Visibility study in strategizing for web marketing and webometric university ranking in Malaysia

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Abstract. The increasing of universities to compete in the higher education institution has gone global as knowledge is growing rapidly in the internet. Webometric has introduced a ranking system for the universities to analyze their website on the content of the universities’ website according to their indicator of presence, visibility, openness and scholars. The amount of performed universities in Malaysia is microscopic compare to most universities in the U.S. The study analyzes a selection of universities from webometric in accessing the website data and traces the relationship between the indicators and the ranking. The present study contributes to the enhancement of University performance through a detail identification and strategy using Webometric dimensions.

Keywords: Webometrics, Web Marketing, Information management, Visibility

1. Introduction
Webometric helps to describe in a quantitative way the scholarly communication processes that focuses on the information available in the publicly accessible Web. The Ranking of World Universities website has popularized webometric by rating the universities in the world based on the web presence. The accessibility of universities’ websites gives a larger audience the opportunity to experience the same teaching, research and information transfer all over the world. This gives the opportunity for the universities to be known worldwide and having the title of a “World Class Universities”[1].

Other than that, in the growth of information economy and global competition, any university that ranked in a top position on webometric performed their content on presence, visibility, openness and scholars. Additionally, it gives the liberty for the university to grow and earned recognition worldwide. Vice versa for the low ranked universities that are having a minor content on their websites also shows web bad practices by the universities. There is no limitation of activities for the universities to embrace the use of website, thus the sharing information has a larger audience from the website.

Malaysia’s universities face the difficulty to perform well in webometric, which brings down more of Malaysia’s universities rank. Even though nowadays there are a lot of universities in Malaysia has embraced and made use of their own websites for such activities and research, but the rank says a lot more than just the activities done. Due to the changes in demand and the expand condition of society, universities that want to accomplish their vision is recommend to respond towards the changes and develop a better internal structure.
2. Conceptual Development

A study conducted concluded that the webometric ranking reflects the true state of the website based on rich files, size, Google Scholar and visibility [2]. A website gives the opportunity for the staff, prospective students, incoming students and students to contact with the University along with promoting the programs or courses from the University for other interested people. This research focuses on the evaluation of the University of Ibadan websites using the webometric ranking parameters to identify the problem of the websites that needs to be improved so that it is increasing the University of Ibadan ranking in Nigeria, Africa and the World. A higher ranked university developed the culture of researches, teaching and learning culture into their web that makes the university increases their perceived impact, improves their visibility and makes positive perception about the stakeholders.

Sri Lankan universities have a lower ranking in webometric while universities in other countries achieve a better ranking. This study aims to analyze the web presence and visibility of Sri Lankan state universities in order to determine the significant parameters of Webometric for a higher rankings and readiness of Sri Lankan state universities for Webometric [3]. It is a narrowed descriptive cross-sectional research study to analyze the state universities’ websites and a deductive research approach to collect specific data of the important variables. Findings shows that in-links, rich files and Google Scholar gives a higher contribution for the web presence. While in the online questionnaire, findings shows that even though the university’s academic staffs were equipped with the necessary web publication facilities, yet they are not familiar with web publication and do not engage on a better web practice.
According to Van Niekerk et al. (2006), strategic management is a tool to forecast the future and place the institution in the best possible position for future success. Additionally, the opportunity for the universities to analyze the present condition of their personnel, students, and other stakeholders into a consideration gives the account to create and sustain competitive advantage. In the time of globalization, it has certainly influenced the nature of business process in the education industry as the transformation of educational services has become a commercialized product for the education industry. The impact of strategic management on higher education system includes content, teachers’ capabilities, teaching methods, assessment of academic achievement, academic resources, and physical environment of universities (S. Fard et al., 2010). By implementing the correct strategic plans, a success institution will follow and grow into an extremely important tools for organizational effectiveness.

Aguillo has defined each of the webometric indicators which consist of presence, openness, excellence and visibility. Presence is defined as the total number of webpages hosted in the main webdomain (including all the subdomain and directories) of the university as indexed by the largest commercial search engine (Google). Every webpage will be counted for each webdomain and subdomain, except the old or discontinued domains for other purposes such as alternative central ones for foreign language or marketing purposes will not be counted in the data as it is concluded as a bad practice in confusing external users. Also, any rich files such as filetypes like pdf, doc, docx, ppt, ps, or eps is excluded because the reason of differentiating presence from Openness indicator [4].

Openness counted the number of files in Google Scholar (the largest academic search engine), includes two component files which are the total number and the recent publications, for those that published between 2009 until 2013 to increase the deposit rate. Excellence counted the total number of academic papers published in high impact international journals by the help of Scimago, a data provider that measures the high-quality output of research institution. Because of the calculation may be misleading, there is a restrict counting data that only those excellent publications (the university scientific output that is being part of the 10% most cited papers in their respective scientific fields) will be included in the data. Lastly, visibility is a data collection of both total number of external inlinks (backlinks) and the number of webdomains that are origin of these links (referred domains) from each source. The data will be provided by Majestic SEO and ahrefs, where both will use their own crawlers to generate different database that should be used jointly for filing coverage gaps or correcting mistakes. To avoid any strong interlinking from local sources or game the system contracting link farms, the top 10 linking domains and their corresponding backlinks are excluded. The data then will be obtained by the product of the number of backlinks square root and the number of domains originating those backlinks [5].

3. Research Objective
The primary research objective here is to investigate the webometric parameters of visibility, presence, openness and scholar that lead to a well-built web presence of top rank universities. Those been done to investigate whether the webometric parameters would lead a higher ranking to Malaysia’s universities. Third, to identify the weakness keys that are hampering Malaysia’s universities from performing in the webometric ranking as compare to other top rank universities. Lastly, to propose a strategy for improving Malaysia’s university website performance in future ranking.

4. Methodology
The methodology is descriptive observation method, investigating the data of each selected universities from the sample. The observation method held a structured, uncontrolled, nonparticipant, uncontrolled and natural environment observation. The researcher will observe the target sample without any concerned or control over the sample while the data is being collected. The sample will be stratified into a group of Malaysia’s universities and world universities group. To confirm and make sure that all of the webometric parameters is significantly related to webometric ranking, the hypothesis is developed to give the guidance to this research. The groups represent an independent
sample because there is no relationship between the subjects in each sample.

5. Data Collection and Analysis

It is suggested by Ranking of World Universities that the data will be collected by using a mechanical observation method using Google, Ahrefs, Majestic SEO, Google Scholar and Scimago. Each data of visibility, presence, openness and scholars will be collected by using the sample’s website. In the data collection of visibility, Ahrefs and Majestic SEO will be used to collect the number of external networks from the sample’s websites. Next, the data that will be collected by Google for the indicator of presence is the size (number of page) of the main web domain of the sample that also includes the rich files. On the other hand, openness is a data collection from Google Scholar Citation for collecting the number of citation. Lastly, Scimago will be used to collect number of paper from the year of 2011 to 2015 to represent scholars in the webometric indicator [6][7].

The typical raw, ordinal and rank data lead this study to analyze with a method of nonparametric test. After the data has been collected, the data then will be analyzed further by using Statistical Package for Social Science (SPSS). For a nonparametric test, Mann-Whitney U test has been chosen for the further analysis on SPSS for a statistic result. Mann-Whitney U test will provide mean from the ranks table to show a mean ranks and sum of ranks for the two groups of Malaysia’s universities group and world universities group. The higher mean rank will indicate a higher webometric ranking. The further analysis of Mann-Whitney U test is the actual significant value of the test results from statistics test table. The U statistics and asymptotic significance (2-tailed) p-value will conclude which group is significantly higher than the other group.

Each indicator will be tested to verify whether each of the webometric indicators will give an impact towards the ranking. The analysis of confirming on which indicators of the webometric will holds a significant parameter towards webometric ranking will be suggested to be tackled in the next Ranking of World Universities cycle. After the SPSS analysis, top rank universities will be analyzed by using mechanical observation method for each of the indicator. The top rank universities will be the benchmark for Malaysia’s universities to achieve a better content in each of the indicator.

The data obtained for each of the indicators will be obtained from the sample’s website link itself. Each of the indicators will be accessed by using different method of mechanical observation. With visibility Majestic SEO and Ahrefs, presence with using Google, openness using Google Scholar Citation while Scholars using Scimago. The data obtained will be in a secondary data, as the data is accessed by the search engines used rather than data that is obtained by the researcher itself. Mann-Whitney U-test will be used to test the statistical test of this study because of the nonparametric study. The expected results using Mann-Whitney for this study is to have a higher mean rank to indicate which indicator would have a higher webometric rank. Each hypothesis in the table will be tested in this study to conform the relationship of the indicators using webometric.

6. Conclusion

After analyzing the data for each of the webometric indicator, the results will show the specific webometric indicator of visibility, presence, openness and scholars’ indicator would either represent weak parameters or strength parameters for an effective improvement for webometric ranking. By identifying the strength parameters from the analysis, a strategy of improving on the strength parameters will benefit the webometric next ranking. A strategy that involves comparison between the weak parameters of webometric indicators in Malaysia’s universities between the top rank universities in Webometricis in accordance to the mechanical observation done for both top rank universities websites and Malaysia’s universities websites. Focusing on the data that will be collected from Webometric and applying the best strategy for indicators that has weak parameters and also towards the strongest parameters that would gave a better impact on the ranking later.
Table 1. Summary of data sources, data collection method, data type, statistical test, expected results, hypothesis and research question

| Indicator | Data Sources | Data collection method | Data type | Statistical test | Expected results | Hypothesis |
|-----------|--------------|------------------------|-----------|------------------|------------------|------------|
| Visibility | Sample’s website link | Mechanical observation method using Ahrefs and Majestic SEO | Secondary data on number of external networks. | Mann-Whitney U test | Higher mean rank to indicate a higher webometric ranking and (2-tailed) p-value to conclude groups that is significantly higher than the other group | Ha1: Visibility has a relationship with Webometric Ranking in Malaysia’s universities. |
| Presence  | Mechanical observation method using Google. | Secondary data on size (number of page) of the main web domain. |  |  |  | Ha2: Presence has a relationship with Webometric Ranking in Malaysia’s universities. |
| Openness  | Mechanical observation method using Google Scholar Citation. | Secondary data on number of citations. |  |  |  | Ha3: Openness has a relationship on Webometric Ranking in Malaysia’s universities. |
| Scholars  | Mechanical observation method using Scimago. | Secondary data on number of papers from the year of 2011 to 2015. |  |  |  | Ha4: Scholar has a relationship on Webometric Ranking in Malaysia’s universities. |

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