Presence and Activity of Croatian Higher Education Institutions on Social Networking Sites

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Abstract. *Within the last few years Croatian higher education institutions have embraced social networks as a place where they can established presence and engage into communication with users of those social networks. Different social networks allow different means of interaction with users, e.g. content can be commented, shared or graded. This interaction is very important, especially for social networks that curate content based on user activity. Based on our findings, institutions can modify their existing social network strategies or can create new ones to fulfill given goals. Paper presents results of the research on social networks used by Croatian Higher Education Institutions. Nine different social networks were identified during this research. Goal of the research was to determine in which manner they are used, either as a one or two way communication channel. With constant changes within social networks it is of key importance to monitor all the trends and to make modification of communication strategies so that published content has more chance in reaching targeted audience.*

Keywords. Social networking sites, Croatian higher education, Facebook, LinkedIn, Twitter, YouTube, social networks

1 Introduction

In past few years there were many papers which focused on presence of higher education institutions on social networks (SN). We can find papers that are focused on different aspects of social networks, e.g. use of SN as teaching tools [3] [11], use of SN for communication [4], communication strategy for presence on SN [7] or analyses of user opinions on need for presence on SN [8].

There is a vast number of different definitions regarding what exactly does term "social media" implies/means and what is its connection with "social network sites". The definition given by Boyd and Ellison [2] that "social network sites as web-based services that allow individuals to (1) construct a public or semi-public profile within a bounded system, (2) articulate a list of other users with whom they share a connection, and (3) view and traverse their list of connections and those made by others within the system." partially covers the field but it does not include two important issues: communication and feedback system. On the other hand definition of social networking sites by Kaplan and Andreas [10] as "applications that enable users to connect by creating personal information profiles, inviting friends and colleagues to have access to those profiles, and sending e-mails and instant messages between each other." addresses communication issues but still lacks description of feedback system. A broader definition encompassing all aspects of social networking sites should define them as network based applications that enable user to create, publish, curate and disseminate their content to one or more specific groups of people with purpose of spreading information or communication and getting feedback on published content. This definition can also be extended to some social media and content delivery platforms. Due to their characteristics some of them can used as social networking sites, e.g. content can be curated, commented and shared.

In this paper the term "social network" is used to denote social networking applications, Internet based social networks, social media platforms and content delivery platforms such as Facebook, Twitter, LinkedIn, YouTube and Flickr.

Different social networks allow different means of interaction with users, e.g. content can be commented, shared or graded. This interaction is very important, especially for social networks that curate content based on user activity. Facebook is one such network. It uses user activity to decide which content will be shown and which will be omitted from displaying to user [9].

2 Research

The aim of this research is to find out which social networks are used by CHEI and to determine in which

manner they are used, as a one way or two way communication channel. Focus of this research is on presence and activity of institutions Presence and activity of their organizational units such as departments, libraries and IT support centers [7] are not part of this research. Also user engagement and interaction with users will be noted.

Finding out on which social networks educational institutions are present can be of great value for institutions that are not yet present on these networks. This data can help them in choosing a right network for their needs based on best practice used by similar institutions. The data can also be valuable to institutions that have already established presence on social networks in order to make adjustments to their communication strategy.

The conducted research consisted of data gathering from web pages of CHEI. The web site of each CHEI that was listed in the table was opened in a web browser and its home page and contacts web page was inspected for the presence of links that lead towards social network web sites. The home page is the first page of a web site and therefore it is a logical place to hold links that lead towards social network sites. Since the general problem of identity in the social networks is also a part of the Croatian reality the criterion of official and unofficial presence of an institution needed to be set in order to receive relevant data. This meant that official presence was considered only in the case when links between a social network and the official website existed i.e. institutional recognition of the account was clear. This way all malicious and unapproved forms of presence are omitted from this research. This approach can be compared with one that Google used for a long time to provide verification [1] for its Google+ product but it is now deprecated [13]. Since social networks can be used among other things as a communication channel, it also seemed logical to look at the web page where contact information as e-mail or phone number are published. In previous research studies the focus was on either one [4] or several predefined social networks [6]. For this research it was decided that there will be no predefined list of social networks that will be monitored or analyzed. This way a better insight can be made about presence of institutions on social networking sites.

At the end of August 2013 an e-mail was sent to The Ministry of Science, Education and Sport (MoSES) with a request for data on Croatian higher education institutions (CHEI). This data is publicly available at MoSES web site at URL http://pregledi.mzos.hr/ustanove_VU.aspx but in an attempt to reduce possibility of error during web scraping a request for exported data from database has been sent. MoSES has provided requested data in a form of a spreadsheet table. The table contained information on 136 institutions. Several institutions had typos in URLs of their web sites and therefore correct URLs were obtained via Google search. Out of those 136 institutions 101 of them are publicly funded and 35 privately funded.

All web sites were visited on 23rd September. Out of 136 sites 133 were successfully visited. Three sites could not be reached and examined at that time due to the fact that their web servers provided no response or were inaccessible. One of those sites belongs to a privately funded institution and two belong to publicly funded institutions. Starting from the presumption that institutions have set things up for the new academic year (updated information on the web site, established presence on social networks, class schedules, etc.) the beginning of October 2014 was chosen as the starting date.

In the period between 1st October and 31st December published content and statistics were gathered daily with the use of specialized service called Quintly. We used Quintly to gather data from Facebook, Twitter, Google+ and YouTube. Quintly is not a free software but they do offer "Students Special program". This program allows several months of free use of the tool to students for academic purposes. Along Quintly we have also provided CHEI links that lead towards social networks to several other tools such as Wildfire, Socialnumbers, SimplyMeasured and All my + Statistics. This was done so that those tools could also be used in future research. Most of the tools that are available at present time can produce statistics only for the period since social media profile was introduced to it for the first time.

3 Discussion

On 53 out of 133 different web sites we have found links towards social network sites, i.e. nearly 40% of institutions use on one or more social networks. One additional site had a link that lead towards a nonexistent Facebook page and was therefore discarded. Out of those 53 institutions 30 of them (57%) are publicly funded and 23 of them (43%) are privately funded. We can see that 23 of 34 examined privately founded institutions have presence on social networks. Out of 99 examined publicly funded institutions 30 of them have presence on social networks. This means that 67% of privately funded institutions have some form of presence on social networks compared with 30% presence of publicly funded intuitions. We believe that one of the main reasons for higher acceptance rate among privately funded institutions is large potential for marketing activities, i.e. institutions can use social networks for building brand awareness, acquisition of new students, various PR activities, etc.

All of the links were found on home pages and none were found on web pages with contact information. It seems that social networks are not at the moment considered to be a communication channel of the same value as phone or e-mail.

With the definition of social networks sites presented in the introduction in mind, nine different social networks were identified:

- Facebook
- Twitter
- YouTube
- LinkedIn
- Google+
- Tumblr
- Instagram
- Flickr
- Vimeo

When looking at the number of institutions (NoI) that have established presence on a number of social networks (NoNS) we can see that most of them use only one social network. As shown in Table 1 most institutions use only one or two social networks. Only one institution uses five different networks. This is also the largest number of social networks that any institution uses according to our research.

Table 1. Use of social networks across institutions

NoNS	NoI
1	28
2	14
3	5
4	5
5	1

Nine social networks were identified. Facebook is the most frequent social network followed by YouTube and Twitter. We have expected to see general purpose social network such as Twitter or Google+ at the second place and not YouTube that is used as a publishing platform for video content. When taking into account the effort that Google has put into promotion of Google+ we have expected for more institutions to embrace it. Also due to the characteristic of LinkedIn which allows it to be used as a portfolio for both institution and staff members we have expected for more institutions to use it. Table 2 shows all identified social networks and number of their occurrences.

Table 2. Identified social networks and their usage frequency

Social network	NoI
Facebook	45
YouTube	20
Twitter	17
LinkedIn	8
Google+	2
Tumblr	1
Instagram	1
Flickr	1
Vimeo	1

Due to rather low acceptance rate of some social networks and a small quantity of data that was available for harvesting the decision was made to focus only on top three social networks (Facebook, YouTube and Twitter) regarding their performance on social networking sites and analysis of content that they have published.

3.1 Facebook

Facebook allows institutions to publish different content types. When talking about the reach of different content types there is no consensus which content type has the greatest reach. [15] [5]. Since the reach depends on Facebook algorithm called Edge Rank as this algorithm changes over time different content types get promoted or demoted. [15] This means that each institution should try out different content types and find out which ones are the most appealing to their audience. Table 3 shows seven different types of content (TOC) that have been identified on Facebook. Those content types are:

- Coverphoto (CV) – title photo which is displayed on the top of Facebook page
- Link (LN) – hyperlink toward a web page
- Note (NO) – text that can be formatted
- Photo (PH) – digital photography
- Status (ST) – text message
- Video (VI) – digital video
- Event (EV) – event to which Facebook users can be invited

Table 3. Content published on Facebook

	CV	LN	NO	PH	ST	VI	EV
INST	24	38	4	37	28	5	10
TOT	55	1762	13	760	286	11	15

As it can be seen out of 45 institutions (INST) that use Facebook most institutions publish Links (38), Photos (37) and text based Statuses (28).

When looking at summarized (TOT) data for all institutions it can be seen that Links are the most frequent content type (1762). Links are followed by Photos (760) and Status (286). Other content types are rarely used by institutions.

People show interest in a certain page by becoming a fan of it. Fans can engage in interaction with a page through private or public communication. The private way of communication are messages. The data on private communication cannot be obtained. When an institution publishes content on Facebook users of Facebook have several types of engagement (ENG) on their disposition:

- Comment (CM) – user can leave a comment on published content in form of text or photo
- Like (LK) – user can mark published content with "Like". This is the simplest way for user to engage with the published content.

- Share(SH) – users can share content from other users or Facebook pages with their own friends or followers.

This engagement types are not available for content published as an Event. Engagement types for Events are:

- Join
- Maybe
- Decline

Since there is no way to compare engagement between Event and other content types we have decided not to collect RSVP data for Events at this time.

Table 4 shows how Facebook users, presumably fans of pages they are interacting with, have interacted with Facebook pages, i.e. how many times they left a comment or shared the content.

Table 4. User engagement on Facebook

TOC	**Coverphoto**			**Link**		
TOT	55			1762		
ENG	**CM**	**LK**	**SH**	**CM**	**LK**	**SH**
COU	10	874	0	363	7735	97
TOE	884			8195		
TOC	**Note**			**Photo**		
TOT	13			760		
ENG	**CM**	**LK**	**SH**	**CM**	**LK**	**SH**
COU	1	38	0	589	13651	150
TOE	39			14390		
TOC	**Status**			**Video**		
TOT	286			11		
ENG	**CM**	**LK**	**SH**	**CM**	**LK**	**SH**
COU	112	1749	7	325	4032	150
TOE	1868			4507		

Photos have gained most engagement (TOE) or interactions, a total of 14390. They are followed by Links (8195 interactions) and Video (4507 interactions). We can also see that most users have engaged by clicking a Like button or link (28079). Comments were written 1400 times and content was Shared 404 times.

Table 5 shows that some content types gain more engagement per published content (EPC) than other. It is interesting to notice that Video, which is most rarely used content type according to this research, has such large interaction rate. We believe that the cause for this is the fact that one institution has used video as a voting tool for giving away scholarship [12]. They have published in total seven videos that have total engagement (TOE) of 4328. If those seven videos would be excluded from the analysis, TOE for remaining four videos would be 179 with EPC of 44.75.

Photos do have a significantly larger EPC than Status or Link but this does not mean that they should replace them as content types. It would be a mistake to publish all information as Photos in attempt to gain higher engagement rate, e.g. notice about the change of an exam date can be published as Status and information about a new learning material can be published as a Link that lead towards an institution's learning management system. We believe that content type should be diversified in accordance with the type of message that is being disseminated.

Table 5. Content and engagement ratio

	TOE	**TOT**	**EPC**
Coverphoto	884	55	16.07
Link	8195	1762	4.65
Note	39	13	3.00
Photo	14390	760	18.93
Status	1868	286	6.53
Video	4507	11	409.73

3.2 YouTube

Out of 20 institutions that have established presence on YouTube, 19 of them have their own YouTube channel. One institution uses YouTube channel that is not dedicated only to their content. Therefore we have decided to exclude this channel from data shown in Table 6 and Table 7.

Table 6. Number of subscribers

CH	**SO1**	**SD31**	**NS**
19	551	667	116

On 19 channels (CH) total number of subscribers has increased form 551 (SO1) on October 1st to 667 on December 31 (SD31). Total number of new subscribers (NS) in given period is 116. This averages to six new subscribers per channel.

Table 7. Number of videos

CH	**VO1**	**VD31**	**NV**
19	758	773	15

In the same period number of videos has increased from 758 (VO1) to 773 (VD31). With total of 15 new videos (NV) average number of new videos per channel is less than one.

Total number of video views in given period is 21000. This means that each of 773 videos was viewed in average 27 times. Unfortunately, there is no public data for number of video views on Facebook so we cannot make a comparison with YouTube.

3.3 Twitter

Out of 17 institutions that had links towards their Twitter profile one institution had no activity on their profile. This profile also had zero followers, zero tweets and they didn't follow anyone on Twitter. We

presume that they have created a Twitter profile to prevent possible cybersquatting of their username. This institution was omitted from data gathering. Table 8 and Table 9 shows data gathered on 16 Twitter profiles (TWP). Total number of followers has increased (NFO) for 259. The starting number of followers was 4196 on October 1st (FOO1) and end number was 4455 on December 31st.

Table 8. Number of Twitter followers

TWP	FOO1	FOD31	NFO	FOLL
16	4196	4455	259	1985

Number of users that institutions are following (FOLL) is a lot smaller than a number of Twitter users that are following institutions (FOD31). Due to recent changes that Twitter has made [14] it is now possible to contact someone via a direct message even if there is no reciprocity in following. If an institution is not following back all of its followers we would recommend them to enable feature that allows all followers to contact them.

Table 7. Number of tweets published

TWT	OTW	RTW	RTU
997	852	135	9

In given period total of 997 tweets (TWT) was published. Most of those tweets, 852, are tweets composed by institutions (OTW). Retweets (RTW) count for 135 tweets and public replies to users (RTU) count only for nine tweets. By retweeting other users' content institutions show that they are actively following other Twitter users and that are trying to find appealing content for their followers. We were surprised to see such a low number of public replies.

Conclusion

Within the last few years Croatian higher education institutions have embraced social networks as a place where they can established presence and engage into communication with users of those social networks. We believe that in years to come we will see significant growth of presence from existing 40%.

Institutions have established presence on nine different social networks. Facebook is the dominant social network followed by YouTube and Twitter. When selecting content for publishing on Facebook institutions should take into consideration that different content types have different reach and that users engage with them in a different manner. Each institution should try out different content types and find out which ones are most appealing to their audience. Content type should be diversified in accordance with the type of message that is being disseminated. First place for Facebook did not come as a surprise but second place for YouTube is a surprising result. We have expected to see a general purpose social network such as Twitter or Google+ at the second place and not YouTube that is used as a publishing platform for video content. When taking into account effort that Google has put into promotion of Google+ we have expected for more institutions to embrace it. We see a lot of potential in Twitter. At this time institutions use it primarily for dissemination of information but there is a lot more to it. Twitter could be used at greater scale as a two-way communication tool.

We would recommend to institutions to use more than one social network. There is no imperative that an institution should be present on all available networks. Selection of social networks should be based on a communication strategy and desired goals. Institutions that want to extend their reach should use general purpose social networks such as Facebook and Twitter, whereas YouTube is great for institutions that have video content such as promotional video content, recordings of lectures, different tutorials, etc.

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