

# An Assessment of The Web Presence of Top 10 University in Southeast Asia

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**Abstract:** *The web presence is said to be one of the factors a university to be visible in the web space. This study aims to assess Southeast Asia universities on the web space and expose the impact of universities online presence to the rank of the universities in the Southeast Asia region. The contribution of universities website in indicating the performance of the university by using the webometrics analysis method has not been widely done yet by other researchers. The use of webometrics analysis in determining the level of visibility of a web domain is still on the early stage. To gather information about web links and visibility, search engine and web crawlers was used as well as webometrics analysis and web mention in analyzing the web presence and influence. Scatter plot was generated to have a better insight of the analysis result. In summary, the study shows the involvement of the universities website on the web space does not give a direct impact to the ranking of the university in the world but the web mention by Wikipedia to the universities do have an impact. The use of webometrics analysis and web mention to study the web structure of an institution is possible.*

**Index Terms:** *Academic website, webometrics analysis, web mention, social media.*

## I. INTRODUCTION

The World Wide Web (WWW) can be used to attract students, scholars and funding from other places as well as making all those educational institutions being well known all over the world by allowing their knowledge to spread beyond physical boundaries through E-learning programs and open access initiatives [1]. WWW has been a medium for improving and promoting the academic, scientific and educational level of competences of a university. It is a vast network that allows us to look for relevant information by navigating sites and domains all around the world. The key to being reached by new users is the interconnection degree of websites which is the more incoming links the websites received, the more likely to achieve more visitors [2]. The visibility of a university on the web is one of the crucial factors for the success of a university. The academic web is one of the biggest influences in the world web ranking. However, to be able to be visible in the world wide web, the web domain needs to assure their acceptance in the network by producing more resources that can be used by other users. To show the impact of a website, the number of hyperlinks

that a website receives from another website need to be investigated and the result could be a significant proof [3]. The quality of resources they produce in the social network could determine the frequency they will appear in the search engine result page. This will also increase their level of visibility in the world wide web. The study of the presence of the university's website on the world wide web is, in general, to evaluate their performance of their web domain and at the same time, evaluating academic and research performance of the universities. According to Aminpour et al. [4], the ranking of the world universities are being determined by their webometrics features and it gives a significant impact to the university's web domain. Nonetheless, many of the studies are focusing on the European academic web space and there's no study has been done on Southeast Asia academic web space. Therefore, this study is done to evaluate the Southeast Asia academic web domain. Link analysis is one of the most common methods to investigate the relationship between website, institution, domains, and nation [5]. However, link analysis is typically done by calculating the numbers of hyperlinks to a set of academic-related websites or pages and evaluated whether the number of links found could reasonably be used to indicate the impact of the target site/page. Ortega and Isidro [6] in their research also has stated that in web studies, the reliability of the data sources used to develop quantitative analysis is the most concerning issue as the links have the volatile nature of the web in which the contents appear, change and vanish in a short time period [2]. The determinant factors that become the overall influence of a country is precisely taken from their relation or interaction among the respective countries, governments, organizations, and institutions. However, as far as we can see, there is no comprehensive study of the web structure of the Southeast Asia countries that take measure their collective or relative influence. In short, this study aims to analyze the network of Southeast Asia universities on the web space and expose the impact of universities website and online presence on the rank of the universities in the Southeast Asia region. Several research questions were raised up for this research:

- i. Is there any correlation between webometrics analysis and web mention?
- ii. Do the result in webometric analysis and web mention correlate with the QS-World University ranking?

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II. METHODOLOGY

For this study, the top 10 universities in Southeast Asia is selected from QS World Universities Ranking in 2019. Table 1 shows the top 10 universities in Southeast Asia and its world rank.

Table 1. Top 10 universities in Southeast Asia from QS World Universities Ranking

Rank	University	World Rank
1	National University of Singapore	11
2	Nanyang Technological University	11
3	University of Malaya	24
4	Universiti Putra Malaysia	36
5	Universiti Kebangsaan Malaysia	43
6	Universiti Sains Malaysia	46
7	Universiti Teknologi Malaysia	50
8	Chulalongkorn University	49
9	Universitas Indonesia	54
10	Mahidol University, Thailand	58

A. Webometrics

In the Webometrics Ranking of World Universities, Visibility contributes 50% and Presence contribute another 5% of the calculation [7]. Visibility is the product of the number of Referring Domain and Backlinks. Referring domain is referred to as the number of domains that links originate from while backlinks are the number of all external hyperlink's links to the website. Data extraction for the Visibility is done by using Ahref, a toolset for backlinks and Search Engine Optimization (SEO) analysis. The backlinks for each website are gathered by using their official website URL. As for Presence or website size, the value can be obtained by using the commercial Google search engine by using the following command format:

$$\text{Site size} = \text{"site:main.domain.name"}$$

B. Web Mention

Web mention is an alternative to backlinks where instead of relying on the hyperlink, regular text can be used as an indication of citing an institution. This has been studied thoroughly by Ortega J [8] on Spanish universities and found that the reliability of the results is dependent on the name itself. We are going to test whether it is reliable or not for this study. Extraction of data for web mention is done by using specially developed data miner using PHP and Google custom search engine API. Web mention is done only on seven most commonly used social network which is Youtube, Blogspot, Wordpress, Facebook, Wikipedia, Twitter and Instagram by only using the full name of the university as table 1. The query used to count the number of web mention is as follows:

$$\text{"site:[social network domain] "university full name" "}$$

Due to the nature of Google crawler indexing, also known as Google Dance [9] and the continuous change in the number of web mention, the data were extracted in a short period of time to make sure that the result is precise and up to date.

III. RESULTS & DISCUSSION

A. Backlinks

Table 2. Backlinks Result

University	Backlinks
National University of Singapore	18,700,628
Nanyang Technological University	1,652,494
University of Malaya	2,064,381
Universiti Putra Malaysia	14,974,313
Universiti Kebangsaan Malaysia	3,373,462
Universiti Sains Malaysia	3,227,054
Universiti Teknologi Malaysia	1,574,788
Chulalongkorn University	8,685,073
Universitas Indonesia	4,015,029
Mahidol University, Thailand	7,168,604

From Table 2, we can see that the National University of Singapore with about 18M backlinks and Universiti Putra Malaysia with around 15M backlinks were receiving the most backlinks out of the 10 universities while Nanyang Technological University, 1.6M backlinks and Universiti Teknologi Malaysia, 1.6M backlinks received the least number of backlinks. A total of 65M backlinks received from all these universities with an average of 6.5M backlinks each. From this data, we can't conclude that the top rank universities can produce more backlinks when their ranking is higher compared to other universities because the second highest ranking does not perform as well as the first.

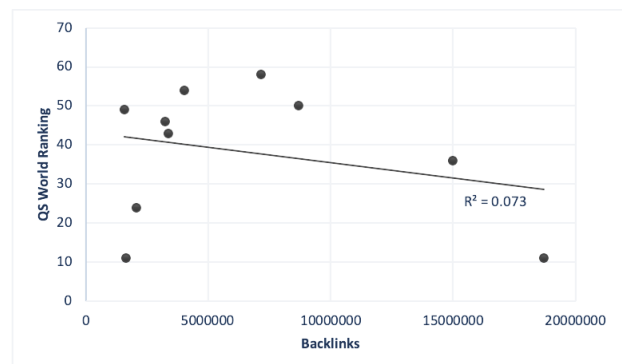


Fig. 1 Scatter plot between QS World Ranking and Backlinks

Fig. 1 shows the scatter plot between QS World Ranking and Total Backlinks received by each university. From here, a very weak coefficient of determination, R-Squared ( $R^2$ ) was calculated with a value of 0.073.



**B. Website Size**

**Table 3. Website Size**

University	Site Size
National University of Singapore	754,000
Nanyang Technological University	985,000
University of Malaya	398,000
Universiti Putra Malaysia	571,000
Universiti Kebangsaan Malaysia	408,000
Universiti Sains Malaysia	317,000
Universiti Teknologi Malaysia	666,000
Chulalongkorn University	521,000
Universitas Indonesia	691,000
Mahidol University	562,000

Table 3 shows the number of website size for every website. Nanyang Technological University has the highest size of the site (985,000 pages) followed by National University of

Singapore (754,000) and Universitas Indonesia (691,000) while Universiti Sains Malaysia (317,000) has the lowest size of pages. From the result above, we can see that the number of website size of the university in the web space does slightly reflect the ranking of the universities.

**C. Web Mention**

Table 4 shows the result for web mention based on seven social media. Universitas Indonesia was topped in five social media, 32k times on Youtube, 301k times in Blogspot, 134k times in Wordpress, 47k times in Twitter and 11k times on Instagram. However, even the combination of all five can't beat Universiti Teknologi Malaysia which was mentioned by Facebook for 1M times, which is the highest of all social media mentioned. The National University of Singapore was mentioned 314 times in Wikipedia. On the other hand, Nanyang Technological University has the lowest mentioning value for all the social media mentioned above.

**Table 4. Web Mention Result**

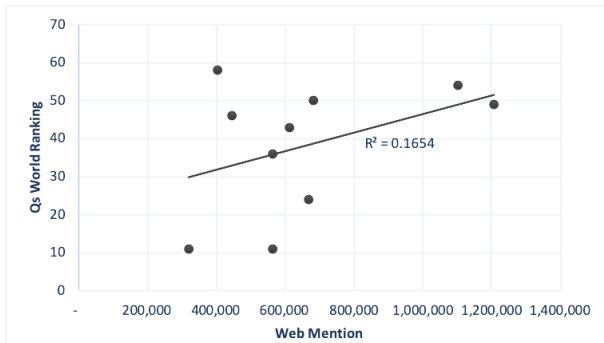
University	YouTub e	Blogspo t	Wordpres s	Faceboo k	Wikipedi a	Twitte r	Instagra m
National University of Singapore	6,590	38,400	29,000	482,000	<b>314</b>	6,410	862
Nanyang Technological University	3,890	20,500	14,300	275,000	117	4,780	612
University of Malaya	6,830	33,300	13,000	602,000	225	10,600	2,060
Universiti Putra Malaysia	5,600	98,300	14,200	439,000	59	4,990	1,610
Universiti Kebangsaan Malaysia	8,690	149,000	29,300	419,000	99	6,540	10
Universiti Sains Malaysia	5,170	122,000	18,300	295,000	74	2,870	1,440
Universiti Teknologi Malaysia	5,350	105,000	12,100	<b>1,080,000</b>	67	4,240	8
Chulalongkorn University	6,270	10,700	13,200	636,000	103	10,600	5,800
Universitas Indonesia	<b>32,100</b>	<b>301,000</b>	<b>134,000</b>	575,000	57	<b>47,000</b>	<b>11,400</b>
Mahidol University	7,260	6,290	6,400	373,000	59	4,950	4,120

From the result, a scatter plot of QS World Ranking and Total Web Mention was generated with trendline as shown in fig. 2. A weak coefficient of determination ( $R^2 = 0.1654$ ) was found showing there is a small relationship between QS World Ranking and Web Mention. Both Singaporean universities have a low web mention despite having a higher ranking in QS World Ranking. Meanwhile, the lower ranking universities perform quite well in web mention. This may be a proof of weakness in terms of criteria set by QS World Ranking. It is possible to split each social media and analyze each of them with a QS World Ranking. By looking at table 4, we can see the most popular social media is Facebook, followed by Blogspot, Wordpress, Twitter, Youtube, Instagram and lastly Wikipedia. Top 3 university has the

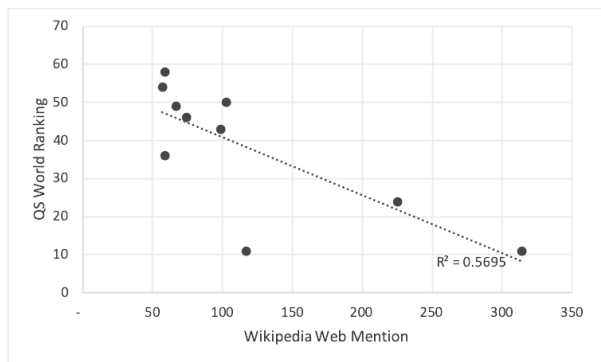
dominates the Wikipedia web mention showing a strong relationship between them. To prove this, a scatter plot was generated as shown in fig. 3. From this figure, it was confirmed that Wikipedia web mention has a strong coefficient of determination ( $R^2 = 0.5695$ ), thus a lot of impacts given to the ranking or vice versa.



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**Fig. 2 Scatter plot between QS World Ranking and Web Mention**



**Fig.3 Scatter plot between QS World Ranking and Wikipedia Web Mention**

## IV. CONCLUSION

Throughout this study, we can conclude that not all webometrics indicator can be used to find the relationship with QS World Ranking. Website size and backlinks did not indicate any relationship at all. Further study and data cleanup needs to be done on size and backlinks as both were only analyzed at the surface level. For example, not all contents of the website are purely academic and related to the university and some of them are spam contributed by hacked website [10]. While the spam did increase the site size, it can disrupt the overall content quality of the website. While overall total web mentions did not indicate any relationship with QS World Ranking, an in-depth analysis found that Wikipedia web mention does have an impact on the ranking. Further study includes categorizing web mention of universities in Wikipedia by country to check the consistencies with this study.

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## AUTHORS PROFILE



**Sharul Hafizis** is a master student from School of Computing and Information Technology Officer in University Technology Malaysia (UTM). He has been working on improving UTM webometrics ranking since 2009 and a Wordpress developer since 2012. Current project includes social media analytics for Malaysia Higher Learning Institution which analyzes hot topics and interest of academic community that guides universities social media administrator and developing an academic website web crawler with content analysis using machine learning and webometrics indicator which able to classify and differentiate between academic content and non academic content such as blogs and spam. He is also interested to study the relationship between



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