

Web visibility of Romanian universities – an analysis based on website analytics and social media data

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Abstract

There are many aspects that influence the importance of a university. Among these, web visibility is taking advantage of available technology, focusing on the benefits of internet and social media. This paper provides an analysis of the Romanian public and private universities websites, using alexa.com, a tool for website traffic analysis. Moreover, the official social media accounts of universities (Facebook, Twitter, Google+, Flickr, YouTube and Instagram) were analysed, collecting several data such as: the number of likes and followers, the number of subscribers and the number of posts. The analysis was performed using ANOVA and Nonparametric Test for the presence via websites and Spearman and Pearson correlation to assess the correlation between social media and website traffic. In general, public universities from Romania have more visibility and a higher number of links to their websites compared to private ones. Based on the fact that Facebook and site content are often related, it should be noted that activity on Facebook may improve website rankings for Romanian universities.

Keywords: *web visibility; social media; university; ANOVA; correlation.*

1. Introduction

Thelwall (2002) argues that analysing the impact a university website produces is equally important as analysing the impact of scientific research through citations, although the impact is not the same as stated by Jeyshankar and Ramesh Babu (2009). Moreover, Thelwall and Harries (2003) conclude that there is a strong connection between web presence of an university and research quality. Also, McNutt and Marchildon (2009) show that web presence is a crucial factor in increasing internationalisation. Furthermore, according to Kretschmer and Aguillo (2004), web visibility is essential in enhancing transnational collaborations in research.

In this context, this article aims to analyse the web visibility of Romanian universities from two perspectives: website traffic analytics and social media presence. The research is particularly important for university management in this country.

2. Data

A list of Romanian universities that are authorised for functioning or fully accredited is provided by The Romanian Agency for Quality Assurance in Higher Education at the following link <http://www.aracis.ro/en/eval-results/institutional-evaluations/> (accessed 30 January 2018). For each university the website was analysed using the facilities provided by alexa.com, one of the most powerful tools for website traffic analysis. It should be noted that alexa.com only measures traffic for domains (<https://support.alexa.com/hc/en-us/articles/200461930-Subdomains-Where-do-visitors-go> accessed 30 January 2018). Several indicators were collected, as follows: Global traffic rank; Traffic rank in country; Bounce rate; Daily Page views per Visitor; Daily Time on Site; The number of sites linking in; Percentage of visitors from Romania.

Next, for each university the official social media accounts were analysed: number of likes and number of followers (for Facebook); number of likes, number of followers and number of tweets (for Twitter); number of followers (for Google+ and Flickr respectively); number of subscribers (for YouTube); number of posts and number of followers (for Instagram). As one can observe professional networks such as LinkedIn or Research Gate were not included in the analysis. All data were collected on 5th January 2018.

3. Methods

In order to perform the analysis, certain records were first eliminated. Universities that do not have any social media account (5 cases) were not included as the influence of social media on website traffic can't be measured. Universities who do not have a website (3

cases) could not be included either. Universities whose website domain were not registered in Romania (4 cases) were not included as traffic rank in Romania can't be calculated. In the end, 82 universities were analysed.

First, web presence via website and social media presence of Romanian universities are analysed separately, using ANOVA for interval-ratio indicators with enough cases and Nonparametric Test for Median for ordinal indicators. Second, an analysis on how social media is correlated to website traffic will be conducted. For this reason, correlation coefficients between variables describing website traffic and social media activity will be used.

4. Results

Table 1 shows the number of universities reporting for each social media indicator, out of 55 public universities and 27 private universities. As one can observe, almost all the universities have reported Facebook activity while only 34.1% have reported Twitter activity in terms of tweets and followers. It should be noted that only 12.2% have reported likes on Twitter. Moreover, the results are similar for public and private universities.

Table 1. Number of universities reporting for each social media indicator

	Total	Public	Private	As % of total	As % of public	As % of private
Twitter_tweets	28	19	9	34.1	34.5	33.3
Twitter_followers	28	19	9	34.1	34.5	33.3
Twitter_likes	10	7	3	12.2	12.7	11.1
Facebook_likes	80	55	25	97.6	100.0	92.6
Facebook_followers	80	55	25	97.6	100.0	92.6
Youtube_subscribers	34	20	14	41.5	36.4	51.9
Google_followers	6	3	3	7.3	5.5	11.1
Flick_followers	1	0	1	1.2	0.0	3.7
Instagram_posts	2	2	0	2.4	3.6	0.0
Instagram_followeres	2	2	0	2.4	3.6	0.0

Source: designed by the authors, based on collected data

Next, the average values for indicators with regard to social media presence as well as results for the ANOVA procedure by type of university, where applicable are presented (table 2). As one can observe, the Levene Test for homogeneity shows that the ANOVA procedure can be applied successfully. Yet, the results following this procedure show no statistical difference between the means.

Table 2. Average values for indicators with regard to social media presence

	All universities	Public universities	Private universities
Twitter_tweets	1171	1044	1437
Twitter_followers	614	583	679
Twitter_likes	202	285	9
Facebook_likes	11984	13414	8838
Facebook_followers	11893	13320	8752
Youtube_subscribers	149	155	140
Google_followers	67	116	18
Flick_followers	3	Not applicable	3
Instagram_posts	91	91	Not applicable
Instagram_followeres	1278	1278	Not applicable

Source: designed by the authors, based on collected data

Table 3 presents the Average values for indicators with regard to web visibility as well as results for the ANOVA procedure by type of university. As one can observe, only *Percentage_visitors_from_Romania*, *Bounce_rate* and *Daily_time_on_site* meet the homogeneity condition for applying the ANOVA procedure. Out of these, the only statistical difference between the means by type of university is observed for *Bounce_rate*, confirming that public universities have a lower bounce rate compared to private ones. For *Daily_pages_per_visitor* and *Sites_linking_in* the Welch test is interpreted. A statistical difference between the means by type of university is observed for *Sites_linking_in*, confirming that public universities have a higher number of links to their websites compared to private ones.

Table 3. Average values for indicators with regard to web visibility

	All universities	Public universities	Private universities
Bounce_rate	0.59719737	0.570236	0.66781
Daily_pages_per_visitor	2.95134146	3.054727	2.740741
Daily_time_on_site	177.1125	188.9818	151
Sites_linking_in	390.740741	524.6296	122.963
Percentage_visitors_from_Romania	0.66485246	0.6525	0.736222

Source: designed by the authors, based on collected data

Table 4 shows the maximum, minimum and median values for Global Rank and Rank in the country as well as the results for the independent tests for median significance by type of university. As one can observe, there is a statistical difference between the medians by type of university for both variables. This confirms that public universities have more visibility both globally as well as in Romania compared to private ones.

Table 4. Maximum, minimum and median values for Global Rank and Rank in the country as well as the results for the independent tests for median significance.

		Total	Public	Private	Independent test for median significance	Independent test for median result
Max of Global_rank		12215686	7597903	12215686		
Max of Rank_Romania		55372	55372	47497		
Min of Global_rank		46134	46134	325714		
Min of Rank_Romania		464	464	3965		
Median of Global_rank		681371	492059	3646646	0.000	Reject the null hypothesis (The medians of Global_rank are the same across categories of Type_university (public, private))
Median of Rank_Romania		9181	8401	12476	0.026	Reject the null hypothesis

Source: designed by the authors, based on collected data

The next two tables analyse the correlation between certain indicators of website traffic and social media presence on Facebook and Twitter. Interpretations will be made according to Statstutor (2017). As one can observe, there is a weak statistically significant correlation between Daily Page views per Visitor and the number of likes and followers on Facebook respectively. Moreover a moderate correlation can be observed between the number of sites linking in and the number of likes and followers on Facebook respectively.

The results in Table 6 indicate a moderate negative correlation between global rank, rank in the country and the number of likes on Facebook and the number of followers on the same platform respectively. As Facebook and site content are often related, one can conclude that

activity on Facebook may improve website rankings for Romanian universities. This is not applicable to Twitter.

Table 5. Pearson correlation between certain indicators of website traffic and social media presence.

	Facebook number of likes	Facebook number of followers	Twitter number of followers	Twitter number of tweets
Bounce rate	-.225	-.227	.053	.065
Daily Page views per Visitor	.246*	.247*	.011	.089
Daily Time on Site	.191	.192	-.002	.101
The number of sites linking in	.572**	.569**	.125	.342
Percentage of visitors from Romania	.082	.083	-.115	-.073

**results significant at 1% level; *results significant at 5% level

Source: designed by the authors, based on collected data

Table 6. Spearman correlation between certain indicators of website traffic (global rank and rank in the country) and social media presence.

	Facebook number of likes	Facebook number of followers	Twitter number of followers	Twitter number of tweets
Global rank	-.591**	-.593**	-.284	-.206
Traffic rank in the country (Romania)	-.495**	-.496**	-.356	-.296

**results significant at 1% level

Source: designed by the authors, based on collected data

5. Conclusions

Alguillo (2009) stresses the importance of increasing the web audience in the case of universities and proposes several approaches: electronic journals, raw material publication,

information resulting from more informal activities, creating open access repositories. Our findings suggest that in the case of Romania, Facebook helps in increasing the web visibility of the universities. Therefore, we suggest creating such repositories and promoting them via Facebook.

The research is a good starting point for university managers in charge of designing communication strategies. Yet, the analysis should be extended to the website and social media content. This analysis should first address language. One interesting finding of Aminpour et al. (2009) who conclude that creating content in English can significantly improve web visibility. Also, our findings suggest that Twitter does not help in increasing web visibility of universities. This may be due to improper use of this social media channel, as Linvill et al. (2012) point out, for only one way communication.

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