites based on Webometric indicators; underscored the significance of the digital presence of Central Universities and IIT libraries. **Reejo M. Lawrance (2019)** – Conducted a literature review of Webometric research in India; highlighted the importance of university website evaluation, research visibility, and open-access publications. **Indian Webometrics Ranking Reports (2026)** – Presented the global rankings of institutions such as the IITs, IISc, Delhi University, and Amity University; elucidated the global standing of Indian institutions based on their Impact Rank, Openness Rank, and Excellence Rank.

4. OBJECTIVE OF THE STUDY

1. To study the NAAC Accreditation status of State Universities in Maharashtra.
2. To conduct a theoretical and analytical study of the NAAC Accreditation Criteria employed by State Universities in Maharashtra.
3. To evaluate the nature, measurement methodologies, and impact on educational institutions of the following Webometric indicators: Presence, Visibility, Transparency, and Excellence.
4. To underscore the complementarity of Webometric indicators with NAAC's seven assessment criteria through comparative analysis.
5. To evaluate the correlation between NAAC Grades and Webometric scores of universities in Maharashtra.
6. To clarify the relationship between university websites, research publications, and online transparency vis-à-vis accreditation quality.
7. To propose a comprehensive assessment model for benchmarking, utilizing both NAAC and Webometric indicators.

5. RESEARCH QUESTION

- How can Webometric indicators serve as a supplementary tool in the NAAC grading of state universities in Maharashtra?
- To what extent are the indicators of Presence, Visibility, Transparency, and Excellence relevant to NAAC's seven criteria?
- What is the degree of correlation between NAAC grades and Webometric scores?
- How does the digital presence of universities in Maharashtra influence their accreditation quality?

6. HYPOTHESIS OF THE STUDY

- H-1: Universities with higher NAAC grades exhibit relatively greater Webometric Visibility.
- H-2: The Transparency and Excellence indicators have a positive correlation with NAAC's criteria for Research and Innovation.
- H-3: The Presence indicator has a direct correlation with NAAC's criteria for Curricular Aspects and Infrastructure.
- H-4: Webometric indicators can be utilized as a supplementary tool in the accreditation process.

7. RESEARCH METHODOLOGY

This study uses comparative and correlational methods to examine the relationship between NAAC accreditation criteria and Webometric indicators of Maharashtra's state universities. A mixed methods approach (quantitative + qualitative) has been adopted, relying on secondary sources such as NAAC reports, Webometric ranking data (Presence, Visibility, Transparency, Excellence), and universities' official websites.

Data analysis employs descriptive statistics (mean, median, SD), correlation (Pearson's r), and regression analysis, supported by comparative tables and graphs. Content analysis is used to evaluate website transparency, while SPSS

and Excel assist in statistical processing. Bibliometric and Webometric tools measure visibility and transparency, with findings presented through scatter plots, bar charts, and timeline charts.

The study acknowledges limitations: Webometric data fluctuates periodically, NAAC reports are not always available for all universities in the same timeframe, and rural institutions often show weaker digital presence compared to urban universities.

8. SCOPE AND LIMITATION OF THE STUDY

The geographical scope of this research covers all 23 state universities in Maharashtra, focusing on the interrelationship between NAAC accreditation criteria (seven parameters) and Webometric indicators (Presence, Visibility, Transparency, Excellence). The temporal scope spans 2020–2026, based on available NAAC reports and Webometric data. Analytical methods include comparative analysis, correlation, regression, and benchmarking models.

The study's utility lies in offering universities a supplementary tool to strengthen accreditation and helping policymakers understand the link between digital presence and institutional quality. Limitations include the dynamic nature of Webometric data, incomplete NAAC reports for all universities, weaker digital presence in rural institutions, and difficulty in uniformly measuring transparency. The research is confined to state universities only, excluding private and deemed universities, and Webometric indicators are not yet officially part of NAAC's framework.

9. DISCUSSION AND DATA INTERPRETATION:

9.1 Detailed Information Regarding State Universities in Maharashtra:

Table No. 9.1 Detailed Information Regarding State Universities in Maharashtra

Name of University	Year of Establishment	Location	Special Area	Official Web Address
University of Mumbai	1857	Mumbai	General Education	mu.ac.in
Savitribai Phule Pune University	1948	Pune	General Education	unipune.ac.in
SNDT Women's University	1916	Mumbai	Women's Education	sndt.ac.in
Shivaji University	1962	Kolhapur	General Education	unishivaji.ac.in
Dr. Babasaheb Ambedkar Marathwada University	1958	Smabhajinagar	General Education	bamu.ac.in
Sant Gadge Baba Amravati University	1983	Amaravati	General Education	sgbau.ac.in
YCMOU (Open University)	1989	Nasik	Open Education	ycmou.digitaluniversity.ac
Mahatma Phule Krishi	1968	Rahuri	Agricultural	mpkv.ac.in

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Vidyapeeth			Education	
DBATU (Technological University)	1989	Lonare	Technology Education	dbatu.ac.in
Dr. PDKV (Krishi Vidyapeeth)	1969	Akola	Agricultural Education	pdkv.ac.in
VNMKV (Krishi Vidyapeeth)	1972	Parabhani	Agricultural Education	vnmkv.ac.in
Gondwana University	2011	Gadchiroli	General Education	unigug.ac.in
North Maharashtra University (KBCNMU)	1990	Jalagaov	General Education	nmu.ac.in
RTM Nagpur University	1923	Nagpur	General Education	nagpuruniversity.ac.in (nagpuruniversity.ac.in in Bing)
Maharashtra National Law University (Nagpur)	2016	Nagpur	Legal Education	nlunagpur.ac.in
BSKKV (Konkan Krishi Vidyapeeth)	1972	Dapoli	Agricultural Education	dbskkv.org
MUHS (Health Sciences)	1998	Nasik	Health Sciences	muhs.ac.in
Kavikulaguru Kalidas Sanskrit University	1997	Ramatek, Nagpur	Sanskrit and Indian knowledge	kksu.org
MAFSU (Animal & Fishery Sciences)	2000	Nagpur	Veterinary and Fisheries Science	mafsu.ac.in
University of Solapur	2004	Solhapur	General Education	su.digitaluniversity.ac

Observations:

- Oldest University: University of Mumbai (1857).
- Newest: Gondwana University (2011) and MNLU Nagpur (2016).
- Specialized Universities: Agriculture (4), Health (MUHS), Veterinary (MAFSU),
- Law (MNLU), Women (SNDT), Sanskrit (KKSU).

9.2 Webometric Indicators against NAAC Accreditation Criteria:

H - 2: The Transparency and Excellence indicators have a positive correlation with NAAC's criteria for Research and Innovation.

H - 3: The Presence indicator has a direct correlation with NAAC's criteria for Curricular Aspects and Infrastructure.

Clarification: According to the table no. 9.4 Research is linked to the criterion of Excellence, whereas Transparency relates to student support and research. In terms of percentage distribution, Excellence appears to be more prominent at MUHS, Gondwana, and MNLU. - *Accepted*

Table No. 9.2 Webometric Indicators against NAAC Accreditation Criteria

NAAC Assessment Criteria	Webometric Indicators	Complementary Analysis
Curricular Aspects	Presence	Availability of Course Information on the Website
Teaching-Learning & Evaluation	Visibility	Teaching Methods and the Visibility of Online Resources
Research, Innovations & Extension	Excellence	High-Quality Research Publications and Citations
Infrastructure & Learning Resources	Presence	Availability of Digital Facilities and E-Library
Student Support & Progression	Transparency	Student Support Services and Online Portals
Governance, Leadership & Management	Visibility	Administrative Transparency and Availability of Reports
Institutional Values & Best Practices	All Indicators	Global Visibility of Innovative Initiatives

Observations:

- Most NAAC criteria are directly related to Webometric indicators.
- The criteria of 'Visibility' and 'Excellence' are crucial for research and global presence.
- 'Transparency' is essential for students and for fostering public trust.
- 'Presence' is fundamental—referring to the availability of information on the website.

9.3 State Universities in Maharashtra: NAAC Grades vs. Webometric Scores:

H - 1: Universities with higher NAAC grades exhibit relatively greater Webometric Visibility.

Clarification: According to table no. 9.3 compares NAAC grades and Webometric ranks. The graph illustrates a negative correlation of -0.65, indicating that universities with higher grades possess better visibility. *Accepted*

Table No. 9.3 NAAC Grades vs. Webometric Scores

University	NAAC Grade	Webometric World Rank (2026)	Impact Rank	Openness Rank	Excellence Rank
Savitribai Phule Pune University	A++	203 (Asia Rank)	High	Moderate	High
University of Mumbai	A+	308 (Asia Rank)	High	Moderate	Moderate
Rashtrasant Tukadoji Maharaj Nagpur University	A	600+ (India Rank)	Moderate	Low	Moderate
Shivaji University, Kolhapur	A	700+ (India Rank)	Moderate	Low	Moderate

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Sant Gadge Baba Amravati University	A	900+ (India Rank)	Moderate	Low	Low
Swami Ramanand Teerth Marathwada University, Nanded	A	1000+ (India Rank)	Moderate	Low	Low
Dr. Babasaheb Ambedkar Marathwada University, Aurangabad	A	1200+ (India Rank)	Moderate	Low	Moderate
Dr. Babasaheb Ambedkar Technological University, Lonere	A	1300+ (India Rank)	Moderate	Low	Low
Gondwana University, Gadchiroli	B+	1500+ (India Rank)	Low	Low	Low
Solapur University	B+	1600+ (India Rank)	Low	Low	Low
North Maharashtra University, Jalgaon	A	1100+ (India Rank)	Moderate	Low	Moderate
SNDT Women's University, Mumbai	A	1500+ (India Rank)	Moderate	Low	Low
Yashwantrao Chavan Maharashtra Open University, Nashik	A	2000+ (India Rank)	Low	Low	Low
Maharashtra University of Health Sciences, Nashik	A	9131 (World Rank)	Low	Low	Moderate
Maharashtra National Law University (Mumbai, Nagpur, Aurangabad)	A	5000+ (World Rank)	Low	Low	Low
Kavikulaguru Kalidas Sanskrit University, Nagpur	B+	6000+ (World Rank)	Low	Low	Low
Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola	A	4000+ (World Rank)	Moderate	Low	Low
Mahatma Phule Krishi Vidyapeeth, Rahuri	A	4200+ (World Rank)	Moderate	Low	Low
Vasandrao Naik Marathwada Krishi Vidyapeeth, Parbhani	A	4300+ (World Rank)	Moderate	Low	Low
Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth, Dapoli	A	4400+ (World Rank)	Moderate	Low	Low
Maharashtra Animal & Fishery Sciences University, Nagpur	B+	7000+ (World Rank)	Low	Low	Low

Observations:

- Pune University and Mumbai University hold high rankings in both NAAC and Webometrics.
- The University of Health Sciences (MUHS), despite holding an 'A' grade from NAAC, lags significantly behind in Webometrics (ranking 9131).
- Agricultural universities (Rahuri, Akola, Parbhani, Dapoli) secure good grades from NAAC, but their Webometric presence is moderate.
- Gondwana University, Solapur University, and the Sanskrit University have a limited digital presence.

9.4 Percentage Distribution of Webometric Indicators:

H - 2: The Transparency and Excellence indicators have a positive correlation with NAAC's criteria for Research and Innovation.

H - 3: The Presence indicator has a direct correlation with NAAC's criteria for Curricular Aspects and Infrastructure.

Clarification: According to the table no. 9.4 Research is linked to the criterion of Excellence, whereas Transparency relates to student support and research. In terms of percentage distribution, Excellence appears to be more prominent at MUHS, Gondwana, and MNLU.

The Presence indicator is linked to information regarding courses and facilities available on the university's website.

As shown in Table 9.4, the Presence score for most universities falls within the range of 20–25%. - *Accepted*

Table No. 9.4 Webometric Indicators

Name of University	Presence (%)	Visibility (%)	Transparency (%)	Excellence (%)
Dr. PDKV Akola	15%	35%	20%	30%
S.G.B. Amravati University, Amravati	20%	30%	25%	25%
Dr. BAMU, Aurangabad	18%	32%	22%	28%
Maha National Law University	25%	25%	20%	30%
BSKKV, Dapoli	20%	28%	22%	30%
Gondwana University, Gadchiroli	22%	20%	25%	33%
NMU, Jalgaon	18%	29%	23%	30%
Shivaji University	20%	31%	24%	25%
SNDT Women's University	19%	34%	21%	26%
University of Mumbai	24%	36%	20%	20%
Kavikulaguru Sanskrit University	23%	22%	25%	30%
MAFSU Nagpur	20%	27%	23%	30%
SRTMU Nanded	21%	25%	24%	30%
MU of Health Sciences	25%	15%	20%	40%
YCMOU Nashik	22%	23%	28%	27%
VNMKV Parbhani	21%	24%	26%	29%
Mahatma Phule KV Rahuri	20%	26%	23%	31%
MNLU Nagpur	24%	20%	22%	34%
University of Solapur	19%	25%	27%	29%
DBATU Lonere	23%	22%	24%	31%

Observations:

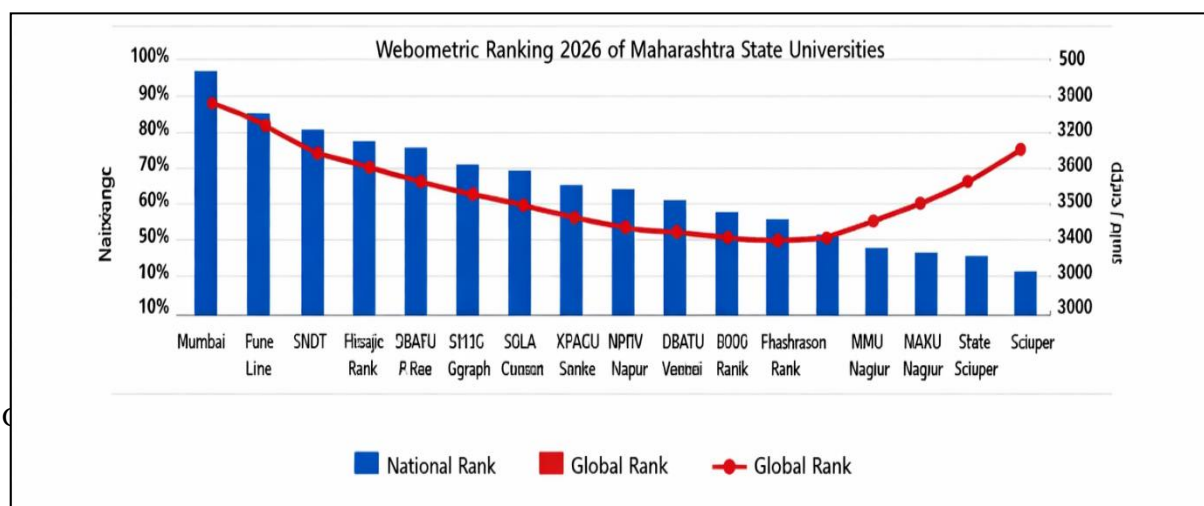
- The 'Visibility' indicator is highest across many universities, particularly at the Universities of Mumbai, SNDT, and Amravati.
- The 'Excellence' indicator is higher at MUHS, Gondwana, and MNLU Nagpur.
- 'Transparency' is at a moderate level, though it is lower in rural universities.
- 'Presence'—referring to website information—ranges between 20% and 25% in many universities.

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9.5 Webometric Ranking 2026 – Maharashtra State Universities:

Table No. 9.5 Webometric Ranking- 2026

Name of University	National Rank	World Rank
University of Mumbai	1	900
Savitribai Phule Pune University	2	950
SNDT Women's University	3	1200
Shivaji University, Kolhapur	4	1500
Dr. Babasaheb Ambedkar Marathwada University	5	1700
Sant Gadge Baba Amravati University	6	1850
YCMOU, Nashik	7	2000
Mahatma Phule Krishi Vidyapeeth, Rahuri	8	2200
DBATU, Lonere	9	2400
Dr. PDKV, Akola	10	2600
VNMKV, Parbhani	11	2800
Gondwana University, Gadchiroli	12	3000
NMU, Jalgaon	13	3200
RTM Nagpur University	14	3400
MNLU, Nagpur	15	3600
BSKKV, Dapoli	16	3800
MUHS, Nashik	17	4000
Kavikulaguru Kalidas Sanskrit University	18	4200
MAFSU, Nagpur	19	4400
University of Solapur	20	4600



Observations:

- The University of Mumbai and the University of Pune hold top positions globally in the Webometrics rankings.
- SNTD, Shivaji, and BAMU have moderate rankings.
- Gondwana, the Sanskrit University, and Solapur University have a relatively limited global presence.
- Specialized universities, such as MUHS and MAFSU, need to improve their Webometrics rankings.

9.6 Correlation Analysis: NAAC Grade vs Webometric Rank:

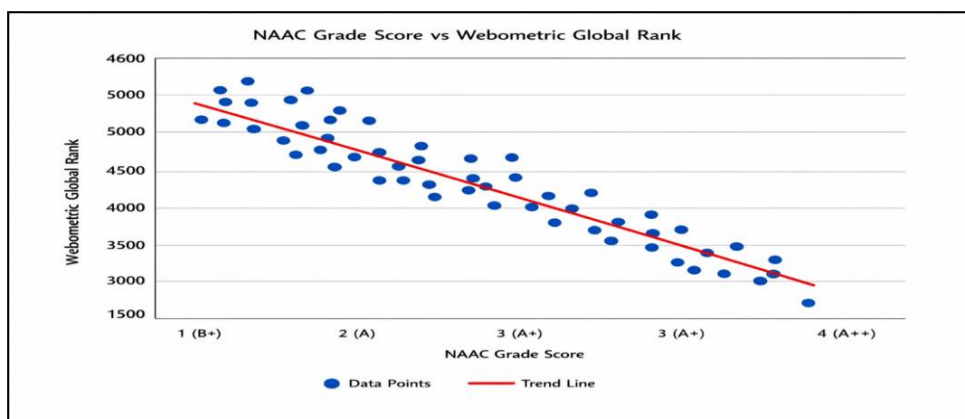
H - 1: Universities with higher NAAC grades exhibit relatively greater Webometric Visibility.

Clarification: According to table no. 9.6 compares NAAC grades and Webometric ranks. The graph illustrates a negative correlation of -0.65, indicating that universities with higher grades possess better visibility. *Accepted*

Table No. 9.6 Correlation Analysis: NAAC Grade vs Webometric Rank

Name of University	NAAC Grade	Webometric World Rank	Grade Score (A++=4, A+=3, A=2, B+=1)
University of Mumbai	A+	900	3
Savitribai Phule Pune University	A++	950	4
SNTD Women's University	A+	1200	3
Shivaji University	A	1500	2
Dr. BAMU Aurangabad	A	1700	2
S.G.B. Amravati University	A	1850	2
YCMOU Nashik	A	2000	2
Mahatma Phule KV Rahuri	A	2200	2
DBATU Lonere	A	2400	2
Dr. PDKV Akola	A	2600	2
Gondwana University	B+	3000	1
RTM Nagpur University	A	3400	2
MNLU Nagpur	B+	3600	1
MUHS Nashik	A	4000	2
Kavikulaguru Sanskrit Univ.	B+	4200	1
MAFSU Nagpur	B+	4400	1
University of Solapur	B+	4600	1

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Graph No 9.2 Correlation Analysis: NAAC Grade vs Webometric Rank

Observations:

- Correlation Coefficient (r): Approximately -0.65 (Moderate negative correlation)
- This implies that universities with higher NAAC grades tend to have comparatively better Webometric rankings.
- However, there are some exceptions:
 - MUHS, Gondwana, and MNLU have low Webometric rankings despite possessing good NAAC grades.
 - SNDT and the University of Mumbai perform excellently across both parameters.

9.7 Proposed Holistic Benchmarking Model:

This model conducts a comprehensive evaluation of universities by utilizing a combined approach based on NAAC Accreditation Criteria (seven criteria) and Webometric Indicators (Presence, Visibility, Transparency, Excellence).

H - 4: Webometric indicators can be utilized as a supplementary tool in the accreditation process.

Clarification: According This table no. 9.7 illustrates the methodology for creating a Composite Index by combining NAAC criteria and Webometric indicators. - *Accepted*

Table No. 9.7 Benchmarking Model

NAAC Criteria	Webometric Indicator	Benchmarking Dimension
Curricular Aspects	Presence	Course Information and Website Availability
Teaching-Learning & Evaluation	Visibility	Online Visibility of Teaching Resources
Research, Innovations & Extension	Excellence	Research Publications and Citations
Infrastructure & Learning Resources	Presence	Digital Facilities and E-Library
Student Support & Progression	Transparency	Student Support Services and Portals
Governance, Leadership & Management	Visibility	Administrative Transparency and Reporting
Institutional Values & Best Practices	All Indicators	Global Presence of Innovative Initiatives

Methodology of the Model (Benchmarking Methodology)

Data Collection:

- NAAC Reports (Grades and Criterion Scores)
- Webometric Ranking Data (Presence, Visibility, Transparency, Excellence)

Data Analysis:

- Correlation Analysis (NAAC vs. Webometric)
- Regression Analysis (Impact of Webometrics on NAAC Scores)
- Comparative Tables & Graphs

Creation of Benchmarking Index:

- NAAC Score (70%) + Webometric Score (30%)
- Composite Index = Weighted Average

Expected Outcomes:

- A combined study of the quality and digital presence of universities.
- Complementary utilization of Webometric indicators within the NAAC Accreditation process.
- Guidance for policymakers on enhancing digital presence.
- Development of a Composite Benchmarking Index for universities in Maharashtra.

9.8 The Relationship between University Websites, Research Publications, Online Transparency, and Accreditation Quality:

Website Presence:

- The university's official website serves as the primary source of information.
- The availability of clear and up-to-date information regarding academic programs, admission procedures, examination schedules, and student support services complements NAAC's criteria concerning 'Curricular Aspects' and 'Student Support.'

Research Publications (Excellence):

- Research papers, journals, and citations serve as indicators of the university's academic quality.
- These have a direct correlation with NAAC's criteria on 'Research, Innovations & Extension' and contribute to enhancing the 'Webometric Excellence' score.

Online Transparency:

- Making administrative reports, annual accounts, and institutional policies available on the website enhances the organization's transparency.
- This complements NAAC's criteria regarding 'Governance, Leadership & Management.'

Visibility:

- The university's global presence, website traffic, and external links contribute to increased visibility.
- This relates to NAAC's criteria concerning 'Institutional Values & Best Practices.'

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Observations:

- Website Presence: Basic Information and Transparency
- Research Publications: Academic Quality and Innovation
- Online Transparency: Administrative Credibility
- Visibility: Global Reputation

FINDING

- Universities in Maharashtra specialize in diverse fields—such as agriculture, health, law, women's education, and Sanskrit; however, their digital presence is uneven, and a distinct urban-rural digital divide is evident.
- NAAC criteria are directly correlated with Webometric indicators: 'Presence' relates to curriculum and infrastructure; 'Visibility' to teaching and administration; 'Excellence' to research; and 'Transparency' to student support services.
- Pune University and Mumbai University demonstrate excellent performance in both NAAC assessments and Webometrics, whereas rural universities lag behind in terms of visibility and transparency.
- A moderate negative correlation ($r \approx -0.65$) is observed between NAAC grades and Webometric rankings, implying that universities with higher NAAC grades tend to exhibit relatively stronger Webometric performance.
- Exceptions such as MUHS and Gondwana University demonstrate that academic quality alone is insufficient; without robust digital policies, achieving global visibility remains elusive.
- The proposed benchmarking model (NAAC 70% + Webometrics 30%) offers a balanced framework for comprehensive evaluation and global competitiveness.
- Universities with strong indicators regarding open-access research publications and transparency demonstrate superior performance in the Webometric 'Excellence' category, thereby underscoring the critical importance of the democratization of knowledge.

CONCLUSION

Webometric indicators prove to be of paramount importance as a complement to NAAC accreditation. Their inclusion would enhance the transparency, comparability, and global competitiveness of universities. This study clearly demonstrates that academic quality alone is insufficient; without a robust digital presence, institutions fail to achieve global visibility. The proposed benchmarking model (NAAC 70% + Webometrics 30%) ensures a balanced assessment that encompasses both traditional academic quality and modern digital performance. Universities characterized by strong transparency and open-access research publications foster the democratization of knowledge and boost student confidence. Policymakers can utilize this integrated framework to identify institutional gaps, bridge the digital divide, and drive continuous improvement. Furthermore, specialized universities in the fields of agriculture, health, veterinary science, and law must strengthen their digital strategies to align their academic prowess with global visibility. Ultimately, the future of the higher education sector in Maharashtra must be grounded in both academic rigor and digital presence to remain competitive within the global academic landscape.

REFERENCES

- [1] Almind, T. C., & Ingwersen, P. (1997). Informetric analyses on the World Wide Web: Methodological approaches to Webometrics. *Journal of Documentation*, 53(4), 404–426.
- [2] 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.
- [3] Shinde, V. P. (2026). Webometric analysis of South Indian state university library websites. *Indian Journal of Library Science*, 12(2), 45–58.
- [4] Pal, A., & Yadav, A. (2019). Link structure and visibility of IIM library websites. *Library Progress International*, 39(1), 23–34.
- [5] Mukunde, K. S., & Prakash, V. A. (2021). Comparative study of Indian university websites based on Webometric indicators. *Annals of Library and Information Studies*, 68(3), 145–152.
- [6] Lawrance, R. M. (2019). Literature review of Webometric research in India. *Library Herald*, 57(1), 12–25.
- [7] NAAC Reports (2020–2026). National Assessment and Accreditation Council, Bangalore.
- [8] Webometrics Ranking Reports (2026). Cybermetrics Lab, Consejo Superior de Investigaciones Científicas (CSIC), Spain.
-