CHAPTER V

CONCLUSIONS & IMPLICATIONS

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CHAPTER V
CONCLUSION & IMPLICATIONS

5.0 SUMMARY
The purpose of the present study is
1. To study engineering college websites of India in general and Maharashtra in particular.
2. To identify the online services given by engineering college libraries in Maharashtra.
3. To find out the most targeted websites of engineering colleges.
4. To know the web structures of the websites of engineering colleges.
5. To compile the directory of web address of the engineering colleges in Maharashtra under DTE.

   The population of the study is the library Webpages and websites from engineering colleges in Maharashtra based on approved institutions under Directorate of Technical Education, Maharashtra state. It is the survey based research on the analysis of the engineering colleges’ library Webpages and websites in Maharashtra. The data is collected from March 2012 to March 2017. The study has used commercial search engine Google for retrieving the required webometric data for the analysis of engineering colleges’ library Webpages and websites and A1 Website Analyzer 8 software for link performance.

   The data analysis of the study is done by applying the statistical tools and techniques such as Frequency and Percentage Analysis, Ranking method, Web-impact Factor.

5.1 SUMMARY OF FINDINGS

I. Status-wise Engineering Colleges in Maharashtra:

   There are several status and types of engineering colleges in Maharashtra state offering technical education and research programs that includes; Autonomous, Government, University departments, Deemed universities, and other private unaided institutions etc. As well as following several categories are included in their status i.e. Minority, Religious, Accreditations and Gender wise. It has been observed in the study that, out of 374 Engineering Colleges:
1. **Type of Institutions:** It is observed from the collected data that **94.66%** (354) Engineering colleges are from un-aided/private colleges.

2. **Autonomy of Institutions:** The study shows that **5.34%** (20) Engineering colleges are of autonomous status.

3. **Category wise Institutions:** It is found from the study that **83.42%** (312) Engineering colleges are from non-minority category. Followed by **11.23%** (42) of Engineering Colleges are from Linguistic Minority category and **5.35%** (20) from Religious category.

4. **Accreditations of Institutions:** Of the total Engineering colleges, only **16.31%** (61) are accredited by National Board of Accreditation (NBA) and **69.79%** (261) of Engineering Colleges have Not Applied for Accreditation.

5. **Gender wise Institutions:** The Present study indicates that **1.61%** (6) Engineering Colleges are offering education separately for female gender, followed by **0.54%** (2) Engineering colleges running for male gender.

6. **Institutions with the Year of Establishment:** It is found that of the total Engineering colleges, the highest **48.12%** (180) were started during the year 2001-2010.

7. **Zone – Wise Distribution of Institutions:** The study indicates that nearly one-third Engineering colleges in Maharashtra are from Pune zone **35.56%** (133). **Pune is the educational hub of Maharashtra state.** Followed by Mumbai region **18.71%** (70).

8. **University-Wise Institutions in Maharashtra:** There are 13 universities are there in Maharashtra State imparting engineering education. In University-wise distribution of engineering colleges in Maharashtra, it is observed from the data that maximum **30.21%** (113) Engineering colleges are under the jurisdiction of the Savitribai Phule Pune University.

9. **Distribution of Institutions in the Maharashtra state:** Maharashtra comprises thirty five (35) districts and one (1) union territory as on today. The study sample engineering colleges are situated in almost two-third of the districts of the Maharashtra states namely Pune, Mumbai, Nasik, Ahemadnagar, Raigad, Kolhapur, and Aurangabad. The highest **81 (21.66%)** of Engineering Colleges are situated in Pune districts.
10. **Web Domains Possessed by Institutions:** Domain is a unique name that identifies an internet resource such as a website. It is found that the highest i.e. 28.07% (105) Engineering college websites possess .org domain.

11. **Status of Library WebPages/Websites:** Library Webpages and Websites names are formed by the rules of the Domain Name System. It is observed that most of the engineering institutions websites do not provide separate Webpages, Websites and Tabs of their libraries; it is also found that 69.79% (261) engineering colleges websites do not provided such facility.

12. However it was found in the research study that only one (01) engineering college out of 374, have do not publish their website on World Wide Web (www).

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**II. Content Analysis:**

1. **Basic Information**

   The basic information is more important to project their brief information of library on the college website.

   The study shows that 70.60 % of Engineering college library Webpages and Websites displays link like “About Library” on their website, followed by 45.45 % of engineering college library Webpages and websites providing “Library Hours” information. The lowest, 4.01 % of engineering college library Webpages and websites provide “FAQ” information on their websites.

2. **Library Sections Information**

   Over the years, the digital library section has improved so much than the other sections of the library due to the growth of modern information and communication technology.

   Almost one third (1/3) of the Engineering college library WebPages and websites (i.e., 35.83%) given link as “Digital Library” however few of them have given only textual information, followed by 3.74 % of websites contain the information about “Circulation Section”. The lowest, 0.80 % of Engineering college library Webpages and websites contains “Virtual Library” information.

3. **Library Collections Information**

   The collection of resources is the heart of the library, which is more important to project their collections on their college library WebPages’/website. In library
collections, books are the basic and the notable one when compared to the other materials in the library.

From total Engineering College library, 72.46% of Webpages and Websites mentioned the information about “Books” on their websites. Whereas 4.55% of Engineering college library Webpages and websites only contain the “Theses” information.

4. Periodicals Subscription Information

Periodicals are the important source of information for the latest developments in the concerned subject area. In terms of periodicals information, the present study shows that 70.05% of Engineering college library Webpages and Websites display the link like “Print Journals/Magazines” information on their websites.

5. Electronic Resources and Databases

Electronic databases are used to get the huge amount of required information in a short period and save a lot of time for the user. The study shows that 63.37% of Engineering college library Webpages and Websites provides the information about “Electronic Journals” with appropriate links, followed by 47.06% of Engineering college library Webpages and websites mentioning “Electronic Books” in their websites. Lowest i.e. 8.02% of Engineering college library WebPages and websites contain information about “Electronic Theses and Dissertations”.

6. Library Services Information

Provision of “Library Services” is the main purpose of any library website. Therefore, it is important to know which library services are offered and to what extent. Reprography is a form of reproduction of documents and this facility is the need of time for the users especially in the research area.

It is observed from the study that variety of library services are provided by the studied libraries, however the study also shows that 44.12% of Engineering college library Webpages and Websites displays reprography facility information, followed by 43.58% of Engineering colleges library WebPages and websites containing information about “Book Bank”.

7. Technical Services Information

In terms of technical services, 4.01% of Engineering college library Webpages and Websites provide e-mail link facility for their users and 2.41% of engineering colleges library WebPages and websites providing Ask a librarian facility
8. **Value Added Information**

The study shows that 4.01% of Engineering college library Webpages and Websites provide “Feedback Form / Suggestion Box” on their websites and 3.74% of Engineering college library WebPages and websites provide “Hit Counter”. Also, 2.67% of Engineering college library WebPages and websites provide “Website Last Updated” information in their websites.

9. **Multimedia Tools**

Website should include the multimedia tools and it is very much important to improve the quality of the entire website.

It was observed that 51.34% of the Engineering college library Webpages and Websites are supported with different photos of libraries and their activities and 0.53% of the Engineering college library WebPages and websites have music in their contents.

10. **Search Options**

In terms of search options, 41.18% of Engineering college library Webpages and Websites have given the “OPAC (Online Public Access Catalogue)” facility to their users. OPAC facility is the mirror of any automated library database and it is the quickest way of finding the relevant information from the database of automated library. Only 2.94% of engineering college library WebPages and websites provide the “Search Engine” facility to their users.

11. **Link to Social Networking Sites**

Link to social networking sites play an important role in measuring the value of the any website in this digital days. The study includes facebook, twitter, LinkedIn and flickr.

From social network site 1.60% of Engineering college library Webpages and Websites links to “Facebook” followed by 1.07% of Engineering college library WebPages and websites having links with “Twitter” site. The lowest one is 0.27% of engineering college library WebPages and websites links to “LinkedIn” site.

12. **Open Access Resources**

Link to open access resources is a key feature of any Engineering college library Webpages and websites.

From their websites 35.03% of the Engineering college library Webpages and Websites provide links to “NPTEL” e-databases and 27.54% of the Engineering college library WebPages and websites providing links to “DELNET” database.
13. **e-Reference Sources**

   e-Reference sources include dictionaries, yearbooks, handbooks, directories and encyclopedias. From variety of e-reference sources **3.74 %** of Engineering college library Webpages and Websites have links to “Dictionaries” form and followed by **3.48 %** of encyclopedias from their websites.

14. **Distribution of WebPages**

   An evaluation of the link performance among the Engineering colleges library Webpages and websites, analysis found that library webpage [http://www.srmcew.edu.in/Facilities.aspx](http://www.srmcew.edu.in/Facilities.aspx) of Shrimati Rajashri Mulak College of Engineering for Womens, Nagpur has the first rank with 501 link webpages on their library webpage and 506 Links.

   As well as with 287 link webpages and 297 Links having on Amar Seva Mandal’s Shree Govindrao Vanjari College of Engineering and Technology, Nagpur, Library webpage [http://www.gwcet.ac.in/index.php?Option=com_content&view=article&id=153&Itemid=345](http://www.gwcet.ac.in/index.php?Option=com_content&view=article&id=153&Itemid=345) is placed on the second position.

15. **Distribution of Web Impact Factor**

   The following web impact factors are calculated for 374 engineering college library WebPages and websites.

   - Simple Web Impact Factor (SWIF)
   - Revised Link Web Impact Factor (RLWIF)
   - Self Link Web Impact Factor (SLWIF)
   - External Link Web Impact Factor (ELWIF)

   Separate rank list of all other Library webpages and websites is prepared and attached in the **Appendices 9** here with. Here only top ranks Library webpage is given from respected web impact factors.

   - **Simple Web Impact Factor (SWIF):**

   An evaluation of the link performance among the Engineering colleges library Webpages and websites, analysis found that University Department of Chemical Technology, Aurangabad (Affiliated to Dr. Babasaheb Ambedkar Marathwada University, Aurangabad), Knowledge Resource Center webpage [www.bamu.ac.in/krc](http://www.bamu.ac.in/krc) has the first rank with 672 links on their website and 336 is simple web impact factor (SWIF).
Revised Link Web Impact Factor (RLWIF):

In the Revised Link Web Impact Factor (RLWIF) study found that the ration of ‘In links’ with respect to webpages among the Engineering colleges library Webpages and websites, analysis found that TSSMS's Padmshri Vasantdada Patil Institute of Technology, Bavdhan, Pune, Library webpage http://jspm.edu.in/pvpit/central-library/ has the first rank with 46 links on their website and one (1) is Revised link web impact factor.

Self Link Web Impact Factor (SLWIF):

The ration of ‘Self links’ with respect to webpages among the Engineering colleges library Webpages and websites, analysis found that Library webpage http://aiktclibrary.org:800/joomla/ of Anjuman I Islam’s Kalsekar Technical Campus, Panvel has the first rank with 3 links on their website and one (01) is the Self Link Web Impact Factor (SLWIF) found that during the study.

External Link Web Impact Factor (ELWIF):

In the study of Engineering colleges library Webpages and websites, evaluated that Rajiv Gandhi College of Engineering Research and Technology, Chandrapur, Library webpage http://www.rcert.ac.in/InternalPage.aspx?Antispam=5uEoiSYF PZn&ContentID=12&MyAntispam=9pDfMtGshSz has the first rank with 9 links on their website and 4.5 is external link web impact factor (ELWIF).

16. Ranking of Library Webpage and websites:

Based on the analysis of the Webpages and Websites of engineering colleges libraries in Maharashtra State, rating and grading have been done by using the scoring as shown in the Appendices 10. The scores are assigned according to the detailed information included out of the maximum points defined for that particular criterion. As per score, Webpages and Websites have been rated, ranking and grading with descending order of scoring. As well as grading based on the points achieved scores. Detailed list of Library webpages and websites are attached same here with in the Appendices 10.

Analysis found that only one (01) Engineering College website having grade A+ and rated Excellent rating for their Library webpages and websites. Average rated Library webpages and websites mostly higher frequency than other groups, i.e. 186 and percentage near about half of the total libraries, its 49.73% got grade C.
5.2 Tenability of Hypotheses:

The tenability of hypotheses for the present study is examined based on the major findings.

Hypothesis 1: Mostly engineering colleges in Maharashtra have their own websites on www.

The Colleges of engineering faculty are having the advanced technologies available; hence it is common expectation that, the libraries of engineering colleges should render services using recent technologies through Webpages and websites. However it was found in the research study that only one (01) engineering college out of 374, (i.e. R. V. Parankar College of Engineering & Technology, Arvi, Dist. Wardha) have do not publish their website on World Wide Web (www). As per researcher studied, almost 100% engineering colleges (i.e. 373) having their own websites on World Wide Web (www). Regarding this hypotheses, researcher is highly satisfied in this respect. Hence the above hypotheses proved and agreed to found correct. (See the Appendices 10, DTE College Code 4648, pg.278)

Hypothesis 2: Engineering colleges are regularly updates their websites.

Although the engineering colleges are considered as technical institutes, but during the study, researcher found that the only 2.67 % (10) of Engineering Colleges’ Webpages and websites provided information about “Websites last updated”. Therefore the libraries of these colleges are not aware about this update of Webpages and websites time to time. It is found that majority of the libraries are lacking in this parameter. Hence the above hypothesis disapproved and disagrees to found correct. (See the Table No.4.6.15, pg.164)

Hypothesis 3: Engineering College libraries are offers web based services to their users.

The engineering colleges are considered as technical institutes and using advanced technologies in their day to day work of college administration, services and library services online through internet or intranet local network. During the study, researcher found that the Engineering College Webpages and websites provided web-based services near about thirty five (35) various services like Technical services, Value added information services, Multimedia tools, Search options, Social networking sites links, Open access resources, Reference sources, etc. services.
Therefore observation and collection of data about all these web-based services, researcher concluded that few (Average 1 – 50 %) engineering college Library Webpages and websites provided services to their users. Hence the above hypotheses proved and agreed to found correct. (See the Table No.4.6.14 to 4.6.20, pgs.163 - 170)

Hypothesis 4: Most of the libraries of engineering colleges don’t have their independent website.

During the study of engineering colleges Webpages and websites researcher found that the only 3.74 % (14 no’s) of Engineering Colleges’ having their “Independent library Websites”. Therefore most of the libraries of colleges are not building/creating independent/separate websites on World Wide Web (www). It is found that majority of the libraries Webpages and websites Location on their college websites under the tabs of Administration /About us /Academics / Infrastructure / Departments / Facilities / Gallery / Campus / Services / Sections / Utilities / Resources / Sources / Student corner / Quick Links / Links / Information, etc. Hence the above hypotheses proved and agreed to found correct. (See the Table No.4.6.7, pg.155)

The researcher has tested all the hypotheses treated in the synopsis and based on the observation and data collected during the study of engineering colleges Webpages and websites.

Hence the Hypotheses made are tested & proved in the present study.

5.3 Implications from the Present Study:

1. Implications for the Engineering Colleges Librarians as follows:

- Engineering college librarian should be publishing library webpage/website on their college website.
- Provide the link of WebOPAC or OPAC compulsory on library webpage/website.
- Online circulation system through College/Library websites should be considered in future.
- Frequently day to day updates of information should be a must and should be done for the engineering college library Webpages and websites.
- Engineering college library Webpages and websites should concentrate on the provision of link to e-databases, consortium, and open access from their websites.
Proper freedom may be given to the faculty members to upload current information and modules related to their course on the engineering college library Webpages and websites.

Provide link for library members’ login or online membership form registration from library webpage/website.

2. **Implications for the Engineering Colleges Authorities/officials as follows:**

- Allocate sufficient/ample budget for infrastructures, hardware and software facilities in the library sections.
- Proper training should be given to the library staff to develop the quality library websites by the website maintaining authorities.
- Advanced technology oriented/supported should be given by the institutions/college authorities to encourage the websites contents at national / international level.
- Suitable encouragement as well as funds allocation should be given to the engineering college library authorities to create individual library websites.

5.4  **Suggestions for Further Research:**

- Study of engineering colleges’ websites/library websites in different parameter in Maharashtra will be the interesting research work for future researcher.
- Further researches may be on comparing Indian websites with the foreign engineering college library Webpages and websites through webometric study.
- Advanced technology oriented studies may be undertaken in the field of webometric to develop more standard websites.
- Webometric studies in various Universities, colleges, educational institutions, social institutions, corporate websites and government websites can be undertaken.

5.5  **Limitations of the Study:**

The study of engineering colleges’ websites is very huge and vast for data collection and analyses. Researcher has studied only Webpages and websites of engineering colleges’ in Maharashtra specially library.

The present study is limited to the engineering colleges in Maharashtra state and there are 374 engineering colleges in Maharashtra under Directorate of Technical Education, Maharashtra State, up to the date of registration March 2012. In these 374
engineering colleges all State Government / Aided Colleges, University Managed Institutes, University Departments, Autonomous Engineering Institutes, and Unaided colleges are considered for the study.

Websites are updated periodically by engineering colleges Libraries. Due to this updating process links, they also keep on changing a continuous basis. The consecutively issue is also addressed in this study because web information systems are continuously undergoing changes incrementally as well as radically. Results of one search engine sometimes differ from the other search engine and also the hits of one day differ from next day. The period of data gathering took place from March 2012 to March 2017.

5.6 Observations of the Study:

From the present study is observed during the evaluation and analysis of the Engineering Colleges Library Webpages and websites as follows:
1. It was observed in the research study that only one (1) engineering college have do not publish their website on World Wide Web (www).
2. Engineering colleges are from un-aided/private colleges are very high in percentage against aided colleges.
3. The study shows that most of Engineering college library Webpages and Websites displays link like ‘About Library’ on their website, but other information is not included or displayed on their websites.
4. Most of the college libraries focus on Digital Library, but their performance and availability of Digital Library service or sections are very poor.
5. Online services and sources are provide by the engineering college library, but percentage is very low as compared to the available data.
6. The Knowledge Resource Center, Dr. Babasaheb Ambedkar Marathwada University, Aurangabad is found Excellent website during the study.
7. Ghodawat Engineering College, Nagpur published very ideal website of their library with the help of free website software from open source freeware.
8. Vidya Pratishthan's Kamalnayan Bajaj Institute of Engineering and Technology, Baramati, Dist. Pune have provides online Renewal and Reservation of library books/reading material through their WEBOPAC services.
9. Walchand College of Engineering, Sangli is the autonomous engineering college but their score among analysis is zero. They have not given any information about their library.
10. Veermata Jijabai Technological Institute (VJTI), Matunga, Mumbai, is started before independence of India, and it is autonomous, but still their library information is not up to the mark.

11. Researcher also observed that four (04) colleges were established before independence of India (i.e. before year 1947). These are:
   1. College of Engineering, Pune (1854)
   2. Veermata Jijabai Technological Institute (VJTI), Mumbai (1887)
   3. Institute of Chemical Technology, Mumbai (1933)
   4. Laxmi Narayan Institute of Technology, Nagpure (1942)

12. During the study of engineering colleges in Maharashtra, researcher observed that updating of websites and library webpages time to time is very negligible.

13. It is found that majority of the libraries Webpages and websites location on their college websites under the tabs of Administration /About us /Academics / Infrastructure / Departments / Facilities / Gallery / Campus / Services / Sections / Utilities / Resources / Sources / Student corner / Quick Links / Links / Information, etc.

14. Researcher observed that some libraries have published only photos of the library; they are not provided any other information or links on the webpage or website.

15. Engineering colleges’ website and library webpages and websites are mostly not validated by W3C CSS or any other standard agency or standard. It is seems that Authorities of concern colleges and libraries not aware or serious about validation of websites.

5.7 Conclusion:

Engineering college library WebPages and websites is the active tool to furnish the information about services and activities of the library. It will benefit the users to learn about services provided by the particular library. Although, Engineering college library WebPages and websites have varying levels of services and web presence, there is a huge opportunity for developing the web sites. The Engineering colleges, library authorities need to identify qualified, skilled and techno savvy manpower and form a Web unit who will be responsible to collect, organize and display current library information and service to the community through World Wide Web (www). The findings will be useful to the users of engineering college library, to analyses the quality of library resources and services.