Chapter II

WEBOMETRIC: REVIEWS OF RELATED LITERATURE
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INTRODUCTION
It is mandatory to review the literature available with respect to the area of the research. Many researchers have been attempted on Webometric in India and international. This chapter presents some of the excerpts of various studies that had been done on the areas of webometric. The worldwide studies are collected, related to web content analysis, web link analysis and general webometric from leading databases like SCOPUS, EBSCO, PRO-QUEST, J-Gate and open source journals. All the reviews were classified and studied to get an in-depth view of the topic under consideration. The large body of literature on Webometric provides the basis to the present study.

The study has analyzed the related previous studies of library website contents i.e. basic information, different sections, collections and services in both Indian and International perspectives.

The link analysis part identified the related previous studies of library website's link performance i.e. web pages, link web pages, various links and impact factors in both Indian and International perspectives.

Other than the library website contents and link analysis studies, the general studies on webometric were also identified in both Indian and International perspectives.

Thomas, O., Willett, P. (2000), this paper ‘Webometric analysis of departments of librarianship and information science’, describes a Webometric analysis of the linkages (or ‘citations’) to websites associated with departments of librarianship and information science (LIS). Some of the observed citation counts appear counter-intuitive and there is only a very limited correlation with peer evaluations of research performance, with many of the citations being from pages that are far removed in subject matter from LIS. Our conclusions are that citation data are not well suited to the quantitative evaluation of the research status of LIS departments and that
departments can best boost their web visibility by hosting as wide a range of types of material as possible

**Bjorneborn, L., Ingwersen, P. (2001),** since the mid-1990’s has emerged a new research field webometric, investigating the nature and properties of the Web drawing on modern Informetric methodologies. The article ‘Perspectives of webometrics’, attempts to point to selected areas of webometric research that demonstrate interesting progress and space for development as well as to some currently less promising areas. Recent investigations of search engine coverage and performance are reviewed as a frame for selected quality and content analyses. Problems with measuring Web Impact Factors (Web-IF) are discussed. Concluding the article, new directions of webometric are outlined for performing knowledge discovery and issue tracking on the Web, partly based on Bibliometrics methodologies used in bibliographic and citation databases. In this framework graph theoretic approaches, including path analysis, transversal links, "weak ties" and "small-world" phenomena are integrated.

**Gopalkrishnan, S., Ambuja, R., Seetharama, S., (2002),** World Wide Web has created a sea change in information transfer. Information scientist have undergone a perceptible change and have become IT centered, which is evidenced by their citing pattern of citations of information scientists in seminar proceedings of Indian origin and also one volume of an international journal in the field of library and information science. The study ‘A Webometric study on library and information science literature’, reveals that the trend of citations has changed over time and web citations would replace other citations in future.

**Macías-Chapula, C.A. (2002),** this work ‘Bibliometric and Webometric analysis of health system reforms in Latin America and the Caribbean’, presents the results of a bibliometric and webometric analysis on the production and distribution of the literature generated on health system reforms, as produced in or about Latin America and the Caribbean, for the period 1980-1999. Results indicated the limitations and low quality of local and regional databases to represent the productivity in the field. Data was obtained regarding the patterns of production and distribution of documents over time; the main countries and areas involved in health system reform processes; and the institutions behind the initiatives. The implications of the results derived from this research to health policy makers, researchers, librarians, database producers, and information scientists are discussed by the author.
Ndez-Borges, A. A. Herna., Macias-Cervi, Pablo., Gaspar-Guardado, Asuncio´ N., Arcaya, Mari´a Luisa Torres-A´ Lvarez De., Z-Rabaza, Anarui´ and Nez-Sosa, Alejandro Jime´ (2003), the objectives in this study ‘User preference as quality markers of pediatric web sites’, was to analyze whether the number of inbound links and/or daily visits to a sample of pediatric web pages are reliable quality markers of the pages. Study during two-years, follow-up of 363 web pages with pediatric information. The number of inbound links and the average number of daily visits to the pages were calculated on a yearly basis. In addition, their rates of compliance with the codes of conduct, guidelines and/or principles of three international organizations were evaluated. Most importantly, Authors observed a moderate, significant correlation between compliance with quality criteria and the number of inbound links (p<0.001). However, no correlation was found between the number of daily visits to a page and its degree of compliance with the principles. Some indexes derived from the analysis of webmaster’s hyperlinks could be reliable quality markers of medical web resources.

Ortega Priego, J. L. (2003), the aim of this paper is to propose a Vector Space Model as a new methodological approach which allows us to present the relationships between the elements of the Triple Helix Model (University, Industry, Government) in a special model by using the webpage’s of the National Research Council’s of Germany and Spain as examples. Out links of the Biomedicine and Biology centers of these national councils were analyzed with the intention of representing graphically these relationships through the Vector Space Model that allows for Multidimensional Scaling in three dimensions. Results show a map with the differences and similarities between the Spanish and German cases. It may be concluded that these results could become a qualitative indicator of a scientific and technical reality.

Park, H.W., Thelwall, M. (2003), we have recently witnessed the growth of hyperlink studies in the field of Internet research. Although investigations have been conducted across many disciplines and topics, their approaches can be largely divided into hyperlink network analysis (HNA) and Webometric. This article on ‘Hyperlink analyses of the World Wide Web: A review’ is an extensive review of the two analytical methods, and a reflection on their application. HNA casts hyperlinks between Web sites (or Web pages) as social and communicational ties, applying standard techniques from Social Networks Analysis to this new data source. Webometric has tended to apply much simpler techniques combined with a
more in-depth investigation into the validity of hypotheses about possible interpretations of the results. In particular, link creation is an unregulated phenomenon and so it would not be sensible to assume that the meaning of hyperlinks in any given context is evident, without a systematic study of the context of link creation, and of the relationship between link counts, among other measurements.

Tang, R., Thelwall, M. (2003), this article explores disciplinary differences in academic Web-site interlinking using the university departments of chemistry, psychology, and history. Research on ‘U.S. academic departmental Web-site interlinking in the United States disciplinary differences’, has suggested that Web-link counts are related to research productivity and geographic distance between source and target, but no previous Webometric studies have comparatively analyzed academic departments from different disciplines. This study shows large differences in Web use by discipline for both Web-site size and the extent of interlinking, with the history department making little use of the Web and the chemistry department the most. There are significant correlations between in-links and research impact for the psychology and chemistry departments, with a stronger association for the psychology department. There was little evidence, however, of a geographic trend in interlinking.

Bjorneborn, L., Ingwersen, P. (2004), in this article, ‘Toward a basic framework for webometrics’, we define webometric within the frame-work of informetric studies and bibliometrics, as belonging to library and information science, and as associated with cybermetrics as a generic subfield. We develop a consistent and detailed link typology and terminology and make explicit the distinction among different Web node levels when using the proposed conceptual frame-work. As a consequence, we propose a novel diagram notation to fully appreciate and investigate link structures between Web nodes in webometric analyses. We warn against taking the analogy between citation analyses and link analyses too far.

Kaliczyńska, M. (2004), This paper ‘Webometrics - Can we measure the Internet?’, refers issues connected with webometric - science, which allow conducting various researches over model and content of the Internet, especially www sites. Webometric methodology connections with other disciplines and numerous examples of various, sometimes completely different Internet measures were shown. This paper presents the state of the art in webometric.

Lamirel, J.-C., Shehabi, S.A., Francois, C., Polanco, X. (2004), This paper present a compound approach for Webometrics based on an extension the self-organizing
multimap MultiSOM model. The goal of this new approach is to combine link and domain clustering in order to increase the reliability and the precision of Webometrics studies. The extension proposed for the MultiSOM model is based on a Bayesian network-oriented approach. A first experiment shows that the behavior of such an extension is coherent with its expected properties for Webometrics. A second experiment is carried out on a representative Web dataset issued from the EISCTES IST project context. In this latter experiment each map represents a particular viewpoint extracted from the Web data description. The obtained maps represented either thematic or link classifications. The experiment shows empirically that the communication between these classifications provides Webometrics with new explaining capabilities.

**Thelwall, M., Vaughan, L. (2004),** Webometric, the quantitative study of Web phenomena, is a field encompassing contributions from information science, computer science, and statistical physics. Its methodology draws especially from bibliometrics. This special issue ‘Webometrics: An introduction to the special issue’, presents contributions that both push forward the field and illustrate a wide range of webometric approaches.

**Bjorneborn, L. (2005),** This Webometric study ‘Identifying small-world connectors across an academic web space - A webometric study’, identifies web links, pages, and sites that function as small-world connectors affecting short link distances across topics in an academic web space. A five-step methodology is developed to sample and identify small-world properties by zooming stepwise into more and more fine-grained web node levels and link structures among 7669 sub sites harvested from 109 UK universities. The methodology includes shortest path nets functioning as investigable small-world link structures, 'mini small worlds', generated by deliberate juxtaposition of topically dissimilar sub sites. The network analysis tool Pajek identified all shortest link paths within the data set between 10 pairs of sub sites. The study includes a novel corona-shaped model of reachability structures in a web sub graph. The study also suggests how the Web is a web of genres with richly diversified genre connectivity and with genre drift, i.e. changes in page genres along link paths that may affect small-world properties.

**Chu, H. (2005),** Hyperlinks from other Web sites are, in some respect, similar to bibliographical citations. Link analysis, like citation analysis in bibliometrics, has emerged as a research area of webometric in recent years. But why are links made and
where do they point? A sample of in-linked Web entities (i.e., Web pages or Web sites) was randomly selected from a group of academic institutions' Web sites. The in-linked sites, along with the hyperlink data and out-linking sites were analyzed and categorized to form taxonomy of in-linked sites. Based on this taxonomy, a list of reasons for hyper linking, grouped in four top-level categories (teaching/learning, research, service, and home page), was identified. Compared with bibliographical citations, hyperlinks were made for a different set of reasons. Hyper linking also has fewer dimensions, less complexity, and little negative implication. On the whole, almost 50% of all the in-links examined were created for pointing to resource or directory information provided at the target Web sites. In addition, nearly three fourths (73%) of all the in-linked sites analyzed in this study were linked to for reasons relating to service or home page while less than one third (27%) of the links were made out of research or teaching/learning motivations. Yet, teaching and research are the two major criteria traditionally used for evaluating academic institutions. These findings, although by no means conclusive, suggest that evaluative link-based studies should not only consider link counts but also reasons for hyper linking in order to ensure the validity of such research.

**Mayr, P., Tosques, F. (2005),** this report ‘Webometric studies with Google Web APIs’, describes possibilities and restrictions of the Google Web APIs (Google API). The implementation of the Google API in the context of information science studies from the webometric field shows that the Google API can be used with restrictions for internet-based studies. The comparison of results from the two Google interfaces Google API and the standard web interface google.com (Google Web) shows differences concerning range, structure and availability. The study is based on simple and extended queries in the German and English languages. The analyzed results of the Google API confirm the broad tendency of former internet studies.

**Wang, Cheng-Zhi, (2005),** the conventional criteria of website evaluation is widely applied in evaluating online information, which is an important component of information literacy instruction in academic institutions. The purpose of this article ‘Evaluating Demographic Websites: Toward Webometric Criteria’, is to introduce and apply essential webometric criteria to supplement the conventional criteria to improve information literacy instruction. The article first synthesizes the widely used conventional criteria into Six C's for the sake of simplicity and applicability. Then, important webometric criteria of popularity, profundity, luminosity, and error-
checking are introduced. Next, the webometric data collected from leading demography research institutions’ websites in the U. S. are analyzed. The article concludes that while conventional criteria continue to be convenient and useful, particularly for novel web users, a basic set of Webometric criteria can serve as a supplementary tool to provide additional insights into evaluating online resources.

Aguillo, I.F., Granadino, B., Ortega, J.L., Prieto, J.A. (2006), in this article ‘Scientific research activity and communication measured with cybermetrics indicators’, to test feasibility of cybermetric indicators for describing and ranking university activities as shown in their Web sites, a large set of 9,330 institutions worldwide was compiled and analyzed. Using search engines’ advanced features, size (number of pages), visibility (number of external In-links), and number of rich files (pdf, ps, doc, ppt, and xls formats) were obtained for each of the institutional domains of the universities. We found a statistically significant correlation between a Web ranking built on a combination of Webometric data and other university rankings based on bibliometric and other indicators. Results show that cybermetric measures could be useful for reflecting the contribution of technologically oriented institutions, increasing the visibility of developing countries, and improving the rankings based on Science Citation Index (SCI) data with known biases.

Alimohammadi, D. (2006), this brief communication ‘Webliometrics: A new horizon in information research’, tries to use the metrics system to coin a new concept in information science metrical studies, namely, webliometrics. An overview of the webliography is presented, while webliometrics as a type of research method in LIS is defined. Webliometrics’ functions are enumerated and webliometric research methods are sketched out. That webliometrics is worthy of further clarification and development, both in theory and practice. Webliometrics potentially offer a powerful and rigorous new research tool for LIS researchers. The research outputs of webliometrics, although theoretically and statistically rigorous, are of immediate practical value. This paper aims to increase the knowledge of an original thought as yet underutilized approach to research methods.

Bjorneborn, L. (2006), Combining webometric and social network analytic approaches, this study ‘Mini small worlds’ of shortest link paths crossing domain boundaries in an academic Web space’, developed a methodology to sample and identify Web links, pages, and sites that function as small-world connectors affecting short link distances along link paths between different topical domains in an academic
Web space. The data set comprised 7669 subsites harvested from 109 UK universities. A novel corona-shaped Web graph model revealed reachability structures among the investigated subsites. Shortest link path nets functioned as investigable small-world link structures - 'mini small worlds' - generated by deliberate juxtaposition of topically dissimilar subsites. Indicative findings suggest that personal Web page authors and computer science subsites may be important small-world connectors across sites and topics in an academic Web space. Such connectors may counteract balkanization of the Web into insularities of disconnected and unreachable subpopulations.

**Kretschmer, H., Kretschmer, T. (2006)**, there is a rapid increase of network analysis in several scientific disciplines beginning some decades ago. In the literature there are few studies on networks with weighted ties since they not only need more complex formulas but need a process of quantification when quantitative empirical data are not directly available. However quantitative empirical data are directly available under the condition of using bibliometric or webometric data. In conclusion of article ‘Application of a new centrality measure for social network analysis to bibliometric and webometric data’, a new Complex Measure of the Degree Centrality is introduced including weighted ties possible for use of the analysis of co-authorship or citation networks. Both co-authorship relations and citations are well quantified data (weighted ties). This new measure is applied to a bibliographic co-authorship network and its reflection on the Web as an example. The new measures of degree centrality show the whole network on the Web has a more centralized structure than the bibliographic network.

**Lihitkar, Shalini and Sarode, Pratibha, (2006)**, this paper ‘Study of websites of library and information networks in India’, deals with 18 websites of library and information networks in India. The home pages of these networks were studied by using selected criteria like contact details, authority, hyperlinks, content coverage, ease of navigation, database, and e-journals in the websites. Finally concluded that, in India most of the library and information networks have their websites and webpage hosted on internet. The network home page should cover maximum content covering hyperlinks systematically placed on the home page. At the same time, the page should not be overcrowded with hyperlinks. To avoid overcrowding look, pop up link can be used.

**Noruzi, A. (2006)**, The impact of Web presence and Web Impact Factor (WIF) form country code top-level domains (ccTLD) of Middle-Eastern countries, and sub-level
domains (SLD) related to education and academic institutions in these countries, is discussed in this paper titled ‘Web-presence and Middle-Eastern impact factors for countries’. The World Wide Web is a reflection of human culture, a massive socio-cultural network of Web resources authored by millions of people and organizations around the world. The WIF is an important part of Webometric research, which studies hyperlinks and the impacts and influence of Websites. Several WIF studies have been carried out using the advanced search facilities of AltaVista, both before and after its acquisition by Yahoo! Further research is needed to gain a better understanding of the nature of Web links.

Noruzi, A. (2006), the purpose of this article ‘The web impact factor: A critical review’, is to analyze the link-based web site impact measure known as the web impact factor (WIF). It is a quantitative tool for evaluating and ranking web sites, top-level domains and sub-domains. The paper also aims to discuss the WIF's advantages and disadvantages, data collection problems, and validity and reliability of WIF results. A key to webometric studies has been the use of large-scale search engines, such as Yahoo! and AltaVista that allow measurements to be made of the total number of pages in a web site and the total number of back-links to the web site. These search engines provide similar possibilities for the investigation of links between web sites/pages to those provided by the academic journals citation databases from the Institute of Scientific Information (ISI). But the content of the web is not of the same nature and quality as the databases maintained by the ISI. This paper reviews how the WIF has been developed and applied. It has been suggested that web impact factors can be calculated as a way of comparing the attractiveness of web sites or domains on the web. It is concluded that, while the WIF is arguably useful for quantitative intra-country comparison, application beyond this (i.e. to inter-country assessment) has little value. The paper offers a critical review of literature on the WIF and associated indicators.

Pernik, V., Schlogl, C. (2006), this article ‘Possibilities and limitations of Web structure mining. Information science departments in German-speaking countries as an example’, reports on a webometric analysis of websites associated with departments of librarianship and information science from German-language countries. On the one hand we describe a hyperlink network analysis among the departments. On the other hand we introduce a co-link analysis which tried to identify similarities (by subject, by location and/or by institution). It is our intention not only
to show how to conduct such analyses and to present their resulting outcomes. In particular we want to discuss problems and limitations which are connected with the analysis of link structures in the Web.

**Thelwall, M., Ruschenburg, T. (2006),** Webometrics in information science is currently dominated by link analysis and strongly influenced by citation analysis, being typically applied to scientific data. In this chapter ‘Basic principles and research fields of webometrics’, we discuss the use of link count metrics in the broad context of informetrics, assessing methodologies and their potential for general social sciences research. In this context, a generic framework for social science link analysis is presented. The final section comprises promising fields for future research in webometric, placing a special focus on the analysis of blogs.

**Barjak, F., Li, X., Thelwall, M., (2007),** The present research on ‘Which factors explain the Web impact of scientists' personal homepages?’, closes this gap by investigating factors that may influence the Web impact (i.e., in-link counts) of scientists' personal homepages. Data concerning 456 scientists from five scientific disciplines in six European countries were analyzed, showing that both homepage content and personal and institutional characteristics of the homepage owners had significant relationships with in-link counts. A multivariate statistical analysis confirmed that full-text articles are the most linked-to content in homepages. At the Individual homepage level, hyperlinks are related to several offline characteristics. Notable differences regarding total in-links to scientists’ homepages exist between the scientific disciplines and the countries in the sample. There also are both gender and age effects: fewer external in-links (i.e., links from other Web domains) to the homepages of female and of older scientists. There is only a weak relationship between a scientist's recognition and homepage in-links and, surprisingly, no relationship between research productivity and in-link counts. Overall, the results emphasize the complexity of the phenomenon of Web Unlinking, when analyzed at the level of individual pages.

**Onyancha, O.B., Ocholla, D.N., (2007),** the study ‘The Performance of South African and Kenyan Universities on the World Wide Web: A web link analysis’, used Link Analysis to compare Kenyan and South African universities according to several Web-based indicators, some of which include the number of pages, and the number of in and out-links. The authors examined the external out-links in order to determine the institutions targeted by South African and Kenyan universities. Also investigated
were the networks or links between universities. Web Impact Factors (WIFs) were calculated and reported in order to compare the universities' web influence. Results indicate that Kenyan universities, like most African universities, have embraced the Internet and its constructs fairly recently, hence most of their websites are at initial stages of construction. Comparatively, South African universities have made remarkable progress in their web presence, which is at an advanced stage of development, equaling counterparts in more developed countries. The study recommends that regional webometric studies be conducted periodically in order to investigate and map the web-related developments of African universities, it concludes that African universities, though not comparable to counterparts in developed countries, can have their websites evaluated webometrically.

Ortega, J.L., Aguillo, I. (2007), the aim of this communication is to analyze the European academic web space using the linear regression. The objectives of this study ‘Linear analysis of cybermetric data: Quantifying the European university web space’, is to describe and understand how each country receives links from others and to explain the relationships and characteristics of the whole European university web space. Several linear regression models were applied to webometric data to show the relationships between several variables. The results show that there are two variables that explain the attraction of European links: number of web pages, and language of these pages. Pages that use the English language are more likely to get links than the non-English ones, because this language is the lingua franca in the European academic web space.

Ortega, J.L., Aguillo, I.F., (2007), the aim of this work ‘Interdisciplinary relationships in the Spanish academic web space: A webometric study through networks visualization’, is to describe the inter-disciplinary research relationships among several Spanish university departments and research groups located in the Spanish web space. 699 web sites from 2390 were selected according to whether a web site receives or links to at least one of the rest. The links between them were extracted with a commercial crawler in 2004 and then analyzed to built a complex directed network of in-links and out-links. The results show that the Spanish academic web space is weakly interconnected both at the level of groups and departments, and that the relationships between disciplines can be appreciated through network graphs. The use of network graphs is a suitable technique to show the transversal relationships among disciplines and to detect incipient research fronts in the web space. The web
presence of Experimental and Technological Sciences is higher than Social Sciences and Humanities as well.

Payne, N., Thelwall, M., (2007), As the web is continuously changing, perhaps growing exponentially since its inception, a major potential problem for webometrics is that web statistics may be obsolete by the time they are published in the academic literature. It is important therefore to know as much as possible about how the web is changing over time. This paper ‘A longitudinal study of academic webs: Growth and stabilization’, studies the UK, Australian and New Zealand academic webs from 2000 to 2005, finding that the number of static pages and links in each of the three academic webs appears to have stabilized as far back as 2001. This stabilization may be partly due to increases in dynamic pages which are normally excluded from webometric analyses. Nevertheless, the results are encouraging evidence that webometric for academic spaces may have a longer-term validity than would have been previously assumed.

Rousseau, R., (2007), in this chapter ‘Publication and citation analysis as a tool for information retrieval’, an overview of citation analysis is presented, emphasizing its formal aspects as applied social network theory. As such citation linking can be considered a tool for information retrieval based on social interaction. It is indeed well known that following citation links is an efficient method of information retrieval. Relations with Web linking are highlighted. Yet, also social aspects related to the act of citing, such as the occurrence of invisible colleges, are discussed. I present some recent developments and my opinion on some future developments. In this way I hope the reader will realize how the fields of citation analysis and Webometrics can be helpful in building social information retrieval systems.

Aguillo, I.F., Ortega, J.L., Fernández, M.(2008), this paper ‘Webometric ranking of world universities: Introduction, methodology and future developments’, presents the Webometric Ranking of World Universities which is built using a combined indicator called WR that takes into account the number of published web pages (S) (twenty-five percent), the number of rich files, those in pdf, ps, doc and ppt format (R) (12.5 percent), the number of articles gathered from the Google Scholar Database (Sc) (12.5 percent,) and the total number of external inlinks (V) (fifty percent). The results show that there is a larger than expected academic digital divide between higher education institutions in the United States and those in the European Union.
This kind of rankings using web indicators should be used to measure universities’ performance in conjunction with more traditional academic indicators.

**Boell, Sebastian K., Wilson, Concepción S., Cole, Fletcher T. H., (2008),** this study ‘A Webometric Analysis of Australian Universities using Staff and Size dependent Web Impact Factors (WIF)’, describes how search engines (SE) can be employed for automated, efficient data gathering for Webometric studies using predictable URLs. It then compares the usage of staff related Web Impact Factors (WIFs) to size related impact factors for a ranking of Australian universities, showing that rankings based on staff related WIFs correlate much better with an established ranking from the Melbourne Institute than commonly used size dependent WIFs. In fact size dependent WIFs do not correlate with the Melbourne ranking at all. It also compares WIF data for Australian Universities provided by Smith (1999) for a longitudinal comparison of the WIF of Australian Universities over the last decade. It shows that size dependent WIF values declined for most Australian universities over the last ten years, while staff dependent WIFs rose.

**Danesh, Farshid., Soheili, Faramarz., Shafiei, Afsaneh., (2008),** The ministries web sites are in fact an entrance into the virtual environment and valuable information concerning the staff, members of society. This research ‘Hyperlink analysis of Iranian ministries websites’, aims to investigate visibility, Web Impact Factor (WIF), and the collaboration rate of the websites of the Iranian government ministries. In this process, in-links, self links and co-links of the websites under study were totaled and then cluster and multiple dimensional scaling were applied. There processes reduce the number of dimensions to a few fundamental and significant dimensions hence providing the opportunity for their investigation. All 20 websites belonging to the Iranian government ministries which were in a period of one month (January 10 – February 22, 2008) were reviewed through Yahoo. The final success of a website is dependent on factors such as quality, size, language, history, content and some other factors and one or two restricted factors cannot be declared as sole reasons for its success. Therefore any research in this field must consider all factors and should judgment be required extreme caution is advisable.

**Elgohary, A.E., (2008),** the purpose of this paper ‘Arab universities on the web: A webometric study’, is to investigate the Web Impact Factor of Arab universities. The study included 99 universities representing 20 Arab countries. The advanced search facility of AltaVista was used for data collection. Two rounds of data collection were
conducted to retrieve the links as well as the web presence of the included universities. Jordanian universities represent 40 per cent of the top ten universities with the revised web impact factor. However, this was not the case in terms of the universities' web presence. Results indicated a strong correlation between external links and web presence. The variability of search engine results and the unavailability of some university web sites are limitations to the study. By investigating, for the first time, the Web Impact Factors of Arab universities as well as the relation to other variables such as language, the paper would provide universities with some measure of how they are viewed by the outside world.

Haidari, Gholam., Zareh, Firoozeh., Osareh, Farideh., Farajpahlou, A. Hossein., (2008), This article ‘Collaboration among Library and Information Science websites of Associations and Societies (LISAS), using webometric methods’, aims to study the websites of Library and Information Science Associations & Societies (LISAS) at both national and international levels applying webometric methods. The in-links and co-links to LISAS' Websites were analyzed, firstly, to study the visibility of these Associations & Societies on the web; secondly, the collaboration among these websites at national and international levels was identified, and finally, Web Impact Factor (WIF) of LISAS' websites was determined using link analysis method. According to the link count, this study found that out of 28 LISAS' websites, 4 were extremely popular or the most visible LISAS' websites. Based on co-link analysis, the structure underlying the 28 LISAS' websites was also studied. Collaboration among these Associations and Societies was also studied through their websites using cluster analysis and multidimensional scaling techniques.

Lang, P.B., Gouveia, F.C., Leta, J., (2008), as an initial approach for a more profound study on the image and impact of Oswaldo Cruz Foundation on the Web, this article ‘Intra-institutional relations on the web: An exploratory study based on webometric methodologies’, investigates the correlations between the sites of the units of this institution in Rio de Janeiro. The methodology used was based on co-linking, interlinking and clustering analysis. The data pointed out to the formation of four different groups and one isolated Unit, as well as a low level of integration between the websites studied.

Payne, N., Thelwall, M., (2008), Longitudinal studies of web change are needed to assess the stability of webometric statistics and this paper forms part of an on-going longitudinal study of three national academic web spaces. It examines the relationship
between university in-links and research productivity over time and identifies reasons for individual universities experiencing significant increases and decreases in in-links over the last six years. The findings also indicate that between 66 and 70% of out-links remain the same year on year for all three academic web spaces, although this stability conceals large individual differences. Moreover, there is evidence of a level of stability over time for university site in-links when measured against research productivity. Surprisingly, however, in-link counts can vary significantly from year to year for individual universities, for reasons unrelated to research which undermines their use in webometrics studies.

Ruschenburg, Tina., (2008), Till date, there are only few webometric studies covering developing countries. This exploratory paper ‘Oceanographic research institutes on the World Wide Web: A comparison of websites in developed and developing countries’, seeks to clarify whether web presence and visibility of research institutes varies across developed and developing countries in one specific research field. For a sample of ten small and medium sized oceanographic research institutes in Germany, India, Kenya, Mauritius, Pakistan, South Africa and the United States page and link counts as well as a set of Web Impact Factors (WIFs) were determined. They were correlated with the United Nations' Human Development Index (HDI) as an indicator for the overall socioeconomic situation of the institutes' host countries. To summarize, the visibility of oceanographic research institutes on the Web (in terms of in-links) matches their website size, but not their real size (in terms of scientific staff). These findings raise doubts about the World Wide Web being a leveler of global inequalities in the scientific information and communication system.

Shah, Leena., Goswami, Prashant., Sharma, Umesh., (2008), The paper evaluates websites of 27 universities of two prominent and largest states of India, Uttar Pradesh and Rajasthan to find out facilities provided by them in search and user friendliness & their drawbacks. The paper ‘Webometric Study of University Websites of Uttar Pradesh and Rajasthan (India)’, analyses authority detail, contact details, currency details, navigation links, user support links & status of universities. Rank tables for each university based on scores obtained have been prepared and graded from excellent to very poor. Paper suggests for a Council/Committee to evaluate websites for improvement on regular basis. Paper also suggests for developing more evaluation parameters and their scaling.
Suo, H., Nie, K., Sun, X., Wang, Y., (2008), in this article ‘Active information recommendation model based on webometrics’, describes Information recommendation is an important kind of service mode in the E-commerce sites. It can improve the cross-selling capacity of the sites and enhance the customer's loyalty to the E-commerce sites. An active information recommendation model combined with the webometrics is proposed, obtained the objective popularity degree of the publication by the webometrics technology and recommended the Top-N rankings of the publication to users in an active way. The recommendation information can reflect the popularity of the online books. In addition, this recommendation model is in high atomization

Tang, Rong and Thelwall, Mike., (2008), this article ‘A hyperlink analysis of U. S. Public and academic Libraries’ web sites,’ reports on patterns of links from and to the Web sites of 100 U.S. academic and public libraries with regard to the originating and targeted URL domain categories. Libraries, grouped into small and large by their collection size, were found to have numbers of in-links proportional to their size, but public libraries, and particularly the smaller ones, hosted relatively fewer out-links. While public libraries link largely to and attract links mainly from the .com and .org domains and U.S. regional sites, academic libraries link to a variety of domains, including .edu, .com, .org, and some overseas sites. Academic libraries also draw in-links mainly from .edu and .com sites. The results reveal that there is little interaction between public libraries in the United States and U.S. universities, and this calls attention to the need for more collaboration between the two types of organizations

Thelwall, M., (2008), Bibliometrics has changed out of all recognition since 1958; becoming established as a field, being taught widely in library and information science schools, and being at the core of a number of science evaluation research groups around the world. This was all made possible by the work of Eugene Garfield and his Science Citation Index. This article ‘Bibliometrics to webometrics’, reviews the distance that bibliometrics has travelled since 1958 by comparing early bibliometrics with current practice, and by giving an overview of a range of recent developments, such as patent analysis, national research evaluation exercises, visualization techniques, new applications, online citation indexes, and the creation of digital libraries. Webometrics, a modern, fast-growing offshoot of bibliometrics, is reviewed in detail. Finally, future prospects are discussed with regard to both bibliometrics and webometrics.
Thelwall, M., (2008), in the article ‘Quantitative comparisons of search engine results’, describes search engines are normally used to find information or Web sites, but Webometric investigations use them for quantitative data such as the number of pages matching a query and the international spread of those pages. For this type of application, the accuracy of the hit count estimates and range of URLs in the full results are important. Here, we compare the applications programming interfaces of Google, Yahoo!, and Live Search for 1,587 single word searches. The hit count estimates were broadly consistent but with Yahoo! and Google, reporting 5-6 times more hits than Live Search. Yahoo! tended to return slightly more matching URLs than Google, with Live Search returning significantly fewer. Yahoo!’s result URLs included a significantly wider range of domains and sites than the other two, and there was little consistency between the three engines in the number of different domains. In contrast, the three engines were reasonably consistent in the number of different top-level domains represented in the result URLs, although Yahoo! tended to return the most. In conclusion, quantitative results from the three search engines are mostly consistent but with unexpected types of inconsistency that users should be aware of. Google is recommended for hit count estimates but Yahoo! is recommended for all other Webometric purposes.

Thelwall, M., Li, X., Barjak, F., Robinson, S., (2008), the purpose of this paper ‘Assessing the international web connectivity of research groups’, is to claim that it is useful to assess the web connectivity of research groups, describe hyperlink-based techniques to achieve this and present brief details of European life sciences research groups as a case study. A commercial search engine was harnessed to deliver hyperlink data via its automatic query submission interface. A special purpose link analysis tool, LexiURL, then summarized and graphed the link data in appropriate ways. Webometrics can provide a wide range of descriptive information about the international connectivity of research groups. Only one field was analyzed, data was taken from only one search engine, and the results were not validated. This is the first paper to make a case for the value of using a range of webometric techniques to evaluate the web presences of research groups within a field, and possibly the first ‘applied’ webometrics study produced for an external contract.

Yi, K., Jin, T., (2008), The purpose of this paper ‘Hyperlink analysis of the visibility of Canadian library and information science school web sites’, is to probe the external visibility of the web sites of all seven ALA-accredited Canadian library and
information science (LIS) schools. The number of in-links to the schools' web sites is used as an indicator of the visibility of all or some portions of the LIS web sites. In-links pointing to the LIS school web sites were collected using the All the Web search engine. The LIS School web pages pointed to by in-links were manually analyzed to discover visible topics and contents. Four content clusters were identified by which to group the content of all the in-linked LIS school web pages. These clusters were LIS, research, home page and resources. The most visible cluster was the LIS cluster and the least visible was the research cluster. The most visible topics were student projects/activities, LIS-related resources and course-related information, in that order. The home page of each LIS school's web site was shown to be the single web page with the most visibility. This was a comparative webometric study, which collected and analyzed in-links for seven Canadian LIS school web sites at two different times, 3 years apart (2003 and 2006). In the study, the ranking of visible clusters, topics and web pages from the LIS web sites were identified.

Aminpour, F., Kabiri, P., Otroj, Z., Keshtkar, A.A., (2009), There are many researchers have been conducted on webometric, especially the impacts of websites on each other and the web impact factor. However, there are few studies focusing on the websites of Iranian universities. This study ‘Webometric analysis of Iranian universities of medical sciences’, analyzed the websites of Iranian universities of medical sciences according to the webometric indicators. In a cross-sectional study, the number of web pages, in-links, external in-links and also the overall and absolute web impact factors for Iranian universities of medical sciences with active exclusive websites were calculated and compared using AltaVista search engine. Finally, the websites were ranked based on these webometric indicators. The results showed that the website of Tehran University of Medical Sciences with 49,300 web pages and 9860 in-links was ranked first for the size and number of in-links, while its impact factor was ranked 38th. Rafsanjani UMS with 15 web pages and 211 links had the highest rank for the web impact factor among Iranian universities of medical sciences. The study revealed that Iranian universities of medical sciences did not have much impact on the web and were not well known internationally. The major reason relies on linguistic barriers. Some of them also suffer from technical problems in their web design.

Arakaki, M., Willett, P., (2009), ‘Webometric analysis of departments of librarianship and information science: A follow-up study’, in this paper reports an
analysis of the websites of UK departments of library and information science. In-link counts of these websites revealed no statistically significant correlation with the quality of the research carried out by these departments, as quantified using departmental grades in the 2001 Research Assessment Exercise and citations in Google Scholar to publications submitted for that exercise. It is concluded that departmental-level webometric analyses do not at present provide an appropriate technique for evaluating academic research quality, and, more generally, that standards are needed for the formatting of URLs if in-links are to become firmly established as a tool for website analysis.

Chung, Y.M., Yu, S.Y., Kim, Y.K., Kim, S.Y., (2009), This study ‘Characteristics and link structure of a national scholarly web space: The case of South Korea’, performs a webometric analysis to explore the communication characteristics of scientific knowledge in a national scholarly Web space comprising top ranking universities and government supported research institutions in South Korea. We found significant differences in scholarly communication activity as well as linking behavior among different subspaces in addition to institutional differences. We also found the usefulness of the ADM approach in analyzing the metric data containing extreme outliers and discovered the directory model as the most appropriate. Page counts were found significantly correlated with in-links as well as with out-links at the directory level in the whole scholarly Web space.

Holmberg, K., Thelwall, M., (2009), It has been shown that information collected from and about links between web pages and web sites can reflect real world phenomena and relationships between the organizations they represent. Yet, government linking has not been extensively studied from a webometric point of view. The aim of this study ‘Local government web sites in Finland: A geographic and webometric analysis’, was to increase the knowledge of governmental interlinking and to shed some light on the possible real world phenomena it may indicate. We show that interlinking between local government bodies in Finland follows a strong geographic, or rather a geopolitical pattern and that governmental interlinking is mostly motivated by official cooperation that geographic adjacency has made possible.

Jalal, S.K., Biswas, S.C., Mukhopadhyay, P., (2009), ‘Intra-institutional relations on the web: An exploratory study based on webometric methodologies’, Web presence of Indian Universities has been reflected in general and Central Universities
in particular. Webometric data have been collected through Yahoo! and Google search engines using special query syntax. An attempt has been made to rank Central Universities in India using appropriate webometric indicators. Results revealed that University of Delhi becomes top rank (with score 4.28 and Sikkim University occupied the last (with score 1.64) among Central Universities in India.

Kjellberg, S., (2009), the purpose of this article ‘Blogs as interfaces between several worlds: A case study of the Swedish academic blogosphere’, is to examine the use of blogs as tools in scholarly communication practice. The article is based on a case study of the Swedish academic blogosphere. It starts with an overview of earlier research about blogs which is followed by a presentation of earlier research on scholarly communication practice. Disciplinary differences regarding the use of ICTs are considered specifically. Sixty-seven Swedish academic blogs are investigated using content analysis, supplemented by a webometric study of the same material. The results indicate agreement across disciplines regarding the use of blogs as tools. One conclusion is that blogs do not replace a previous form of communication, but function as distinct interfaces between four arenas: the university, the research field, the general public and private life.

R. Jayshankar and Rameshbabu, (2009), in this paper ‘Websites of universities in Tamil Nadu: a Webometric study’, researcher examines and explores through a Webometric study the websites of 45 universities in Tamil Nadu comprising of 27 state and 18 private universities. Identifies the domain systems of the websites; analyses the number of web pages and link pages, and calculates the simple web impact factor (WIF), self link web impact factor and external web impact factor of the university websites in Tamil Nadu and ranks the websites as per WIF. Reflects that some universities in Tamil Nadu have higher number of web pages but correspondingly their link pages are very small in number and websites fall behind in their simple, self link and external link web impact factor.

Romero-Frías, E., (2009), This paper on ‘Googling companies - A webometric approach to business studies’, is intended to show how webometric techniques could be applied to business and management studies. Therefore, it describes a number of basic concepts and techniques and the way in which they have been applied to these fields so far. Firstly, some studies found that the number of links pointing to companies' websites correlates significantly with the business performance measures of the entity. This finding suggests that links to a website could be used as a timely
indicator of business performance. Secondly, the examination of co-links, which refers to web pages that links two business sites simultaneously, have been used for competitive intelligence purposes. These studies are based on the idea that the number of co-links to the websites of a pair of companies is a measure of the similarity between them. Finally, motivations for the creation of hyperlinks to business sites could be analyzed through a content analysis approach in order to get confirmation about the business relevance and nature of links. This view complements the quantitative perspective to link and co-link research, providing a brand new approach to business studies.

Aguillo, I.F., Ortega, J.L., Fernández, M., Utrilla, A.M., (2010), The Ranking Web of World Repositories (http://repositories.webometrics.info) is introduced. The objective is to promote Open access initiatives (OAI) supporting the use of repositories for scientific evaluation purposes. A set of metrics based on web presence, impact and usage is discussed. The Ranking is built on indicators obtained from web search engines following a model close to the Impact Factor one. The activity accounts for a 50% of the index, including number of pages, pdf files and items in Google Scholar database, while the visibility takes into account the external in-links received by the repository. The Ranking provides the Top 300 repositories from a total of 592 worldwide, with a strong presence of US, German and British institutional repositories and the leadership of the large subject repositories. Results suggest the need to take into consideration other file formats and the usage information; an option is not feasible today.

B. Ramesh Babu, R. Jeyshankar and P. Nageswara Rao, (2010), This study examines 40 central universities websites in India. Investigates domain systems of the websites, analyses the number of web pages and link pages and calculates the simple web impact factor, self link web impact factor, external link web impact factor and revised web impact factor for Central universities in India and ranks the websites as per the WIF. It also develops a novel network diagram showing link structures between web nodes in webometric analysis. This study ‘Websites of Central Universities in India: A Webometric Analysis’, warns against taking the analogy between citation analysis and link analysis too far.

Holmberg, K., (2010), It is known that there are significant correlations between linking and geographical patterns. Although interlinking patterns have been studied in various contexts, co-in-linking patterns on the Web have only been studied as
indicator of business competitive positions. This research ‘Co-in-linking to a
municipal Web space: A webometric and content analysis’, studies the use of co-in-
links to local government Web sites, assesses whether co-in-linking follows
geographic patterns and investigates reasons for creating the co-in-links. Strong
evidence was found that co-in-linking is more frequent to municipalities in the same
functional region than to municipalities in different functional regions, indicating that
this geographic aspect influences co-in-linking, even though geographic co-in-linking
was not a strong trend overall. Because the functional regions are created based on
cooperation between the municipalities, we have indirectly been able to map
cooperaon from co-in-linking patterns on the Web. The main reason to create co-in-
linking links to municipalities was that the source of the links wanted to show a
connection to its region.

Jalal, S. K., Biswas, Subal Chandra and Mukhopadhyay, (2010), in this paper
‘Web impact factor and link analysis of selected Indian universities’, authors
investigate the effectiveness and relevance of web impact factors (WIFs) for Indian
universities websites. Reviews web impact factor as to how this link-based metrics is
developed and is applied. Reports a case study on universities in West Bengal.
SocSciBot 3.0 is used to generate link data in order to develop/form micro-link
topology under study. Result shows that all the NITs are closely related in the
topology framework/their activities whereas nodes are no linked signiﬁcantly for the
case of state universities and central universities.

Karami, T., Oloumi, T., Rahimi, S., (2010), Weblog has become well established as
one of the Web 2.0 products. Given the essential nature of their job, librarians and
information professionals, can use weblog as a quick and easy mean for information
and knowledge sharing. The present study ‘Review of English language library and
information science weblogs: Analyzing the link between weblog types and their
technical/content structure’, reviews some 150 LIS weblogs in order to examine and
analyze the link between weblog types (personal, library-owned or group operated)
with their content and technical structure. Webometric methods were deployed for
selection of the sample. The ﬁndings indicated that there is a signiﬁcant correlation
between the weblog types and their update frequency. The same holds between the
weblog types and their content. But no such signiﬁcance was observed with respect to
the weblog publishing tools. The investigators believe that the links uncovered could
also hold true for Iranian LIS weblogs.
Lang, P., Gouveia, F.C., Leta, J., (2010), the method of co-link was proposed in 1996 and since then it has been applied in many Webometric studies. Its definition refers to "page co-link analysis", as links are provided by URLs or pages. This paper ‘Site co-link analysis applied to small networks: A new methodological approach’, presents a new methodological approach, a "site co-link analysis", to investigate relations in small networks. The Oswaldo Cruz Foundation institutes were used as a case study. The results indicate that the number of co-links provided by sites led to an increase of 133% in the sample analyzed. In a cluster analysis, three clusters were formed mainly for thematic reasons and four institutes remained isolated.

Malinský, R., Jelínek, I., (2010), the paper ‘Improvements of webometrics by using sentiment analysis for better accessibility of the web’, discusses the webometric model for effective acquirement of relevant information from the web that would better separate the useful data from the useless. Our research emphasis has been placed on techniques that would better reflect the semantic content of single pages. Webometric is purely a quantitative approach to the web, which can be enhanced by qualitative methods and thereby allows us to expand the possibilities of a study problem. Sentiment analysis may be used as a qualitative complement to quantitative approach. This analysis provides a technique of sophisticated analysis of sentences using mathematical and statistical methods and linguistic analysis of text. Extension of the webometric techniques of sentiment analysis methods leads up to a better machine understanding of a web page and its overall semantic meaning. It can be assumed that the designed model will reduce the irrelevant web search results and thereby facilitate user access to the information on the web. The introductory part of the paper explains the concept of the sentiment analysis and the basic functional background of the webometric techniques.

Moscovkin, V.M., (2010), This paper ‘The webometric estimate of the publication activities of universities: The influence of the Belgorod declaration’, gives the webometric estimate of the functioning of the universities included in the Near-Frontier Belarusian-Russian-Ukrainian University Consortium (in the context of the adoption of the Belgorod Declaration on open access to scientific knowledge and our cultural heritage) during 2008-2009 on the basis of the Spanish webometric university ranking and the potential of the Google Scholar search engine. The classification of the universities of the Near-Frontier Belarusian-Russian-Ukrainian University
Consortium has been built according to the degree of publication activities. The influence of the Belgorod Declaration on university publication activities was shown.

Rebai, B.K., Zacharewicz, G., Reymond, D., Corbe, P., (2010), This paper ‘AnCaraS: A new webometrics web-spider; G-DEVS-based validation of concepts’, introduces a new web application specification based on G-DEVS M&S, employed here to validate concepts and feasibility, in order to secure its implementation. The application is a web-spider and graph visualization tool; which supplies website metric analyses to the user, i.e. an informetric characterization with a topologic visualization and also an interactive manipulation of graphs. The tool provides different indicators of consistency of the web site with regards to customizable parameters. The scope of this study aims to improve the quality and attractiveness of public (government offices) and university web portals. There are some technical constraints, i.e. the bandwidth range and DNS (Domain Name Server) definitions; which are also taken into account. This tool has been designed for different kind of users that may range from webmasters through global editing policy deciders. G-DEVS models allow us to specify, test configuration by simulation, test integration of heterogeneous components using G-DEVS/HLA interoperability and thus make the implementation easier and safer, especially when we will save time by avoiding some implementation failures.

Thelwall, M., (2010), for some years bibliometric studies have identified webometrics as one of the largest information science fields. Nevertheless, most published webometric research is relatively theoretical and, as a new research field, seems unlikely to survive unless it is useful in some way. In general it is very important for academics to identify hot research topics and avoid unpromising ones and so methods are needed to help this identification process. This article ‘Webometrics: Emergent or doomed?’, uses citation analysis and a survey of webometricians to assess the extent to which webometric has found applications outside of its parent discipline. The results suggest that there has been a turn towards applied webometric with several externally-financed studies being contracted. Moreover, there is a significant amount of citation of webometric research by disciplines outside information science, including computing, communication science and health. Nevertheless, it seems that the potential user base for current webometric techniques is wider still, creating a need for awareness-raising.
Whilst webometric already has several claims to usefulness, there is still progress to be made.

**Thelwall, M., Klitkou, A., Verbeek, A., Stuart, D., Vincent, C.,** (2010), Despite over 10 years of research there is no agreement on the most suitable roles for Webometric indicators in support of research policy and almost no field-based Webometric. This article ‘Policy-Relevant webometrics for individual scientific fields’ partly fills these gaps by analyzing the potential of policy-relevant Webometric for individual scientific fields with the help of 4 case studies. Although Webometric cannot provide robust indicators of knowledge flows or research impact, it can provide some evidence of networking and mutual awareness. The scope of Webometric is also relatively wide, including not only research organizations and firms but also intermediary groups like professional associations, Web portals, and government agencies. Webometric can, therefore, provide evidence about the research process to complement peer review, bibliometric and patent indicators: tracking the early, mainly prepublication development of new fields and research funding initiatives, assessing the role and impact of intermediary organizations and the need for new ones, and monitoring the extent of mutual awareness in particular research areas.

**Vaughan, L., You, J.,** (2010), Web hyperlink analysis has been a key topic of Webometric research. However, in-link data collection from commercial search engines has been limited to only one source in recent years, which is not a promising prospect for the future development of the field. We need to tap into other Web data sources and to develop new methods. Toward this end, we propose a new Webometric concept that is based on words rather than in-links on WebPages. We propose that word co-occurrences on WebPages can be a measure of the relatedness of organizations. Word co-occurrence data can be collected from both general search engines and blog search engines, which expands data sources greatly. The proposed concept is tested in a group of companies in the LTE and WiMax sectors of the telecommunications industry. Data on the co-occurrences of company names on WebPages were collected from Google and Google Blog. The co-occurrence matrices were analyzed using MDS. The resulting MDS maps were compared with industry reality and with the MDS maps from co-link analysis. Results show that Web co-word analysis could potentially be as useful as Web co-link analysis. Google Blog seems to be a better source than Google for co-word data collection.
Walia, Paramjeet K. and Kaur, Prabhjeet, (2010), Ministries of Government of India have hosted their own websites across the World Wide Web so as to provide the world a view of the functioning of the Indian Government. It is essential these have to be up to the mark to represent the nation in an appropriate manner. But, despite this scale of involvement, there has been relatively little analysis of contents and visibility of these websites. The study ‘Government of India Websites: A Study’, highlights the importance of online government information in India and shows how far these websites have been able to make an impact on the society. The paper aims to examine the websites for their linking and content presence, and also to find out their web impact factor. The research methodology adopted for the study is investigative in nature. It includes observation of the selected websites from different points of view like number of web pages, web impact factor, and number of rich files. Data analyses and interpretation show that for each of the indicator used in this study, there were a different set of websites which achieved the topmost ranks. The finding of this study highlights the standing of these websites against the average values and show that different ministries excelled from different points of view.

Zahedi, Z., Shirazi, M.S., Dehghani, L., (2010), The World Wide Web is an important information source for scholarly communications. Examining the in-links via webometric studies has attracted particular interests among information researchers. In this study, ‘A webometric analysis of ISI medical journals using Yahoo, Alta vista, and all the web search engines’, the number of in-links to 69 ISI medical journals retrieved by Yahoo, AltaVista, and The entire web Engines were examined via a comparative and Webometric study. For data analysis, SPSS software was employed. Findings revealed that British Medical Journal website attracted the most links of all in the three search engines. There is a significant number of External links and the ISI impact factor. The most significant correlation in the three search engines exists between external links of Yahoo and AltaVista (100%) and the least correlation is found between external links of AltaVista (0.51). There is no significant difference between the internal links & the number of pages found by the three search engines. But in case of impact factors, significant differences are found between these three search engines. So, the study shows that journals with higher impact factor attract more links to their websites. It also indicates that three search engines are significantly different in terms of total links, out links and web impact factors.
Zhao, R., Wang, J., (2010), with the newly developed information visualization methods, this paper ‘Research of international Webometrics in frontier domains in visualized information’, analyzed the literature themed at Webometrics cited by ISI Web of Knowledge. Using the software Cite space II, this study developed a knowledge map of the representative personage and works on Webometrics. Finally, based on the detection of the subject headings with word frequency of significant fluctuation, the research frontier and the further development trend of Webometrics was determined and the knowledge map of them was developed.

Zhao, R., Xu, L., (2010), It has been already about 90 years since original study of bibliometric, formed a fully-fledged discipline-Bibliometrics. With the depth of quantitative research and effect of social environment, Informetrics has evolved on the basis of Bibliometrics. And along with sharply increase of Internet Information Resources, Webometrics has emerged as required. In this paper, ‘Visualization analysis of evolution from bibliometrics to webometrics’, the date resources about Bibliometrics, Informetrics and Webometrics are come from ISI Web of knowledge. The author tries to use the information visualization techniques of dynamic network analysis-Cite Space II, draw the knowledge map of literature's co-citation to identify the important achievements and representative scientists. At the same time, the author draws the knowledge map of evolution of Bibliometrics' hotspot, directly shows the development of the evolution from Bibliometrics to Webometrics.

Zissopoulos, D., Kyriazopoulos, G., Panagiotis, S., Eyagelos, T., (2010), Commodity of education has a lot of aspects from theoretical extreme left or humanistic options to extreme right slavery actions. In this research ‘Education commodification: University and professor funding, student loan risk assessment and webometrics’, we define the "politically correct" eligible student spending from the humanistic banker view. Then we present three proposals. For the first proposal the golden rule of our methodology is that we assume that all "student then taxed workers" above the sector average gained this excessive income, due to their previous University education. Then university funding follows this market oriented evaluation. Our other proposals are not that radical but they use the existed banking rules to facilitate student education loans. Credit risk distribution and assessment is used to split the credit danger amongst a lot of financial partners. A similar practical method to evaluate student loan is the webometrics science. Webometrics is used extensive for worldwide university classification and it ready for student credit use.
Aguillo, Isidro F., (2011), Google Scholar, the academic bibliographic database provided free-of-charge by the search engine giant Google, has been suggested as an alternative or complementary resource to the commercial citation databases like Web of Knowledge (ISI/Thomson) or Scopus (Elsevier). In order to check the usefulness of this database for bibliometric analysis, and especially research evaluation, a novel approach is introduced. Instead of names of authors or institutions, a webometric analysis of academic web domains is performed. The bibliographic records for 225 top level web domains (TLD), 19,240 university and 6,380 research centres institutional web domains have been collected from the Google Scholar database. About 63.8% of the records are hosted in generic domains like .com or .org, confirming that most of the Scholar data come from large commercial or non-profit sources. Considering only institutions with at least one record, one-third of the other items (10.6% from the global) are hosted by the 10,442 universities, while 3,901 research centers amount for an additional 7.9% from the total. The individual analysis show that universities from China, Brazil, Spain, Taiwan or Indonesia are far better ranked than expected. In some cases, large international or national databases, or repositories are responsible for the high numbers found. However, in many others, the local contents, including papers in low impact journals, popular scientific literature, and unpublished reports or teaching supporting materials are clearly overrepresented. Google Scholar lacks the quality control needed for its use as a bibliometric tool; the larger coverage it provides consists in some cases of items not comparable with those provided by other similar databases.

Ahmed Elgharabawy, M., Ayu, M.A., (2011), Educational institutes compete to achieve higher ranking in different world ranking systems. This is because higher ranking gives the institute more recognition worldwide. Webometrics is one of the most famous ranking systems for high learning institutions. The study ‘Web content accessibility and its relation to Webometrics ranking and search engines optimization’, tries to investigate the relation between Webometrics ranking and WCAG conformance. Does WCAG conformance affect Webometrics? Is this effect significant? The study also investigates the relation between WCAG conformance and search engines ranking. The aim of this study is to find out whether accessibility can be used as a tool for search engines optimization or not. Results indicate that there is a positive relation between Webometrics and WCAG conformance. Though the results showed a weak correlation between measured variables, the trend was always
positive. As for WCAG conformance and search engines ranking, results showed a weak positive trend almost in all cases which indicates that accessibility could be recommended as a tool for search engines optimization.

Aminpour, F., (2011), The websites of universities by introducing the missions, faculties, departments, courses, educational levels, research and educational facilities, faculty members, students and alumni to the World Wide Web are of great importance in the study of ‘How to improve webometric ranks of Iranian medical universities’. Now a day, webometric ranking of universities is as important as the academic ranking of universities. Webometric ranking of universities reflects the overall web performance of the universities. Analyzing the researches on Iranian academic websites shows many deficiencies in the websites of the Iranian medical universities. These problems are the main causes of low webometric ranks of Iranian medical universities in the Ranking Web of World Universities. The current study reviews the previous studies on the academic websites of Iran and other countries and suggests several ideas for improving the websites of Iranian medical universities focusing on the structure and content according to the webometric indicators of Ranking Web of World Universities. The suggested ideas would improve Iranian medical universities ranks in the international level and also affect the major national policies of information management.

Anwarul Islam, M., (2011), Very few studies have been conducted on webometric studies in Bangladesh. But the present article ‘Webometrics study of universities in Bangladesh’, reports webometric study of all university websites in Bangladesh. Data for the study obtained using AltaVista search engine was used to rank the websites based on webometric indicators. It is found that some universities in Bangladesh have higher number of web pages but their link pages are fewer and websites fall behind in their web impact factor. Some suggestions to improve the WIF of the university websites in Bangladesh are given.

Goltaji, M., Didegah, F., (2011), With regards to important role of universities' websites, this article aimed to study top universities of the Islamic countries using webometric methods. Research data were extracted from AltaVista search engine and WEBO ME TRIGS website. In this study, top universities of the Islamic countries were ranked with some indexes such as number of links, web impact factor, world rank, size, visibility, rich files and scholar. Results showed that there was a significant relation between web impact factor with some indicators such as world rank, size, rich
files and scholar, but there was not any significant relation between web impact factor and visibility of the website. Strong significant correlation between top universities of the Islamic world countries websites' world rank and their ranks based on GDP was another result that we can mention in this study.

Islam, M.A., Alam, M.S., (2011), There have been substantial studies conducted on webometric, especially on the impact of websites and the web impact factor. The present study analyzed the websites of private universities in Bangladesh according to the webometric indicator. It examines and explores the 44 private university websites in Bangladesh and identifies the number of web pages and link pages, and calculates the Overall Web Impact Factor (WIF) and Absolute Web Impact Factor (WIF). In a cross-sectional study, all the websites were analyzed and compared using AltaVista search engine. The websites were then ranked based on these webometric indicators. The study revealed that some private universities in Bangladesh have higher number of web pages but their link pages are very small in number, thus the websites fall behind in their Overall WIF, self link, external links and Absolute WIF. Finally, it is showed that these universities did not have much impact factor on the web and were not known internationally. The major reasons are discussed and suggestions to overcome the problems are presented.

Kannan, R., Govindan, M., (2011), this paper analyses the structure of e-commerce websites using webometric approach to uncover any hidden information from the hyperlinks. The top 50 retail companies' e-commerce websites each from Asia Pacific and USA are chosen for this study. Our results found a positive relationship between the external in-links count pointing to a retail company e-commerce website and one of its business measures, sales. But no association has been found between hyperlink metrics and business measure like revenue. However this conclusion does not hold good for all categories of companies. Comparing the web presence, US private retail companies are more visible on the Web than the Asia pacific retailers. Furthermore this study has found that counts of links pointing to a retail websites are positively correlated with the website age. That is older websites in English language received more external in-links. Such a correlation does not exist for Japan, China and Korean language websites.

Khan, Gohar Feroz., Park, Han Woo., (2011), There is a burgeoning interest among academic scientists and policy-makers in the development and employment of TH (Triple Helix) and WSI (Webometrics, Scientometrics, and Informetrics) research
methods. However, the international literature has not systematically examined TH and WSI approaches in an Asian context. Furthermore, previous literature published in international journals does not adequately address the social forces shaping TH development in Asia. Therefore, the purpose of this special issue ‘Triple Helix and innovation in Asia using scientometrics, webometrics, and informetrics’, is to bring researchers together to discuss university-industry-government (U-I-G) relations and innovation diffusion in Asia employing WSI alongside other methods

Kothainayaki, S., Gopalakrishnan, S., (2011), in the study of ‘Webometric analysis of agricultural universities in India’, University websites are increasingly used for a wide variety of purposes, such as uploading the prospectus, library catalogue, promote achievement of individuals, research groups, new publications, etc. Therefore, there is a necessity and desire to know about websites of academic organizations in general and Indian universities in particular. This paper aims to evaluate Agricultural Universities in India through webometric method. Various concepts like Google Page Rank, Alexa Traffic Rank, and rich files are considered for evaluation. It also presents the network diagrams showing the link structures between the web nodes in webometric analysis.

Markscheffel, B., (2011), Bibliometric analyses enable the measurement of scientific information and allow an evaluation of scientific productivity and efficiency within certain limits. On the other hand an ongoing interest in webometric analysis can be observed. Till now these two parts of informetrics research areas are separated in their interpretation. In this paper ‘An ontology based visualization approach for the joined interpretation of bibliometrics and webometrics data’, we would summarized our experiences in terms of providing a holistic view on both bibliometric and webometric studies with the help of Topic Maps based ontologies. We will explain the problems dealing with the visualization of quantitative aspects of Topic Maps with the help of a special framework. Finally we will give an outlook on the potential of ontologies providing an expanded view on the examined context.

Mukherjee, Bhaskar, (2011), the present paper ‘Bibliometrics to Webometric: the changing context of Quantitative research’, categorically divided the era of quantitative research in two paradigms before the World Wide Web and post World Wide Web. Under pre World Wide Web era the concept and development of terms librarmetry, bibliometrics, scientometrics, informetrics and post World Wide Web era the concept Webometric and cybermetrics have been discussed. Also
diagrammatically present the relationship of both the terms. Explain in details various domain of Webometric research and further mention the tools and techniques used in Webometric researches.

**Mukhopadhyay, Parthasarathi, (2011),** Reports the result of webometric investigation at different levels of domain name system. It includes calculation of web impact factor (Web If ) for ccTLDs of SAARC group of countries; sub-level domains related to education & research and registered under Indian ccTLD and hosts under IIT and IIM educational system in India. The data were collected in December 2010 by using Yahoo, one of the most widely used search engines. Specifically, we gathered ‘Single Mention’ data to measure the number of times that each university was mentioned on websites. In addition, we collected network-based data on Single Mentions. We obtained another data set based on the 2010 world university rankings by Shanghai Jiao Tong University (SJTU). We employed several analytical methods for the analysis, including correlations, nonparametric tests (e.g., the Mann–Whitney test), and multidimensional scaling (MDS). The significant positive correlation between university rankings and web visibility suggests that indicators of web visibility can function as a proxy measure of conventional university rankings. Another distinctive implication can be drawn from the pattern of a disparity in web visibility stemming from the linguistic divide, that is, universities in English-speaking countries dominated the central positions in various network structures of web visibility, whereas those in non-English-speaking countries were located in the periphery of these structures. In this regard, further research linking web visibility to university management, planning, and governance is needed.

**Naeini, M.P., Bagheri, M., Ghaebi, A., (2011),** Aim of this applied research was to extract evaluation criteria of Iranian LIS (Library and Information Science) weblogs. Current research using analytical-survey method and in some stages Webometric methods evaluated 107 sample weblogs. These weblogs were selected from 222 weblogs that had been submitted in directory of ILIS weblogs. This research made a checklist using literature review, expert's attitude and evaluation criteria of websites. This checklist was used for evaluation sample weblogs after standardizing. Finally a checklist was prepared that included 23 factors for evaluation and ranking of ILIS weblogs. Finally, current research has suggested that this checklist can be used for judgment in carnivals of choosing top weblogs.
Niyazi, E., Abounori, E., (2011), The aim of this paper ‘Investigating and surveying the relationship between processes of knowledge management and webometric Scale’, was to evaluate the relationship between six indexes of knowledge management and webometric Scale. The study population included all the members of department of selected-universities. Employing a classified random sampling, the data was collected through the distribution of a questionnaire among the 355 persons of the academic staffs of Tehran, Estahan, Tarbyat Modares, Alzahra, Mazandaran, Guilan, Yazd, Araak and Razi universities. SPSS16.0 and LISREL8.5 were used for statistical analysis. The results of research showed that there were positive correlation between six indexes of knowledge management and webometric scale.

Nooshinfard, F., Moradi, S., (2011), Increasing websites quantity, specially scientific websites, there were many researches with concern of link analysis using webometrics by librarian and other scholars in different academic majors around the world. The purpose of this article was link analysis of all link analysis related papers from the beginning to February 19th 2009. The research based on Weiner, Amick, and Lee searching model in 2008, this study ‘Digging in to link analysis researches in Iran and all around the world: A review article’, included 96 refereed papers extracted from international databases like Springer, Proquest, Sage, Emerald, IEEE, Science Direct and national databases such as Magiran and SID. These papers were studied focusing on their different parts like authors, affiliated organizations, purpose, methods, tools, keywords, date of publishing, publication, indexing databases and their suggestions. Moreover, analyzing those papers and studying any related models were the other purposes of the current article. The findings have been categorized and analyses in ten different sections.

R. Jeyshankar, (2011), There have been much recent interests in extracting information from collections of web links and WIFs. It has been demonstrated that several versions of this metric can produce results that correlate with the various WIFs ratings of 27 nationalized banks websites in India showing that, despite being a measure of purely internet phenomenon, the results are susceptible to a wider interpretation. This study ‘Link analysis and web impact factor of Indian nationalized bank’s website: A Webometric study’, shows topology frame work/link network of reserve bank of India and linking the different nodes of nationalized banks websites in India
Shi, L., Zhao, Q., (2011), as the role of webometric playing in organization management and information management of network appears more and more important, how to mine the new data sources to improve the application level of webometric is becoming the trend of making use of the efficiency of network information resources. This article ‘Data sources of webometrics’, discussed the feasibility of extracting the new data sources of webometric relying on DC element set based on the current data sources in order to offer a better data support for webometric.

Shintaku, M., Baptista, D.M., (2011), The objectives of this paper is to provide a theoretical referential on studies by Almind and Ingwersen (1997), Bjorneborn and Ingwersen (2004), Thelwall, Vaughan and Bjorneborn (2005), Vanti (2007), among others, on webometrics, for use in academic institutional repositories, verifying its implementation in these initiatives, which, by their characteristics of added scholar production, become a representation of scholar communication in institutions. The study ‘Webometrics of the academic institutional repositories’, is also based on research works carried out by Thomas (2007), Dhiman (2010) and Aguillo et all (2010) on webometrics in repositories. The display of metrics applied to repositories may bring out important information on the institution maintaining the repository in regards to the web context.

Sugak, D.B., (2011), one of the methods for the evaluation of web sites, viz., evaluation ranking, is considered. The advantages and disadvantages of this evaluation method are analyzed. The largest ranking system for the evaluation of a university web site, Webometric, is analyzed in detail. The causes of low rankings of the web sites of Russian universities are studied in this ‘Rankings of a university’s web sites on the Internet’, study. The value of a department website as an important structural unit forming the university portal is substantiated.

Thelwall, M., (2011), Link analysis is an established topic within webometric. It normally uses counts of links between sets of web sites or two sets of web sites. These link counts are derived from web crawlers or commercial search engines with the latter being the only alternative for some investigations. This paper ‘A comparison of link and URL citation counting’, compares link counts with URL citation counts in order to assess whether the latter could be a replacement for the former if the major search engines withdraw their advanced hyperlink search facilities. URL citation counts are compared with link counts for a variety of data sets used in
previous webometric studies. The results show a high degree of correlation between the two but with URL citations being much less numerous, at least outside academia and business. The results cover a small selection of 15 case studies and so the findings are only indicative. Significant differences between results indicate that the difference between link counts and URL citation counts will vary between webometric studies. This is the first systematic study of the difference between link counts and URL citation counts in a variety of contexts and it shows that there are significant differences between the two.

**Thelwall, M., Sud, P., (2011)**, the primary webometric method for estimating the online impact of an organization is to count links to its website. Link counts have been available from commercial search engines for over a decade but this was set to end by early 2012 and so a replacement is needed. This article ‘A comparison of methods for collecting web citation data for academic organizations’, compares link counts to two alternative methods: URL citations and organization title mentions. New variations of these methods are also introduced. The three methods are compared against each other using Yahoo!. Two of the three methods (URL citations and organization title mentions) are also compared against each other using Bing.

**Zambalde, A.L., Bermejo, P.H.D.S., De Castro Neto, M., Tonelli, A.O., (2011)**, Brazil is a developing country that is in the midst of major social, economic, technological, cultural and educational change. In the fields of technology and education, dissemination and exchange of information and knowledge has been a major concern of public and private institutions, especially in what regards agribusiness. This study on ‘Internet social networks in Brazilian agribusiness: Knowledge, webometry and interaction’, sought to analyze performance and content aspects of Brazilian agribusiness Internet social networks. The study was based in 10 social networks acting in the areas of Agronomy, Biology, Environment, Animal Health Protection, Agricultural Extension and Rural Education. A exploratory and descriptive survey, based on bibliographic and documental references, with a qualitative approach regarding the interpretation and description of the contents of the websites, and mathematical webometric analysis of the social networks, supported by software tools and the internet. The results presented are: the detailed characterization of the sites investigated, webometric indicators for each website, and analysis of the social network formed by the 10 websites.
Zhao, Q., Shi, L., (2011), Along with the information resources electronic, networking and the quantity of network information surging, in order to a better use of the performance of network information resources, this paper ‘Research on the webometrics based on metadata’, discussed the relationship between metadata and webometric and the feasibility of webometric with Dublin Core Element Set as the data source of network information in view of the problems about the organization and management of network information resources.

Eccles, K.E., Thelwall, M., Meyer, E.T., (2012), This study ‘Measuring the web impact of digitized scholarly resources’, aims to be the first to use these methods to trace the impact, or success, of digitized scholarly resources in the Humanities. Running alongside a number of other methods of measuring impact online, the webometric study described here also aims to assess whether it is possible to measure a resource's impact using webometric analysis. Link data were collected for five target project sites and a range of comparator sites. Findings: The results show that digitized resources online can leave traces that can be identified and used to assess their impact. Where digitized resources are situated on shifting URLs, or amalgamated into larger online resources, their impact is difficult to measure with these methods, however. This study is the first to use webometric methods to probe the impact of digitized scholarly resources in the Humanities.

Goltaji, M., Serati Shirazi, M., (2012), Research centers are among the most important institutes in a scientific society. Using the AltaVista search engine and webometric methods, this research ‘The situation of top research centers' websites in the Islamic World countries: A webometric study’, tries to find the performance and impact of the top research centers of the Islamic World Countries. The results reveal that from 57 countries, 40 of them did not have any research centers scored in webometric ranking and the rest of them had not been scored well in the webometric ranking model. In this study, we rank research centers' websites based on some webometric indicators such as number of pages, linkages, WIF and Revised WIF. Findings show that the ranking of the websites based on the WIF and revised WIF is almost different and there is a strong correlation between the number of research centers in the Islamic countries that were scored in webometric and their ranks based on countries' GDP.

Klinger, A., De Lima, J.V., De Oliveira, J.P.M., (2012), Smart Web Visibility, in this paper, the study of measure techniques used to retrieval information about-words,
expressions or terms (for example, acronyms) on the web. The visibility has straight relation with presentation order of information retrieved. We consider the Smart Web Visibility as a subfield of the Webometrics, the same as Web Visibility is its subfield too. Our approach is based on different rankings from different search engines to evaluate the Smart Web Visibility by processing the homonymous problem before scoring. Authors begin with original results of search engines output, to emphasize after with methods to adding semantics to the queries. Finally, to demonstrate the viability of our ideas we employed acronyms of Brazilian universities to evaluate the smart visibility and compare with the actual situation of Brazil universities published by Webometrics Ranking. The main contribution of this work is a new way to evaluate the Web Visibility, named Smart Web Visibility, which shows how the universities are ranked by multiple search engines.

Maina, S., (2012), in the paper ‘Webometrics and journal websites’, deals with circulation of information on the Internet. One of the metrics employed by webometric is the so-called Web Impact Factor (WIF). A website is highly-visited if it contains information of interest to a target audience, provides high-quality services and is mentioned on more influential websites. A high Journal Impact Factor (JIF) itself may attract many links to a journal website. However, many other factors influence journal visibility and its webometric rank: website layout, speed and ease in finding information, structure of website and hyperlinks. Despite some positive applications of webometric, it is still not clear whether web links can be used for scholarly purposes. Usage data change over time. Search engines cover only a small proportion of information. It is thus important to take into account both quantitative and qualitative aspects of webometric.

Minguillo, D., Thelwall, M., (2012), This study ‘Mapping the network structure of science parks: An exploratory study of cross-sectoral interactions reflected on the web’, aims to introduce a method based on link analysis to investigate the structure of the R&D support infrastructure associated with science parks in order to determine whether this webometric approach gives plausible results. Three science parks from Yorkshire and the Humber in the UK were analyzed with webometric and social network analysis techniques. Interlinking networks were generated through the combination of two different data sets extracted from three sources (Yahoo!, Bing, SocSciBot). These networks suggest that institutional sectors, representing business, universities and public bodies, are primarily tied together by a core formed by
research institutions, support structure organizations and business developers. The comparison of the findings with traditional indicators suggests that the web based networks reflect the offline conditions and policy measures adopted in the region, giving some evidence that the webometric approach is plausible to investigating science park networks. This is the first study that applies a web based approach to investigate to what extent the science parks facilitate a closer interaction between the heterogeneous organizations that converge in R&D networks. This indicates that link analysis may help to get a first insight into the organization of the R&D support infrastructure provided by science parks.

Nowkarizi, M., Sohelli, F., Ryazipoor, M., Mesrinejad, F., Danesh, F., (2012), This research aimed to investigate visibility, web impact factor (WIF), and the collaboration rate of the websites of the Iranian universities under coverage of Science, Research and Technology Ministry, using an analysis of the various links among these websites and webometric. From all 70 websites belonging to the Iranian universities, due to some technical problems, only 69 ones were reviewed through Yahoo, in a period of one month (October 6 -November 5, 2008). These were decreased to 52 websites in analyzing co-links and identifying hi-frequency websites. The results indicated that Tehran, Payame Nour and Elmosanat websites were the most visited sites. The websites of Mohaghegh Ardabili, Industrial Jondi Shapoor and Zabol Universities had the most WIF and RWIF. In-link analysis results showed that the investigated websites had collaborated in 6 clusters, and a multidimensional scale illustrated the collaboration of these websites in 5 clusters.

Pareek, Sarwesh and Gupta, Dinesh K.(2012), A website is considered as an important promotional/informational tool for all kind of organizations. It informs the visitors about the institution, its mission, resources, services, activities, and so on; encourage visitors to interact with the services/resources; exchange services and products with electronic transfer of money; and establish continuous dialogue among the employees and the visitors. Libraries being public service institution, it becomes necessary that they have more and more information in the public access through websites. In the article ‘Information about Services and Information Resources on Websites of Selected Libraries in Rajasthan: A Study’, Data pertaining to 12 selected library and research centers in Rajasthan was collected from their websites during September-December 2010. Analysis found that information resources and services available on the websites vary from library to library.
Pechnikov, A.A., Nwohiri, A.M., (2012), this paper ‘Webometric analysis of Nigerian university websites’, considers a web space built on a set of the university websites of Africa's most populous nation - Nigeria. The investigation conducted reveals a weak connectivity in the set of official websites of Nigerian universities. However, the connectivity becomes stronger when all the university websites are taken into account. It increases significantly with the addition of the only found web communicator to the university websites - National Universities Commission - the sole body that approves the establishment of higher educational institutions in Nigeria and all academic programmes run by them.

Ratha, B., Joshi, L., Naidu, G.H.S., (2012), the paper ‘Webometric study of IIT libraries websites’, presents an analysis of design and structure of the library websites of IITs. It found significant differences according to some important point of view such as the user supporting services, number of hyperlinks on home pages and whole websites, number of images, location of images, In-active links and web pages, etc. The paper finally looks the design and structure of the library websites of IITs.

Saraswathi, D., Kathiravan, A.V., Kavitha, R., (2012), in this study ‘A prominent approach to determine the excellence of students E-Dissertation using H-index and UCINET’, As we know, WIF is the logical sum of external and self-link WebPages divided by number of web pages found on that particular websites. There are number of ways to find the impact of journal, paper, and Web sites etc. The proposed system is going to find impact factor of students E-Dissertation by using h-index and the related links of E-Dissertation represented diagrammatically by using UCINET software. This system is used to measure the quality of E-Dissertation. Most of the E-Dissertations are downloaded from the Web or required pages can read from the Web site itself. This was done by means of a citation analysis and a reader survey. For the citation analysis, impact factor, citing half-life, number of references per article, and the rate of self-references of a periodical were used as indicators. Webometric data have been collected through Yahoo! And Google search engines using special query syntax.

Shari, S., Haddow, G., Genoni, P., (2012), The purpose of this paper ‘Bibliometric and webometric methods for assessing research collaboration’, is to describe the methods and findings of a pilot study which applied bibliometrics and webometrics to examine collaboration in Malaysian biotechnology. The research applied bibliometric and webometric methods to publications and web sites affiliated with Malaysian
institutions. The bibliometric analysis focused on biotechnology-related journal articles indexed in Web of Knowledge. The webometric analysis examined the web sites of top biotechnology institutions generated in the bibliometric analysis. Collaboration behavior was assessed in three ways: intra-institutional versus inter-institutional; national versus international collaboration; and by type of institution collaboration according to the triple helix model. Findings of the pilot study, which applied bibliometric and webometric analyses to a limited sample, indicate that the methodologies will collect the desired data for a more extensive study. This is one of few studies that has examined collaboration using both bibliometric and webometric methods, and elements of the methodology appear to be unique to the study. The methodologies will contribute to an emerging body of literature that explores the nature of research productivity and research collaboration.

Thelwall, M., (2012), ‘Journal impact evaluation: A webometric perspective’, in theory, the web has the potential to provide information about the wider impact of academic research, beyond traditional scholarly impact. This is because the web can reflect non-scholarly uses of research, such as in online government documents, press coverage or public discussions. Nevertheless, there are practical problems with creating metrics for journals based on web data: principally that most such metrics should be easy for journal editors or publishers to manipulate. Nevertheless, two alternatives seem to have both promise and value: citations derived from digitized books and download counts for journals within specific delivery platforms.

Thelwall, M., Sud, P., (2012), In May 2011 the Bing Search API 2.0 had become the only major international web search engine data source available for automatic offline processing for webometric research. This article ‘Webometric research with the Bing Search API 2.0’, describes its key features, contrasting them with previous web search data sources, and discussing implications for webometric research. Overall, it seems that large-scale quantitative web research is possible with the Bing Search API 2.0, including query splitting, but that legal issues require the redesign of webometric software to ensure that all results obtained from Bing are displayed directly to the user.

Thelwall, Michael, (2012), in this study of ‘Introduction to Webometrics: Quantitative Web Research for Social Sciences’, researcher describes the world wide web not only hyperlinks documents and makes massive online publishing available to everyday users, but also hosts tremendous quantities of information about almost
everything. It eases data collection for social science research and becomes a unique resource to provide nontraditional indicators of trendy phenomena. Webometric uses web data to evaluate social or scholarly impacts of, for example, particular websites or events. Thelwall explains what, why, and how to measure aspects of the web on both small and large scales. This booklet’s target audiences are social scientists seeking to understand online reflections of their research topics and library and information science students who want to assist social scientists in their research. Thelwall introduces three main Webometric techniques, web impact assessment, link analysis and blog searching and several packages of software to support their use.

Thelwall, Mike., (2012), ‘A History of Webometrics’, in this descriptive article researcher described the application of Bibliometrics and Informetric approaches to study the web, its information resources, structures and technologies, is known as webometric. Since the name was coined in 1997, the value of webometric quickly became established through the Web Impact Factor, the key metric for measuring and analyzing website hyperlinks. Link analysis became more focused as link impact analysis and link network analysis, taking the quantity of links as a reflection of research productivity or prestige. Web citation analysis developed to facilitate investigations of links to journal articles, and analysis of keywords and phrases enables linking other types of web content. While webometric is based in the theory of citation analysis, its methodology and software contributions may offer the greatest value and widest applicability. A study of the ASIS&T site demonstrates link network analysis.

Vijayakumar, M., Kannappanavar, B.U., Santosh Kumar, K.T., (2012), this study focuses on the identification of web presence and their links among SAARC countries. The research explores that India possesses maximum of 14, 10, 00, 000 web pages; 58, 20, 000 external links; 1, 18, 00,000 internal links; and 9, 83, 00,000 over all links. In case of web impact factor of external and internal links, Sri Lanka claims highest and for over all links once again India claims highest. One can note that, except India no SAARC country possesses all sub-domains, but these possess only a few sub-domains like.edu,.gov,.net, and.org. When analysis of the links was done, it was found that Pakistan has a maximum of 3,610 links to India as compared to other SAARC countries. India once again claims top position among the SAARC countries for wiser ranking.
Walia, Paramjeet K. and Gupta, Monika., (2012), the objectives of ‘Web Impact Factor of Select National Libraries’ Websites’ study is to examine the linking on websites of national libraries and to find out their web impact factor and amount of information present on these websites in the form of rich files. The methodology which is followed in this study is basically investigative in nature. For the purpose of analyzing the link structure, data is collected in the month of December 2009, January 2010, April 2010, and May 2010. The research revealed that among the selected national libraries, websites of national libraries’ of America, Australia and Britain were more visible and hosted the more content compare to the websites of India, Namibia, and South Africa. A short survey is conducted to find the number of functional national libraries websites in the world. Among the 163 countries (which have national libraries) 106 countries have the websites. In this study two national libraries are selected from each continents of the world except American continent.

Wang, F., Gu, L., (2012), This paper is to explore the critical success factors for the websites for Chinese migrant farmer workers. A theoretical framework was put forward according to the theories of usability, information architecture, webometric and business model. A multi-case study on 10 websites was conducted for testifying 7 hypotheses. Business model and a few technical properties were found to be the critical factors that influence the effect and sustainable development of these websites. The originality of this paper ‘The critical success factors for websites for Chinese migrant farmer workers: A multi-case study’, is that it adopted a managerial-technical perspective to explore the critical success factors of the MFW websites.

Zhang, Y., Yi, Y., Huang, T., (2012), In this paper ‘Construction of index system for website evaluation of library in China’, index systems for evaluating public and academic libraries are constructed employing theories of evaluation of online information resources. Quantitative indices as Webometric indices and traditional qualitative indices are combined. Analytic Hierarchy Process is applied to confirm the scientific values of each index. The purpose is the attempt to set standards for building library Websites, to promote techniques in use, to guide the management, and eventually to provide information more effectively.

Ahmadian Yazdi, F., Deshpande, N.J., (2013), The aim of the study ‘Evaluation of selected library associations' web sites’, reported is to evaluate 71 library association web sites using 15 selected Webometric criteria. The study uses Webometric analysis
and ranking based on a scaling method and comparative means analysis (One Way ANOVA), and homogeneous subsets using criteria from SPSS13 and Excel2007. The majority of library association web sites have “contact us” links, but few have Frequently Answered Questions (FAQ) links. Library association web sites are categorized into three groups: high, medium and low, with significant differences between and within the three groups. A combination of criteria scores and classified groups shows that among the 15 criteria, only four criteria have no significant difference between the three groups and the classified groups are heterogeneous based on 11 criteria. Only 71 library association web sites were analyzed in this study. The paper provides a three category classification for library association’s web sites.

Ayu, M.A., Elgharabawy, M.A., (2013), Previous researches have highlighted the importance of web accessibility of a website. Its importance has made the W3C (World Wide Web Consortium) come up with Web Content Accessibility Guidelines (WCAG) as a guideline for developing an accessible website. Amongst websites available in the web wide world, many of them are fall under the education institution website category. These education institution websites are mostly the first door that people will go to visit to get information about education services and courses provided by the institution. Thus, to be accessible is an essential issue for these websites. Another issue that gets much attention in the current competitive internet world is to be visible by popular search engines and ranked at their top lists. For higher learning institutions there is an online ranking that they like to be in the top list, i.e. Webometrics. This paper ‘Effects of web accessibility on search engines and webometrics ranking’, attempts to address those two issues of web accessibility and being at the top list. It presents a study that investigates whether web accessibility has a contributing effect to ranking position in Webometrics and popular search engines. The research covers websites from higher learning institutions and education domains. Three popular search engines are used in this research, i.e. Google, Yahoo! and Bing. The study produces interesting results that would be useful as a guide for higher learning institutions that want to improve their online ranking.

Jalal, Samir Kumar., (2013), The article ‘A Comparative Web link Analysis among Top Indian, Asian and World universities’, investigates the relationship among top ten world universities (TTWU), top ten Asian universities (TTAU) and top ten Indian universities (TTIU) based on the exploratory study of web link analysis.
out-links analysis try to explore the relationship among these universities. The findings suggest that although top ten Indian universities are generating 3.71% out-links to top ten world universities but receives only 0.67% in-links from them. On the other hand, in-links and out-links to top ten Asian universities are far less than top ten world universities. An interesting result reflects that the percentage of in-links and self-links for top ten Indian (30.51% and 69.49%) and Asian universities (31.45% and 68.55%) are less than top ten world universities (55.25% and 44.75%).

Kuvakin, V.I., Vasil'ev, G.G., (2013), the article ‘The Military Medical Academy's website’, deals with the organization of work, evaluation and optimization of the official web site of the Kirov Military Medical Academy. The website of the Kirov Academy is presented as a multifunctional IT tool for support of its activity. Tasks and functions of the Kirov Academy web site, as well as technological features of its work are listed. Some of its quantitative characteristics as a user tool for the access to information resources of the Kirov Academy are given. The description of the site structure and its pages are presented. The requirements for information materials submitted for posting on the site are set out. The data of webometric ranking of Russian institutions of higher education and research institutes are analyzed; the location of the Academy web site in this rating is shown. The areas for further improvement of the Academy web site, its structure and services are stated.

Lang, P.B., Gouveia, F.C., Leta, J., (2013), ‘Cooperation in Health: Mapping Collaborative Networks on the Web’, is studied for mapping and investigate the relationships established on the web between leading health-research institutions around the world. Sample selection was based on the World Health Organization (WHO) Collaborating Centers (CCs). Data on the 768 active CCs in 89 countries were retrieved from the WHO's database. The final sample consisted of 190 institutions devoted to health sciences in 42 countries. Data on each institution's website were retrieved using webometric techniques (interlinking), and an asymmetric matrix was generated for social network analysis. The results showed that the hyperlinks exchanged between northern and southern countries present an abysmal gap: 99.49% of the hyperlinks provided by the North are directed toward the North itself, in contrast to 0.51% that is directed toward the South. Regarding the South, its institutions are more connected to its northern partners, with 98.46% of its hyperlinks directed toward the North, and mainly toward the United States, compared with 1.54% toward southern neighbors.
Martínez-Torres, M. R., Díaz-Fernández, M. C. (2013), The concept of webpage visibility is usually linked to search engine optimization, and it is based on global in-link metric, that is, the number of received links from other websites, but without considering the sources of these links. The purpose of this article ‘A study of global and local visibility as web indicators of research production’, is to demonstrate that this global idea of visibility is only weakly correlated with web metrics measured over a network of related institutions or organizations (local visibility) and research production. As a case study, global and local visibility measurements have been obtained for a set of Spanish Universities, and they have been correlated with results provided by international rankings like the Webometrics Ranking of World’s Universities and the Academic Ranking of World Universities by Shanghai Jiao Tung University. Obtained results suggest that the development of web indicators to be included as part of Universities evaluation programs should consider a local idea of visibility, considering a certain geographical context or similar related institutions.

Milojević, S., Leydesdorff, L., (2013), Bibliometrics, Scientometrics, informetrics and webometrics can all be considered as manifestations of a single research area with similar objectives and methods, which it call information metrics or iMetrics. This study ‘Information metrics (iMetrics): A research specialty with a socio-cognitive identity?’, explores the cognitive and social distinctness of iMetrics with respect to the general information science (IS), focusing on a core of researchers, shared vocabulary and literature/knowledge base. The analysis investigates the similarities and differences between four document sets. The document sets are drawn from three core journals for iMetrics research. Authors split JASIST into document sets containing iMetrics and general IS articles. The volume of publications in this representation of the specialty has increased rapidly during the last decade. A core of researchers that predominantly focus on iMetrics topics can thus be identified. This core group has developed a shared vocabulary as exhibited in high similarity of title words and one that shares a knowledge base. The research front of this field moves faster than the research front of information science in general, bringing it closer to Price's dream.

Noroozi, Z., Hashemzadeh, M.J., (2013), Present study ‘A link network analysis of Iranian research institute websites: Overt and covert relationships’, investigates the link and networks of Iranian research institute websites using webometric and the link analysis method. The population includes the websites of 23 research institutes and
centers in Iran. The data were collected using the Webometric Analyst software. The network diagram shows the mutual link strength among the set of research institute websites in Iran, and depicts the pattern of internal relationships among these websites. Iranian research institute websites are not in good conditions in link exchange and the cooperation with each other. In addition, the co-link diagrams illustrated the covert relationships among Iranian research institutes suggesting that the common topics and contents have been the most important elements of co-link creation among Iranian research institute websites. The websites of Iranian research institutes and centers dedicated most of out-links to scientific, religious, and fun websites, followed by the ones for universities and the institutes of higher education.

Smith, A.G., (2013), This study ‘Web based impact measures for institutional repositories’, investigated webometric measures that could be used to evaluate the impact of institutional repositories, using Australasian university repositories as a case study. URL citation in-links (occurrences of the repositories’ URL in the text of web pages), as found through Google searches, were counted. As well as links from the general web, links made from other Australasian academic institutions and from Wikipedia were counted. For repositories with significant deposit ratios, there appeared to be a small correlation between the URL citation in-links from other Australasian academic institutions, and some conventional measures of research impact: the ISI citations/paper, the QS ranking score, and the ERA quality score. Repositories with higher deposit ratios appeared to achieve more in-links from other Australasian academic institutions, indicating the value of repositories encouraging high deposit rates of their institutions research output. Institutions with repositories that had a high Wikipedia Web Impact Factor were not necessarily highly ranked in terms of in-links from other tertiary institutions or ISI citations per paper. This indicates that repositories impact on the general web is different from their impact on the research community.

Vargas-Quesada, B., Al-Dwairi, K.M.O., Faba-Perez, C., de Moya-Anegón, F., (2013), This article ‘Web structure and influence of the Arab universities of the MENA zone (Middle East and North Africa): Visualization and analysis’, aims to display the structure and reveal the web influence of institutions in the MENA zone, in geographic terms (country) and academic terms (universities), by means of their links. Using search engines and WebCrawler’s designed to gather information about web links, in conjunction with visualization techniques and degree indicators based on
social network analysis, the authors achieved their objective and found responses to a series of pertinent research questions. There is no direct relationship between the number of university websites and the number of in-links. Linking between countries in the MENA zone obeys patterns of vicinity and geopolitics. Arab universities are interlinked following trends governed by territorial proximity. There is a strong endogamy tendency, with universities from a single country citing each other, particularly in the case of Saudi Arabia. The authors present the first ranking of web influence in the MENA zone based on network indicators, namely country and university, and their order is corroborated by comparison with other rankings of a webometric or scientometric nature. Studies of this type cannot be undertaken again, at least not from the web link perspective, as Yahoo!, Google and Bing have since blocked the WebCrawler’s that attempt to carry out searches of in-linking or co-in-linking between/among sites. Hence, this work can be considered both a pioneer and the last of its kind. The authors do not know if or when it will be possible to again make queries about URLs in webs or, alternatively, in titles. This is the first visual report of the web structure underlying the countries and universities of the MENA zone. It is also the first time that a country and university ranking of this geopolitical zone has been carried out using network indicators based on web links.

Zahed, A., Ghazavi, R., Otroj, Z., Soleimanzade-Najafi, N.-S., Mazaheri, E., (2013), Webometrics refers to the quantitative study of science production, application, structure and technology in the cyber environment. Furthermore, webometrics is applied in ranking studies for universities and academic centers as an internationally approved mean. Our study aimed to evaluate the webometric status of Isfahan University of Medical Sciences (IUMS), Iran, and its place in the Webometrics Ranking of World Universities. This was a descriptive cross-sectional study including all websites of Iranian universities. Census sampling was applied to cover all Iranian university websites. Then, the websites were evaluated according to the latest criteria for the international webometrics ranking methodology (Cyberometric Lab, July 2012) and their webometrics rank at international level and the changes in the rank between July 2012 and January 2013 were analyzed. The webometrics rank of IUMS was compared with other medical universities at different levels as well. It seems that impact as the most influential ranking indicator fails to grow proportionately as other factors in IUMS website. This is potentially due to the content language (Farsi) which is an important barrier to easy
retrieval of information by non-Farsi speakers. However, the scientific content and SEO (Search Engine Optimization) standards of the website need serious improvement.

**Antopolskii, A.B., (2014),** Changes that are occurring in the information space of science are discussed. It is shown that global trends in this area, first of all the internetization of scientific communication and dissemination of open access to scientific publications, led to the occurrence of new methods of Scientometrics, namely, webometric. Global and domestic webometric methods for creating indexes are described. The features of the Russian webometric index are listed. Authors conclude that in the article ‘On the feasibility of the Russian national webometric index’, the creation of a more complete and differentiated national index along with the world webometric index is advisable for adequate monitoring of the electronic resources of Russian science. Use of the experience of the Institute of Scientific and Educational Information of the Russian Academy of Education as a platform of the national experience index is proposed.

**Edirimanna, C., Jayasundara, C.C., (2014),** Globalization has made a remarkable impact on the university education system, and the Internet has become the core resource for universities to make their facilities and opportunities available globally. University Web sites are increasingly used for a wide variety of purposes. This study of ‘Study on webometric ranks of Sri Lankan State Universities’ is the evaluation of universities based on their Web performance was introduced by Cybermetrics Lab as the "Webometric Ranking of World Universities" (WRWU), and this ranking system has become a popular way of measuring university excellence.

**Groselj, D., (2014),** this study ‘A webometric analysis of online health information: Sponsorship, platform type and link structures’, aims to map the information landscape as it unfolds to users when they search for health topics on general search engines. Website sponsorship, platform type and linking patterns were analyzed in order to advance the understanding of the provision of health information online. The landscape was sampled by ten very different search queries and crawled with VOSON software. Drawing on Roger's framework of information politics on the web, the landscape is described on two levels. The front-end is examined qualitatively by assessing website sponsorship and platform type. On the back-end, linking patterns are analyzed using hyperlink network analysis. A comparison of ten different health domains revealed substantial differences in their landscapes, related to domain-
specific characteristics. The size and properties of the web crawl were shaped by using third party software, and the results are limited by the selected search queries. The study examines health information landscapes on a large scale and makes an original contribution by comparing them across ten different health domains.

**Jung, K., Park, S.J., Wu, W.-N., Park, H.W., (2014),** Many studies have examined citizen participation in policymaking and its delivery mechanisms through social media tools such as Facebook, Twitter, and YouTube, but few have explored empirical strategies to investigate the nature of online citizen participation in the field of policy analysis and management. The webometric approach is a quantitative tool for capturing network-based intercommunication derived from the Web 2.0 sphere as user-generated content by using diverse methods in informetrics. By applying this approach to examine citizen participation on social media, this study ‘A webometric approach to policy analysis and management using exponential random graph models’, introduces an empirical strategy for collecting data on social media tools used by governments and identifies patterns of citizens’ e-participation and relationships between citizens, governments, and various organizations involved in policy making processes through social media. The results based on the 311 service platforms of New York City and San Francisco suggest that the webometric approach can not only extract government agencies' communication behaviors toward others on social media but also capture the overall network structure, the pattern of interactions between participants, and network properties of participants.

**Kim, J.H., Park, H.W., (2014),** this study analyzes the Triple Helix (TH) structure of an online national food cluster. Although the university-industry-government (UIG) approach provides useful insights into innovation and its diffusion, few studies have examined how such systems are organized and operate in cyberspace. Foodpolis is an export-oriented national food cluster targeting markets in Northeast Asia, including China and Japan. Foodpolis encompasses national food industry complexes and government-led agricultural and food R&D institutes whose goal is to advance food-processing technologies. This study ‘Food policy in cyberspace: A webometric analysis of national food clusters in South Korea’, employs the webometric analysis method to reveal the communication pattern of interactions between participating actors. The study evaluates web mentions and hyperlink networks to investigate links to and from the website of Foodpolis (Foodpolis.kr) by using the NodeXl software package. The results for links to and from Foodpolis do not indicate sufficient
interactions between UIG websites and Twitter accounts. Instead, the website and Twitter account of Foodpolis were linked to its own online cafe, websites of individuals, and government websites. The results suggest that UIG actors should employ online communication channels in a more proactive manner for diffusing innovative initiatives such as Foodpolis.

**Lang, P.B., Gouveia, F.C., Leta, J., (2014),** In order to map Brazilian institutions' web presence in an international network of health research institutions, a study was conducted in 2009, including 190 institutions from 42 countries. The sample was based on WHO (World Health Organization) collaborating centers, and the methodology used webometric analyses and techniques, especially interlinks, and social network analysis. The results showed the presence of five Brazilian institutions, featuring the Oswaldo Cruz Foundation (Fiocruz), showing links to 20 countries and 42 institutions. Through the interface between the health field and the web, the study 'Health research networks on the web: An analysis of the Brazilian presence', aims to contribute to future analyses and a plan for strategic repositioning of these institutions in the virtual world, as well as to the elaboration of public policies and recognition of webometrics as an area to be explored and applied to various other fields of knowledge.

**Liao, H.-T., Zhang, B., (2014),** This paper 'Chinese-language literature about Wikipedia: A Meta-analysis of academic search engine result pages', presents a webometric analysis of the academic search engine result pages (SERPs) of the Chinese-language term of "Wikipedia" across major Chinese-speaking regions of mainland China, Hong Kong and Taiwan. Because of the academic outcome, the findings can also be interpreted for further Meta-analysis, or ‘research about research’, of the Wikipedia research in Chinese-language literatures. The findings cover the results from four major search platforms: CNKI Scholar, Google Scholar China, Google Scholar Hong Kong and Google Scholar Taiwan. Cross tabulation of the results shows the major institutions (journals and academic departments) and scholarly archives for Chinese-language Wikipedia research. The findings suggest that there exists a divide between mainland Chinese academic sources/search results on one hand, and Hong Kong/Taiwanese ones on the other. Meta-analysis based on academic SERPs has implications for identifying the gaps and potentials in internationalization of Wikipedia research.
Lorentzen, D.G., (2014), Webometric and web mining are two fields where research is focused on quantitative analyses of the web. This literature reviewed on ‘Webometrics benefitting from web mining? An investigation of methods and applications of two research fields’, outlines definitions of the fields, and then focuses on their methods and applications. It also discusses the potential of closer contact and collaboration between them. A key difference between the fields is that webometric has focused on exploratory studies, whereas web mining has been dominated by studies focusing on development of methods and algorithms. Differences in type of data can also be seen, with webometric more focused on analyses of the structure of the web and web mining more focused on web content and usage, even though both fields have been embracing the possibilities of user generated content. It is concluded that research problems where big data is needed can benefit from collaboration between webometricians, with their tradition of exploratory studies, and web miners, with their tradition of developing methods and algorithms.

Marine-Roig, E., (2014), Today, destination-marketing organizations and researchers are increasingly focusing their attention on travel blogs and reviews due to their potential for projecting the image of a specific destination and for influencing travel behavior and decision making. However, the criteria used to select the Web sites hosting travel blogs and reviews for study are unclear, and very few quantitative or demographic studies about users (bloggers and readers) have been conducted. The aim of this study ‘A Webometric Analysis of Travel Blogs and Review Hosting: The Case of Catalonia’ is to propose a method in which a webometric analysis is used to select the most suitable Web sites for a specific case study and to obtain information about users. The proposed webometric analysis consists of an integrated formula including visibility, popularity, and size metrics. This method was used to rank 11 suitable Web sites for studying the case of Catalonia.

Orduña-Malea, E., Regazzi, J.J., (2014), The main goal of this research ‘U.S. academic libraries: Understanding their web presence and their relationship with economic indicators’, is to analyze the web structure and performance of units and services belonging to U.S. academic libraries in order to check their suitability for webometric studies. Research study objectives include studying their possible correlation with economic data and assessing their use for complementary evaluation purposes. Researcher conducted a survey of library homepages, institutional repositories, digital collections, and online catalogs (a total of 374 URLs) belonging
to the 100 U.S. universities with the highest total expenditures in academic libraries according to data provided by the National Center for Education Statistics. Several data points were taken and analyzed, including web variables (page count, external links, and visits) and economic variables (total expenditures, expenditures on printed and electronic books, and physical visits). The results indicate that the variety of URL syntaxes is wide, diverse and complex, which produces a misrepresentation of academic libraries' web resources and reduces the accuracy of web analysis.

**Pushpalatha, M., Kathiravan, A.V., (2014),** in recent years, society has moved towards becoming 'information society', virtual space has become the communication channel and the tool of socialization. While internet usage has grown, the way people are using the internet has also changed. More interactive online technology such as blogs, social networking sites such as Twitter and Facebook and other innovations which are part of greater interactivity and user-generated content that characterize so-called 'Web 2.0' - i.e. sites allowing users to interact and collaborate with each other in a social media dialogue - have become more prominent. Information retrieval has become a great challenge in web blogs and social networking web sites. Webometrics is a study of web-based content with primarily quantitative methods for social science research goals using techniques that are not specific to one field of study, which emphasizes the development of applied methods for use in the wider social sciences. This research ‘An exclusive WS-ranking method for ranking of web Blogs using webometrics and sociometrics’, focuses on developing a ranking algorithm for web blogs using webometrics and sociometrics. Most of the existing ranking algorithms use forward links, back links and weblog data. This paper gives an idea of using centrality measurement to rank web blogs.

**Shafi, S.M., Bhat, M.H., (2014),** This study ‘Performance and visibility of Indian research institutions on the web’, aims to examine the performance of Indian research Institutions’ websites using webometric by investigating their visibility, traffic ranks, number of links, time on site, Indian/Foreign users and page ranks besides focusing on the two designed hypotheses. The Council of Scientific and Industrial Research (CSIR) directory (www.csir.res.in/external/heads/aboutcsir/lab_directory.htm) is used to identify the research institutions in India. The directory lists 40 research institutions across India. However, Alexa did not offer required information for some of the websites due to very high traffic ranks, and accordingly the list is reduced to 21 research institutions. The data collected were analyzed and tabulated to reveal
findings in accordance with the desired objectives. The traffic ranks of Indian research institutions differ significantly, whereas no major difference in the page ranks is found. Further, the results show that Indian research institutions’ websites have not been able to attract foreign visitors given the caliber and reputation of these institutions. The results of this study will be useful for website administrators of research institutions in India and across the globe.

Sud, P., Thelwall, M., (2014), this article ‘Linked title mentions: a new automated link search candidate’, introduces a new type of link that can be identified from commercial search engines, linked title mentions. These can be found by querying title mentions in a search engine and then removing those not associated with a relevant hyperlink. Results of a proof of concept test on 51 U.S. library and information science schools and four other sets of schools suggest that linked title mentions may tend to give better results than title mentions in some cases when used for site in-links but may not always be an improvement on URL citations. For links between or co-in-links to specified pairs of academic websites, linked title mentions do not generally provide an improvement over title mentions, but they do over URL citations in some cases. Linked title mentions may also be useful for sets of non-academic websites when the alternatives give too few or misleading results.

Tafaroji, R., Tahamtan, I., Roudbari, M., Sedghi, S., (2014), The purpose of this paper ‘Webometric analysis of Iranian medical universities according to visibility, size and rich files’, is to present the findings of a webometric analysis of web sites of medical universities of Iran. This study was conducted in Sept 2012 using Majestic SEO, Google, Yahoo and Bing search engines. The number of web pages, external in-links, rich files and the total rank for 43 universities with active exclusive web sites were calculated. Findings indicated that Tehran University Medical Sciences with 220453 web pages, 887545 external in-links, and 14495 rich files ranked as the first and Jiroft University of Medical Sciences had the lowest rank in the study. Findings indicated a significant relationship between the Webometric rank and the university rank in Iranian Ministry of Health. This study indicated that the use of rich files can give a better and more reliable view of university rankings. There are few studies focusing on the indicators such as rich files. The present study; however, is one of the few studies that used rich files to examine and analyze the university web sites. The paper would provide information to eliminate the barriers to improve web sites of medical universities in Iran.
Windriyani, P., Ferdiana, R., Najib, W., (2014), One of measurement used in educational institutions is Webometric. Many researches have been done related to the increase in Webometric. This study offers a freshness propose how to improve the university's website by entering a non-technical criteria at Webometric and WCAG 2.0 guidelines for technical criteria. Evaluation of the website is divided into two phases, namely the technical evaluation using tools TAW and non-technical evaluation through direct observation using Webometric success criteria. The results of the evaluation were presented in a graph that shows the error rate of the website. There are some errors that appeared in the technical criteria on 6 websites of Sebelas Maret University, amounting to perceivable 27.08%, operable 17.07% and robust 56.85%. The results of the non-technical criteria all websites are not match in the category of language evaluation, whereas for archiving and persistence parameters only Eprints website, e-learning website, and library website that meet the criteria.

Anowar, F., Helal, M.A., Afroj, S., Sarker, F., Mamun, K.A., (2015), This Study ‘A critical review on world university ranking in terms of top four ranking systems’, has focused to critically evaluate the potential shortcomings of the top four widely accepted ranking systems. These are the Times World University Rankings, QS World University Rankings, Academic Ranking of World Universities (ARWU) and Webometrics Ranking. Authors critically reviewed and analyzed these four higher education ranking systems to identify potential shortcomings in their strategies. Based on their investigation, it was observed that none of these ranking systems can provide satisfactory evaluation in terms of their construct validity and other parameters related to disputation. Nevertheless, these ranking systems are the most popular for what they have been doing over the decades but unfortunately each and every one of them has to some extent lacking as far as ranking Excellency is concerned. Lack of availability of data and publications through which ranking is done is one major obstacle faced to determine the authenticity of ranking systems. Overall observation of these four ranking systems reflects the fact that generic challenges include adjustment for institutional size, differences between average and extreme, defining the institutions, measurement of time frame, credit allocation, Excellency factors as well as adjustment for scientific fields. Misinterpretation of measurement data is also responsible for some of the ranking disputes. Authors have proposed a number of recommendations that could address the identified inadequacy.
and considerably improve the ranking system as well as incorporate more participation of higher education institutes form developing world.

**Chakravarty, R., Wasan, S., (2015),** Library websites plays an important role in dissemination of information of the institution and library resources. It acts as a trustworthy mirror of the institute. To evaluate the library website performance webometric tools and indicators are required. The present study on ‘Webometric analysis of library websites of higher educational institutes (HEIs) of India: A study through google search engine’ has calculated web impact factor (WIF) and R-WIF (Revised WIF) of top ten library websites of HEIs (Higher Educational Institutes) of India and further correlated both the formulas with Spearman’s Rank Correlation. It was found that WIF and R-WIF are correlated and associated which depicts that there is very less difference between the two ranking methods. The position of library websites of half HEIs of India is same while evaluating through both the formulas. After a pilot survey, the list of top ten HEIs of India is extracted from ranking web of Universities. Google search engine was chosen for the study.

**Fan, W., (2015),** Starting from the perspective of Webometrics, this paper ‘Contribution of the institutional repositories of the Chinese Academy of Sciences to the webometric indicators of their home institutions’, explores the improvement effect of institutional repositories (IRs) on their home institutions with respect to web presence and visibility. Taking 19 IRs from institutions affiliated to the Chinese Academy of Sciences (CAS) as study samples, we calculate the contribution of IRs to the webometric indicators of their home institutions in terms of four indicators: page counts, PDF counts, URL mention counts, and link counts. According to their open-access (OA) status, the IRs of CAS were divided into an OA group and a non-OA group, which were compared with respect to differences in the above indicators as well as browse counts and download counts. The results of the study show that: IRs showed a relatively significant positive improvement with respect to Google page counts, Scholar page counts, and Google PDF counts, although the improvement effect with respect to Scholar PDF counts was almost nonexistent; Repositories presented a certain improvement effect with respect to URL mention counts, but the contribution of link counts was limited; and OA repositories manifested noticeable advantages in terms of Google PDF counts, URL mention counts, and download counts. Researcher concludes that IRs can improve the web presence and visibility of their home institutions, while OA IRs offer more benefits to their home institutions.
Gharibeniazi, M., Kamran, M.K.A., Ghaebi, A., (2015), University websites play an important role in disseminating educational and research information to universities. They are a vital port for accessing the universities’ scientific information for researchers, faculty members, and students. The goal of this study ‘Iranian State University websites’ was to compare evaluation methods such as Web Assessment Index (WAI), Web Quality Evaluation Method (WebQEM), and webometric for evaluating Iranian state university websites. In this analytical survey, the data collection tools were checklists prepared by the WebQEM, WAI, and webometric. Descriptive statistics and analytic statistics were used for data analysis. The hypotheses assumed that there was a positive correlation between WebQEM, WAI, and webometric. Using the results of this study could help university website designers to fix weaknesses in order to reach an active participation in these websites.

Guskov, A.E., Bykhovtsev, E.S., Kosyakov, D.V., (2015), In a pilot project the traffic of ten websites of scientific organizations has been studied with the emphasis on web-traffic sources and the analysis of the traffic of pages with scientific content. It is shown that the direct visits to the site are an indicator of the regular audience of an organization website. This audience consists mainly of the organization’s staff and their immediate colleagues, while new visitors come mainly from search engines. It was revealed that the most visited pages are the ones with information about staff and laboratories, as well as news pages if they are regularly updated. It was found that there is no strong relationship between webometric rankings and website traffic. The rank correlation is moderate and traffic from external links on other websites is weak despite the fact that such links are a key webometric indicator. The results of the study ‘Alternative webometrics: Study of the traffic of the websites of scientific organizations’, can be used to optimize the structures of the websites of scientific organizations and the analysis of their user audience.

Jalal, S. K., Sutradhar, B., Sahu, K., Mukhopadhyay, P., Biswas, S. C., (2015), Web contents are interlinked at each other through hyperlinks. Inter-linking nature of web explores significant sources of information. In the context of exploring hyper-linking behavior of the web and retrieving relevant information, search engines and web crawlers play a predominant role as data sources but search engines had mostly withdrawn their supports after December 2011. An attempt ‘Search engines and alternative data sources in webometric research: An exploratory study’, has been taken to evaluate search engines (Google, AoL, Bing, Yahoo!) using some criteria and
found that AoL has the highest coverage among these search engines. The paper also identifies various alternative data sources to carry out webometric research. The finding of the study shows that majestic.com is a predominant and comprehensive data source among alternative data sources in webometric research.

**Janc, K., (2015),** the purpose of this paper ‘Geography of Hyperlinks-Spatial Dimensions of Local Government Websites’ is to determine whether the connections in cyberspace relate in any way to borders as understood in geographical terms. This goal requires testing Tobler's First Law of Geography. Analyses of hyperlinks come under the domain of webometrics, which seeks to answer the fundamental question: Is it possible to measure the Web? This study identified all websites which have hyperlinked to the websites of local authorities in the region of Lower Silesia. These websites were classified by the geographical location of the entity determining their content and thematic category. On the whole, it can be said that connections in cyberspace largely reflect actual functional borders. However, the main functional node dominating cyberspace is a country's capital.

**Khan, A., Idrees, H., (2015),** ‘Calculating Web impact factor for university websites of Pakistan’, this study aims to explore the Web impact factors (WIFs) for websites of Pakistani universities. The paper discusses why revised Web impact factor (RWIF) is more meaningful than simple WIF. The study also attempts to rank the top-five websites of Pakistani universities by considering four different website ranking systems and compares the WIFs of university websites of other developing countries as well. This study calculates the RWIF for subject websites using two webometric tools. Open Site Explorer service (i.e. Developer Shed) and two commercial search engines, i.e. Google and Bing, were used to collect the data for examining the RWIF for subject websites. Collectively 41,960 web pages and 49,740 in-links were found in top-ten Pakistani universities' websites. The collective RWIF for subject websites comes to 1.185, which is at the top in comparison with other developing countries, i.e. India, Bangladesh, Sri Lanka and Indonesia. Calculating WIF for university websites in Pakistan and presenting the comparison with other types of website ranking system is a kind of first study conducted for Pakistani library websites. The study also presents alternate search strategy for data collection to calculate RWIF for websites.

**Orduña-Malea, E., Torres-Salinas, D., Delgado Lőpez-Cőzar, E., (2015),** Twitter as a potential alternative source of external links for use in webometric analysis is
analyzed because of its capacity to embed hyperlinks in different tweets. Given the limitations on searching Twitter's public application programming interface (API), we used the Topsy search engine as a source for compiling tweets. To this end, we took a global sample of 200 universities and compiled all the tweets with hyperlinks to any of these institutions. Further link data was obtained from alternative sources (MajesticSEO and OpenSiteExplorer) in order to compare the results. Thereafter, various statistical tests were performed to determine the correlation between the indicators and the possibility of predicting external links from the collected tweets. The results indicate a high volume of tweets, although they are skewed by the performance of specific universities and countries. Finally, prediction models do not provide optimum results because of high error rates. We conclude that the use of Twitter (via Topsy) as a source of hyperlinks to universities produces promising results due to its high correlation with link indicators, though limited by policies and culture regarding use and presence in social networks.

Patidar, D., Vishwakarma, R.G., (2015), Webometrics is a measurement of the world's academic and scientific research progress. In this system various universities researches and their development are noticed using the updates of the websites. Administrators and managers of these websites are making efforts to improve the ranking of these organizations according to their rating. On the other hand that is observed, there are not only academic universities are played role in research, various different companies and organizations are also participating in research and development. Therefore a new kind of ranking system is required to provide ranking for all the different kinds of organizations who are participating in Webometric. In this paper ‘An implementation of generalized webometrics for all research organizations’, a novel webometrics development and ranking scheme are proposed and implemented, which helps to evaluate the rank of different research organizations according to their improvements and the quality of work using research documents available over web domains. The presented ranking methodology provides a clustered domain ranking system by which domain specific ranking becomes more precise and accurate.

Taram, K., Doulani, A., (2015), The purpose of this paper ‘A webometric analysis of major keywords and expressions in biochemistry using LexiURL Searcher’, is to explore webometric analysis of keywords and expressions of the biochemistry field of study via LexiURL Searcher. Interfaces for assisting users with information access
have received considerable attention. Along with the extraction of data on Web sites for webometric purposes (e.g. link analysis, ranking of Web sites, etc.), LexiURL Searcher presents some information on the arrangement of links among different Web sites. Such capability enables users to identify one or more Web sites around their intended subject and, accordingly, explore all Web sites linked with their identified Web site(s). LexiURL Searcher has preceded webometric analysis by considering the main expressions and keywords derived from the MESH database. The worldwide survey indicated that links from countries such as England, Japan, Germany, Australia and Canada were among the Web sites that are most used in biochemistry. Alternatively, other countries such as Singapore, Thailand and Poland had the most advantageous links to the outside world, whereas South Africa, New Zealand and The Netherlands had the least link effect. Biochemistry, being a specialized domain, would benefit greatly from site linking and would provide users the most assistance in information processing. Most webometric studies remain on the level of link analysis and Web site statuses; however, this paper gives information on the common thread Web sites based on a standard thesaurus.

Thelwall, M., Kousha, K., (2015), this literature review assesses indicators derived from social media sources, including both general and academic sites. Such indicators have been termed altmetrics, influmetrics, social media metrics, or a type of webometric, and have recently been commercialized by a number of companies and employed by some publishers and university administrators. The social media metrics analyzed here derive mainly from Twitter, Facebook, Google+, F1000, Mendeley, ResearchGate, and Academia.edu. They have the apparent potential to deliver fast, free indicators of the wider societal impact of research, or of different types of academic impacts, complementing academic impact indicators from traditional citation indexes. Although it is unwise to employ them in formal evaluations with stakeholders, due to their susceptibility to gaming and lack of real evidence that they reflect wider research impacts, they are useful for formative evaluations and to investigate science itself. Mendeley reader counts are particularly promising.

Vargas Meza, X., Park, H.W., (2015), this study ‘Globalization of cultural products: A webometric analysis of Kpop in Spanish-speaking countries’, examines the Twitter network of Kpop diffusion in Spanish-speaking countries by addressing its communication patterns and main hubs, illustrating Kpop fans activities and
relationships on Twitter. Based on NodeXL, Tweets with the hashtag “Kpop” were collected from March to August 2012 and the structural and informational patterns of social media communication were analyzed through a set of webometric methods. The results indicate that Kpop won a small but growing portion of the music preferences in Hispanic countries as a result of combined efforts of public broadcast firms and fans. The study is the first to focus on countries sharing a common language to provide a better understanding of the diffusion of cultural products through Twitter.

**Xu, W.W., Park, J.Y., Park, H.W., (2015),** The purpose of this paper ‘The networked cultural diffusion of Korean wave’, is to examine the diffusion of a popular Korean music video on the video-sharing web site YouTube. It applies a webometric approach in the diffusion of innovations framework to study three elements of diffusion in a Web 2.0 environment: users, user-to-user relationship and user-generated comment. The webometric approach combines profile analyses, social network analyses, semantic and sentiment analyses. The results show that male users in the US played a dominant role in the early-stage diffusion. The dominant users represented the innovators and early adopters in the evaluation stage of the diffusion, and they engaged in continuous discussions about the cultural origin of the video and expressed criticisms. Overall, the discussion between users varied according to their gender, age, and cultural background. Specifically, male users were more interactive than female users, and users in countries culturally similar to Korea were more likely to express favorable attitudes toward the video. The study provides a webometric approach to examine the Web 2.0-based social system in the early-stage global diffusion of cultural offerings. This approach connects the diffusion of innovations framework to the new context of Web 2.0-based diffusion.

**Yaghtin, M., Honarjooyan, Z., Sotudeh, H., (2015),** Aiming to study the freshness of Persian information, this study attempted to explore the indexing speed of Persian newspapers in Google, Yahoo and Bing. The present study was conducted using a webometric method. The population of the study consisted of all online newspapers published in Persian. The study sample was identified using a targeted method. It included those Persian newspapers listed on the MagIran database with their electronic versions regularly published on their respective websites. The results revealed that Google outperforms the two other search engines in terms of timely indexing of the Persian newspapers. Furthermore, it generally enjoys a more consistent and stable indexing model. Yahoo and Bing are not only slower in indexing
the newspapers, but also experience a comparably lower consistency level in their indexing models. Yahoo and Bing show to be comparable in their indexing speeds. In this study, the indexing status of Persian newspapers on different internet search engines was investigated for the first time. Results showed that those accessing these newspapers using internet search engines will have a higher chance of accessing their most updated versions using Google.

Acharya, S., Park, H.W., (2016), This study on ‘Open data in Nepal: a webometric network analysis’, examines the current open data trends in Nepal based on the webometric analysis method by using search engines to trawl through websites and obtain data. The results indicate that various national and international non-profit organizations, public sector organizations, educational institutions, and a few commercial organizations were the initial actors fostering open data in Nepal. Therefore, these organizations were analyzed in terms of their networking patterns and the extent to which they are exposed internationally in cyberspace by using Webometric Analyst 2.0. Inter-linkage analysis, co-mention analysis, and link impact analyses were conducted to explore the networking behavior in the World Wide Web. The results revealed that international organizations (IOs) were strongly interlinked. Nongovernmental organizations (NGOs), government organizations (GOs), and IOs were interlinked, but weakly. A link impact analysis was also conducted using its indicators of seed sites linked to external websites in terms of the estimated number of top-level domains and country-code top-level domains.

Barnett, G.A., Xu, W.W., Chu, J., (...), Park, J.Y., Park, H.W., (2016), this paper ‘Measuring international relations in social media conversations’, examines international relations as perceived by the public in their social media conversations. It examines over 1.8 billion Facebook postings in English and 51 million Chinese posts on Weibo, to reveal the relations among nations as expressed in social media conversations. It argues that social media represent a transnational electronic public sphere, in which public discussions reveal characteristics of international relations as perceived by a foreign public. The findings show that the international relations in social media postings match the core-peripheral structure proposed in the World Systems Theory. Additionally, the relations are associated with the amount of news coverage and public attention a country receives. Overall, the study demonstrates the value of webometric data in revealing how international relations are perceived by average citizens.
Damayanti, Subriadi, A.P., (2016), Globalization in higher education has a direct impact on competition among universities in Indonesia which become keener. The competition has not been only within universities in the country but also with universities from other countries. This keener competition has motivated each university to improve its quality continuously, so that they could survive and winning the competition. Furthermore, there was a university ranking that standardized and recognized internationally, such as; Webometrics Ranking of World Universities, which was based in Spain. Webometric was a system that provided an assessment of all universities in the world through the university's website assessment. Meanwhile, the progressiveness of Internet Technology has made the spread of word of mouth (WOM) was not limited to directly face-to-face communication, but already in the form of electronic word of mouth (e-WOM). E-WOM has become a phenomenon that was essentially improving the image of organization especially in the context of Webometric measurement. This study ‘Electronic word of mouth (E-WOM): A path to build the image of university’, aimed to identify and analyze the influence of someone’s motivation who engaged in e-WOM by using organization’s websites to enhance the image by exploiting the reputation and Webometric ranking. The research object was Sepuluh Nopember Institute of Technology (ITS), one of the largest University at Indonesia. Data was collected through the questionnaire to the academics community. This quantitative research engaging Partial Least Square (PLS) and enhancing with qualitative assessment. The results showed that there were significant correlation between factors of e-WOM towards improving the image of organization for reputation and webometric ranking.

Gooding, P., (2016), Webometric techniques have been applied to many websites and online resources, especially since the launch of Google Analytics (GA). To date, though, there has been little consideration of information behavior in relation to digitized newspaper collections. The purpose of this paper is to address a perceived gap in the literature by providing an account of user behavior in the newly launched Welsh Newspapers Online (WNO). The author collected webometric data for WNO using GA and web server content logs. These were analyzed to identify patterns of engagement and user behavior, which were then considered in relation to existing information behavior. Findings – Use of WNO, while reminiscent of archival information seeking, can be understood as centering on the web interface rather than the digitized material. In comparison to general web browsing, users are much more
deeply engaged with the resource. This engagement incorporates reading online, but users’ information seeking utilizes website search and browsing functionality rather than filtering in newspaper material. Information seeking in digitized newspapers resembles the model of the ‘user’ more closely than that of the ‘reader’, a value-laden distinction which needs further unpacking. While the behavior discussed in this paper is likely to be more widely representative, a larger longitudinal data set would increase the study’s significance. Additionally, the methodology of this paper can only tell us what users are doing, and further research is needed to identify the drivers for this behavior. This study provides important insights into the under investigated area of digitized newspaper collections, and shows the importance of webometric methods in analyzing online user behavior.

**Jung, K., Park, H.W., (2016),** In advocating an effective inter organizational emergency response networks, we introduce a webometric approach as a critical lens to better understand the challenges facing government organizations during a catastrophic event by comparing two inter organizational information networks derived from respectively content analysis and network approach, which collects data derived from government reports and press releases. This research presents the critical finding from a webometric approach, a lack of inter organizational risk communication was related to other elements of incident management, which implies that sufficient information flow between agencies is necessary for notifying agencies, mobilizing emergency facilities, and planning specific emergency responses, especially during a short-term emergency response to the 2012 Gumi chemical spill, South Korea. Also, the findings highlight that a nationally centralized and segmented emergency response system cannot respond fully to accident-triggered crises, particularly in developing countries. This study provides new insights into the way in which emergency management research based on the webometric perspective can capture inter organizational relationships in the context of catastrophic events.

**Kosyakov, D.V., Gus’kov, A.E., Bykhovtsev, E.S., (2016),** How adequately and fully do the indicators used in webometric research help assess the quality and size of scientific websites? This question is asked by the authors of this article ‘Russia’s academic institutes as mirrored by webometrics’. They analyze the sites of Russian academic institutes and their indicators. The degree of value stability of webometric indicators is demonstrated; examples of their discrepancy with assumed meanings are given; and alternative interpretations are offered. This research
resulted in a monthly replenished free-for-all database of webometric indicators of academic sites, hosted at http://webometrix.ru, which could become a tool for planning measures to improve the representation of scientific organizations on the Internet and a basis for generating webometric site rankings.

Mas-Bleda, A., Thelwall, M., (2016), this study compares Spanish and UK research in eight subject fields using a range of bibliometric and social media indicators. For each field, lists of Spanish and UK journal articles published in the year 2012 and their citation counts were extracted from Scopus. The software Webometric Analyst was then used to extract a range of altmetrics for these articles, including patent citations, online presentation mentions, online course syllabus mentions, Wikipedia mentions and Mendeley reader counts and Altmetric.com was used to extract Twitter mentions. Results show that Mendeley is the altmetric source with the highest coverage, with 80% of sampled articles having one or more Mendeley readers, followed by Twitter (34%). The coverage of the remaining sources was lower than 3%. All of the indicators checked either have too little data or increase the overall difference between Spain and the UK and so none can be suggested as alternatives to reduce the bias against Spain in traditional citation indexes.

Masterton, G., Olsson, E.J., Angere, S., (2016), A webmaster’s decision to link to a webpage can be interpreted as a “vote” for that webpage. But how far does the parallel between linking and voting extend? In this paper, ‘Linking as voting: how the Condorcet jury theorem in political science is relevant to webometrics’, authors prove several “linking theorems” showing that link-based ranking tracks importance on the web in the limit as the number of webpages grows, given independence and minimal linking competence. The theorems are similar in spirit to the voting, or jury, theorem famously attributed to the 18th century mathematician Nicolas de Condorcet. Authors argue that the linking theorems provide a fundamental epistemological justification for link-based ranking on the web, analogous to the justification that Condorcet’s theorems bestow on majority voting as a basic democratic procedure. The analogy extends to the practical limitations facing both kinds of result, in particular due to limited voting/linking independence. However, they argue, referring to the theoretical developments inspired by the jury theorem, that some of the pessimism expressed in the webometrics literature regarding the possibility of a ‘theory of linking’ may be unjustified. The present study connects the two academic disciplines of webometrics in information science and epistemic democracy in political science by showing how
they share a common structure. As such, it opens up new possibilities for theoretical cross-fertilization and interdisciplinary transference of concepts and results. In particular, we show how the relatively young field of webometrics can benefit from the extensive and sophisticated literature on the Condorcet jury theorem.

**Rochim, A.F., Sari, R.F., (2016)**, this paper ‘Study on the correlation of web repository ranking to the green campus ranking of Indonesian Universities’, presents the analysis of fourteen universities Institutional Repository based on webometrics (IR webometrics) ranking and their relation to the universities position in the UI greenmetric ranking. The UI Greenmetric ranking provides opportunities for each university to examine their strength and weakness in promoting green university and sustainable development based on six indicators. Universities that have good Institutional Repository should also have concern about the environmental management of the campus. The purpose of this study was to measure the correlation between all of variables in IR webometric rank and UI greenmetric rank of Indonesia universities, how the correlation between variables of both. The correlations between IR Webometric rank and UI Greenmetric rank we analyzed using Pearson's Product-Moment Correlation Coefficient in SPSS tools. The result showed that the correlation between visibility factor (IR webometrics) and waste factor (UI greenmetric). The visibility of the repository is highly related to the waste treatment policy in these 14 universities, with 0.762 correlation indicator of value.

**Teymourikhani, A., (2016)**, Informal citations are bibliographic information (title or Internet address), citing sources of information resources for informal scholarly communication and always neglected in traditional citation databases. This study is done, in order to answer the question of whether informal citations in the web environment are traceable. The present research ‘Survey of formal and informal citation in google search engine’, aims to determine what proportion of web citations of Google search engine is related to formal and informal citations. Webometrics is the method used in this study. The study is done on 1344 research articles of 98 open access journals, and the method that is used to extract the web citation from Google search engine is ‘Web/URL citation extraction’. The findings showed that 10 percent of the web citations of Google search engine are formal and informal citations. The highest formal citations in the Google search engine with 19/27% is in the field of library and information science and the lowest official citations by 1/54% is devoted to the field of civil engineering. The highest percentage of informal citations with
3/57% is devoted to sociology and the lowest percentage of informal citations by 0/39% is devoted to the field of civil engineering. Journal Citations is the highest with 94/12% in the surgical field and lowest with 5/26 percent in the philosophy field. Due to formal and informal citations in the Google search engine which is about 10 percent and the reduction of this amount compared to previous research, it seems that tracking citations by this engine should be treated with more caution. Researcher sees that the amount of formal citation is variable in different disciplines. Cited journals in the field of surgery are the highest and in the field of philosophy is the lowest. This indicates that in the field of philosophy, which is a subset of the social sciences, journals in scientific communication do not play a significant role. On the other hand, book has a key role in this field perhaps because date of resources is not important in this field.

Thelwall, M., (2016), Astronomy is a natural science attracting substantial public interest. On a human scale, most individual celestial objects are essentially unchanging but are the same true for interest in astronomy research? This article uses the popular online encyclopedia Wikipedia as a proxy for public interest in academic research and assesses the extent to which it cites astronomy and astrophysics articles published between 1996 and 2014. Automatic Bing searches in Webometric Analyst were used to count the number of citations to astronomy and astrophysics articles from Wikipedia. The results have show that older papers from before 2008 are increasingly less likely to be cited. This is true overall and in most of the major language versions of Wikipedia, although it may reflect editors' interests rather than the public's interests. This is consistent with a moderate tendency towards obsolescence in public interest in research, although it is probably affected by the dates on which most Wikipedia content on the topic was created. Papers may become obsolete if they report evidence that is later superseded by improved data or if they propose a model that is later replaced.

Thelwall, M., Kousha, K., Dinsmore, A., Dolby, K., (2016), The purpose of this paper ‘Alternative metric indicators for funding scheme evaluations’, is to investigate the potential of altmetric and webometric indicators to aid with funding agencies’ evaluations of their funding schemes. This paper analyses a range of altmetric and webometric indicators in terms of suitability for funding scheme evaluations, compares them to traditional indicators and reports some statistics derived from a pilot study with Wellcome Trust-associated publications. The finding of this paper
was some alternative indicators have advantages to usefully complement scientometric data by reflecting a different type of impact or through being available before citation data. The empirical part of the results is based on a single case study and does not give statistical evidence for the added value of any of the indicators. A few selected alternative indicators can be used by funding agencies as part of their funding scheme evaluations if they are processed in ways that enable comparisons between data sets. Their evidence value is only weak, however. This is the first analysis of altmetrics or webometrics from a funding scheme evaluation perspective.

Verma, Manoj Kumar and Ksh. Krishna Devi., (2016), Website plays an important role in every institution and every organization. Websites are the gateway to an institution through online mode. Libraries’ websites web pages help the users to get all the information online related to the facilities and services provided by their respective libraries of an institution. IIM are the pioneer management institutions and the libraries website / web page are to be maintained properly where the information should be easily accessible by the user without any hindrance. A checklist was designed and the library webpages were evaluated based on the previous evaluations of websites conducted by different authors.

Hendrikx, B., Dormans, S., Lagendijk, A., Thelwall, M., (2017), Slow Food (SF) is a global, grassroots movement aimed at enhancing and sustaining local food cultures and traditions worldwide. Since its establishment in the 1980s, Slow Food groups have emerged across the world and embedded in a wide range of different contexts. In this article ‘Understanding the geographical development of social movements: a web-link analysis of Slow Food’, authors explain how the movement, as a diverse whole, is being shaped by complex dynamics existing between grassroots flexibilities and emerging drives for movement coherence and harmonization. Unlike conventional studies on social movements, our approach helps one to understand transnational social movements as being simultaneously coherent and diverse bodies of collective action. Drawing on work in the fields of relational geography, assemblage theory and webometric research, we develop an analytical strategy that navigates and maps the entire Slow Food movement by exploring its ‘double articulation’ between the material-connective and ideational-expressive. Focusing on representations of this connectivity and articulation on the internet, authors combine methodologies of computation research (webometrics) with more qualitative forms of (web) discourse analysis to achieve this. Their results point to the significance of
particular networks and nodal points that support such double movements, each presenting core logistical channels of the movement’s operations as well as points of relay of new ideas and practices. A network-based analysis of ‘double articulation’ thus shows how the co-evolution of ideas and material practices cascades into major trends without having to rely on a ‘grand’, singular explanation of a movement’s development.

Webometric analysis of Central Universities in India: A study

SUMMARY:

After going thoroughly all the reviews of books and journals, it is found that the research has been done to find out a number of studies that focus on the library websites. Most of the studies are about the performance, link analysis, evaluation, content analysis and usability of library websites. Early studies of library website information have noticed the number of factors relevant to navigation, speed, access, mission statements, general library information, collection, services and resources, catalogue access, contact information, electronic resources and other collective services such as contact with librarian, Chat, Social media, etc.

The researcher has reviewed total 111 studies from research papers and books from the year 2000 to 2016. The researcher concludes that reviews of the webometric study would result in improving the existing system and generate new ideas to information services.
References


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