

Social Media Analytics with Facebook - The Case of Higher Education Institutions

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Abstract. Social Media Analytics has developed into a new research field within information science in the last years. Due to this fact, currently only a few research results about the usage of Social Media Analytics exist. To fill this gap, we conducted an international delphi study among selected higher education institutions (HEIs) in Germany, Austria and Switzerland which are applying Social Media Analytics related to Facebook. The results demonstrate that the majority of HEIs use more than one Social Media Analytics software tool and consider different Facebook metrics pre-dominantly on a monthly basis to evaluate and to develop their Facebook activities. We conclude that many HEIs lack an integrated Social Media Analytics strategy, under-utilize the real-time capabilities of Social Media Analytics and would benefit from Social Media Analytics.

Keywords: Social Media Analytics · Social Media Analytics metrics · Facebook · International delphi study · Higher education institutions (HEI)

1 Introduction

Due to the increasing importance of online social networks, Social Media Analytics has gained importance in information science and practice in the last years (Zeng et al. 2010; Leskovec 2011; Fan and Gordon 2013). However, currently only a few companies use Social Media Analytics to analyse their social networks (Ruhi 2014). The application of Social Media Analytics is essential for the development of an integrated social media strategy and the overall organizational strategy and provides a competitive advantage (Frauenhofer 2011; Alt and Wittwer 2014). As a result of the novelty of Social Media Analytics, there is currently relatively little research about the usage of this in the different industries (van Barnefeld et al. 2012). Especially the usage of Social Media Analytics in HEIs to support managerial decisions is less scientifically investigated, e.g. which Social Media Analytics metrics are analysed by the HEIs. In this regard, there exists a great variety of Social Media Analytics metrics in particular related to Facebook to analyse the development of a social media presence, such as a Facebook page with, e.g. number of likes, growth rate likes, engagement rate etc. (Kilner 2014; Permatasari et al. 2014).

The analysis of the appropriate Facebook metrics based on social media objectives, as well as the suitable analysis periods, are very challenging for HEIs (Kurniawati et al. 2013; Peters et al. 2013). Especially the management of HEIs benefits from the results of Social Media Analytics in different ways, e.g. for the development of overall sustainable social media strategy. However, at present HEIs are focused on analysing learning processes between students and professors, also known under the term learning analytics. Learning analytics can be defined as “Mining data from systems that support teaching and learning to provide customization, tutoring, or intervention within the learning environment” (Romero and Ventura 2007). In this regard, some researchers synonymously define learning analytics as academic analytics and include also the analysis of organizational processes in HEIs into their definition (Ferguson 2012). Therefore the research article addresses the following research questions and makes also a contribution to the research field of academic analytics.

- Which Facebook metrics and Social Media Analytics software are used by HEIs in Germany, Austria and Switzerland to analyse and develop their Facebook pages?

The objectives of this paper are (1) to provide an overview of the current scientific literature about Social Media Analytics with a focus on Facebook for HEIs, (2) to present the Facebook metrics which are analysed by HEIs in German-speaking countries to develop the Facebook. To answer the research question and to achieve the research objectives, we conducted an international 2-round delphi study. The article is structured as follows: Sect. 2 provides an overview of Social Media Analytics with focus on Facebook in HEIs. In Sect. 3 our scientific approach is described in detail. The research results of the 2-round international delphi study are described in Sect. 4. Section 5 summarizes the research results, describes future research topics in the field of Social Media Analytics and discusses limitations of the present research study. Due to great variety of online social networks we selected Facebook, because Facebook has its origin in HEIs and it has the highest number of users worldwide (Facebook 2014).

2 Social Media Analytics with Facebook in HEIs

2.1 Social Media Analytics and Social Media Analytics Metrics

Currently ambiguities concerning the definition of Social Media Analytics as a result of the interdisciplinarity and the variety of Social Media Analytics applications exists (Zeng et al. 2010; Etlinger and Li 2011; Kurniawati et al. 2013). Based on Zeng et al. (2010) Social Media Analytics “is concerned with developing and evaluating informatics tools and frameworks to collect, monitor, analyse, summarize and visualize social media data to facilitate conversations and interactions to extract useful patterns and intelligence.” In this regard the terms social media mining, social media monitoring, social media intelligence, social media mining or social media performance measurement can be used as synonyms of Social Media Analytics (Chen et al. 2012; Ajmera et al. 2013).

In this context Zeng et al. (2010) stated that the development of Social Media Analytics metrics is an important research field of Social Media Analytics. Based on

Ruhi (2014), Social Media Analytics metrics should clarify the relationship between corporate objectives, supporting business unit metrics and social media activities. The majority of these Social Media Analytics metrics are based on web metrics (Brauer et al. 2014). Currently there exist a great variety of Social Media Analytics metrics to analyse the different social media. In this regard, e.g. Facebook Insights offers the administrator of the Facebook page more than 200 different Facebook metrics, e.g. the number of likes, the number of posts, negative posts etc. to analyse a Facebook page.¹

At present only a few research studies have investigated the importance and usage of Social Media Analytics metrics within the organization. For example a research study of the Association of National Advertisers conducted by Ipsos OTX (2014) has revealed that number of likes, click-through rate, retweets, daily or monthly user, conversation volume, reach, influence, advocacy, sales, ROI are the most important metrics for US marketers. Due to different time and personal constraints, it is difficult for the majority of organizations to select the appropriate Social Media Analytics metrics in order to analyse the different social media activities within the organizations. Therefore some companies have outsourced the analysis of social media activities to a media agency or to other companies (Alfaro et al. 2013).

2.2 Social Media Analytics Software

At present a variety of Social Media Analytics software exists (Chen et al. 2012; Stieglitz and Linh 2013), but only relatively few research studies about Social Media Analytics software are available in the literature. Currently few companies use Social Media Analytics software to analyse and monitor the different social media activities within the organisation (Ruhi 2014). In this regard, Fraunhofer (2011, pp. 11–15) have revealed that companies use Social Media Analytics software to analyse, for example, the corporate reputation, crises (shitstorms), competitors, corporate brand, marketing campaigns, market/trends, price and innovation.

Since 2011 Facebook offers free of charge Facebook Insights to monitor the organization's Facebook page. Regarding to Facebook "Page admins are interested in understanding if people are engaging with the content they publish. To help them with this, Facebook provides Page admins aggregated anonymous insights about people's activity on their Page." (Facebook 2014). Facebook Insights is only available for Facebook pages (not for Facebook profiles) and requires at least 30 fans. Based on anonymized data, Facebook analyses different user activities on the Facebook page, e.g. visits, click-through rate etc. and enables the analysis of deeper information about the Facebook fans and their user behaviour. The different Facebook metrics which are offered via Facebook Insights can be grouped into several categories: total interactions, over time interactions, interactions per posts, fan over time, page views and impressions per post and ads (Borthakur et al. 2011; Killekar et al. 2013).

¹ <https://developers.facebook.com/docs/graph-api/reference/v2.0/insights>.

3 Research Design

As Zeng et al. (2010) and Stieglitz and Linh (2013) have already stated, Social Media Analytics is multidisciplinary and offers the application of various research methods from different research disciplines, e.g. statistics, computational linguistics, corporate management, marketing, sociology. The delphi study is recommended for complex research questions and if a lack of historical statistical data exists. Furthermore, the delphi study was also employed in previous IS research to develop different models and frameworks (Nevo and Chan 2007). The delphi method is a method for “[...] achieving convergence of opinion concerning real world knowledge solicited from experts within certain topic areas. The idea of the delphi study is to achieve a group consensus” (Hsu and Sandford 2007, p. 1) by mitigating halo or bandwagon effects (Keller and von der Gracht 2014, p. 6). The group consensus is attained by a series of questionnaires that offers the participants the possibility to reflect their answers according to the group results from previous delphi study rounds. Therefore we conducted an international 2-round delphi study between May 2014 and August 2014 based on an online questionnaire.

Due to the required experience and the profound background knowledge in the field of Social Media Analytics, professional staff was selected for this delphi study. There is no general rule about the sample size of a delphi study (Walker and Selfe 1996). During the investigation period, 315 higher education institutions in German-speaking countries out of 530 (60 %) had a Facebook page. We selected HEIs based on the number of Facebook fans and the country. Therefore HEIs were excluded which did not provide continuously content on their Facebook page. Based on four month investigation period of the delphi study and to ensure the execution of international delphi study we selected HEIs from Germany, Switzerland and Austria. We contacted 30 possible participants via telephone in Germany, Austria and Switzerland. 14 HEIs participated on the delphi study; nine universities were from Germany, three universities from Austria and two universities from Switzerland. The average time that participating HEIs have used Facebook amounts to 1.149 days. The Engagement Rate varies between 0.50 % and 3.59 %. All HEIs took part on all delphi study rounds, thus we had no panel mortality.

Based on Walker and Selfe (1996) at least two delphi rounds are required. The determination of the necessary rounds can be made *ex post* or *ex ante*. We used Kendall’s Coefficient of Concordance (W) to determine the level of agreement on the final evaluations. An analysis of the final evaluations resulted in a W of 0.435 and 0.349, which is significant at $p < 0.001$. In the run-up of the first delphi round, a comprehensive list with the Facebook metrics was provided to all participants to ensure the same understanding between the participants.

The objective of the first delphi round was to determine the current usage of Social Media Analytics and the different Facebook metrics in HEIs in German-speaking countries. The online survey was divided into two parts and comprised 68 questions. The first part included questions concerning the Facebook strategy, the organizational integration of Social Media Analytics and the applied Social Media Analytics software. The second part included questions concerning the usage of the different Facebook

metrics. The first round of the delphi study was conducted from 11–24 June 2014. We reminded participants either via mail or phone from 19–24 June to take part. We then analysed the results of the first delphi round via SPSS and implemented the online questionnaire for the second delphi round. The objective of the second delphi round was to reach a group consensus concerning the importance of the different Facebook metrics. The survey of the second delphi round comprised 20 questions and was conducted from 2–20 July 2014. The mean and standard deviation were selected to present the group opinion of experts. Also in the second delphi round a reminder mail was sent between starting on 10 July 2014. The analysis of results of the second delphi round was carried out from 20 July to 13 August 2014.

4 Research Results

4.1 Usage of Social Media Analytics Exemplified by Facebook in HEIs

9 out of 14 experts stated that they have a written social media strategy for their social media activities. 8 out of 9 experts mentioned that they have specific objectives for their Facebook page and their Facebook strategy. In the first delphi round the participating universities in German-speaking countries consider Facebook Analytics as very important. More than 50 % of the participants (8) assess Facebook Analytics as very important (4), 4 as import and 2 as slightly less important. In the second delphi round the participants evaluated the importance of Facebook Analytics higher ($m = 3.89$). The organizational integration of Social Media Analytics in HEIs is closely linked with the organizational integration of social media marketing. Social media marketing is carried out in almost all participating universities in German-speaking countries (10) by the PR department. Only two universities have established a social media department and two universities consider social media marketing as a part of the marketing department. Concerning the organizational integration of Social Media Analytics, the majority of the universities have integrated Social Media Analytics into the same department that is responsible for social media activities. Only one HEI has outsourced Social Media Analytics to an external provider. Between 1.5 and 2 employees are responsible for the support of the Facebook page and between 0.5 and 1 employee is responsible for the analysis of the Facebook page within HEIs in German-speaking countries. All investigated HEIs analyse their Facebook page via Facebook Insights. Furthermore, 11 out of 14 universities have stated that they use additional Social Media Analytics software to analyse the development of their Facebook page, e.g. Fanpage Karma, Hootsuite, Buzz or Meltwater.

4.2 Current Usage of Facebook Metrics in HEIs

The analysis of the used Facebook metrics by HEIs allows deeper insights into the usage of Social Media Analytics in HEIs and their Social Media Analytics strategy. Previous research has revealed that the number of total likes is the most analysed Facebook metric, which is also confirmed by our analysis. Our findings show that 13 out of 14 HEIs in German-speaking countries analyse the number of total likes

(see Fig. 1). However, a more differentiated analyses of the number of total likes by considering demographic information, gender, age, organic, viral and paid is done by fewer HEIs. While eight out of 14 HEIs analyse the number of total likes [age] and six participating HEIs analyse the number of total likes [region] and [gender], only three HEIs measure the number of total likes [organic] and only one HEI analyses the

Facebook metric	N	M	Mode of Time interval	After post (6)	Daily (5)	Weekly (4)	Monthly (3)	Quarterly(2)	Yearly (1)
Total Likes	13	0.93	3.00				●		
Post Reach	13	0.93	2.00					●	
Post Interactions	14	0.86	4.00			●			
Post Likes	14	0.86	4.00			●			
Post Comments	14	0.86	4.00			●			
Post Shares	14	0.86	4.00			●			
Post Engagement	14	0.79	4.00			●			
Growth Rate Likes	10	0.71	2.00					●	
Total Reach	10	0.71	2.00					●	
Talking About	8	0.57	3.00				●		
Likes [Age]	8	0.57	3.00				●		
Unlikes	7	0.50	2.00					●	
Response Rate	6	0.43	2.00					●	
Likes [Gender]	6	0.43	3.00				●		
Likes [Region]	6	0.43	3.00				●		
Negative Posts	5	0.36	1.00						●
Positive Posts	5	0.36	2.00					●	
Trending Topics	5	0.36	2.00					●	
Reach [Age]	5	0.36	3.00				●		
Reach [Organic]	5	0.29	3.00				●		
Reach [Viral]	5	0.29	3.00				●		
Reach [Region]	4	0.29	3.00				●		
Net Likes	3	0.21	3.00				●		
Response Time	3	0.21	3.00				●		
Influencers	3	0.21	3.00				●		
Likes [Organic]	3	0.21	3.00				●		
Reach [Paid]	5	0.21	3.00				●		
Reach [Gender]	3	0.21	3.00				●		
Referrals to Website	2	0.14	2.00					●	
Referrals from Website	2	0.14	3.00				●		
Likes [Viral]	2	0.14	3.00				●		
Likes [Paid]	2	0.14	2.67				●		

Fig. 1. Usage and time periods of Facebook metrics ordered by application of Facebook metrics

number of total likes [viral] and the number of total likes [paid]. Equally important as the metric number of total likes is the post reach for HEIs. The second most common group of analysed Facebook metrics are metrics concerning post interactions. The number of post likes, the number of post comments, the number of post shares and the post engagement are analysed by 11–12 HEIs. The third mostly analysed group of Facebook metrics comprises the growth rate likes, the total reach and the number of post clicks. These Facebook metrics are analysed by 10 out of 14 HEIs in German-speaking countries. The number of talking about, the unlikes and the response rate are only analysed by half or less than the half the participating universities. The next group of Facebook metrics refers again on Facebook posts, respectively the content of the posts. Nearly half of universities analyse the positive posts, the negative posts and the trending topics. Furthermore, the high standard deviation demonstrates that there is a limited group consensus concerning the current usage of these Facebook metrics among HEIs in German-speaking countries. The next group of applied Facebook metrics focuses on the reach of the Facebook page. The total reach [age], the total reach [region], the total reach [organic] and the total reach [viral] are only analysed by 4–5 HEIs. The following group includes six different Facebook metrics. The net likes, the top influencer, the response time, the total likes [organic], the total reach [gender], the total reach [paid] are only analysed by 3 out of 14 HEIs in German-speaking countries. The last group comprises referrals from the website, the referrals to the website, total likes [organic] and total likes [paid]. Only 2 out of 14 HEIs analyse these Facebook metrics. The low usage of referrals from/to website demonstrates a lack of an integrated social media strategy among German-speaking HEIs.

4.3 Time Periods of Analysed Facebook Metrics in HEIs

In order to get a deeper insight into the analysis of the Facebook page in HEIs, the participants were asked to name the time periods the different Facebook metrics are analysed. As Fig. 1 illustrates, only the metric negative posts is analysed yearly by HEIs in German-speaking countries. The Facebook metrics post reach, growth rate likes, total reach, the number of unlikes, the response rate, positive posts, trending topics and the referrals to website are measured quarterly by HEIs. The majority of Facebook metrics are analysed on a monthly basis. Post interactions, post likes, post comments and post shares are analysed on a weekly basis. Therefore, it can be concluded that the Facebook page is mainly analysed on a monthly basis in HEIs in German-speaking countries.

5 Conclusion and Limitations

The present research results allow for deeper insights into the usage of Social Media Analytics in HEIs in German-speaking countries with the example of Facebook. Our research results have revealed that not all participating HEIs have a social media strategy, but all participating HEIs are analysing their Facebook page with one or more Social Media Analytics software applications. All of them use Facebook Insights to analyse the development of their Facebook pages. Closely linked with organizational

integration of social media activities is the organizational integration of Social Media Analytics. Currently this integration is not clearly dedicated in most HEIs. Currently, Social Media Analytics is mainly assigned to the PR department. In this regard, further research on the organizational integration of Social Media Analytics seems warranted, maybe comparing industries and branches. At present, HEIs analyse a variety of Facebook metrics to develop their Facebook page. Total Likes, Post Reach, Post Interactions, Total Reach and Talking About are the most important Facebook metrics for HEIs. In this context, the importance of the different Facebook metrics from the perspective of HEIs has to be discussed. For example, the Facebook metric Total Likes has a limited significance regarding to the long-term developments of Facebook page; the growth rate of total likes would be more meaningful in this context. In this regard, the number of analysed Facebook metrics and which metrics are analysed indicate that only few HEIs pursue an integrated social media strategy despite the majority reporting an explicit Facebook strategy with objectives. Only two universities analyse the referrals from/to their website, which is important to understand an integrated social media strategy including the website. It seems that the majority of HEIs in German-speaking countries do not exploit the range of Facebook metrics linked with an overall social media strategy. Our research also revealed that many HEIs analyse their Facebook page on a monthly basis. The monthly analysis period has to be discussed against the background of the real-time analysis capability offered by Social Media Analytics software. Furthermore, we recognize that there is a lack of integrated and cross-network Social Media Analytics frameworks (cf. Alt and Wittwer 2014). Therefore, Social Media Analytics measurement frameworks which classify the variety of the different Social Media Analytics metrics are missing.

One limitation of the present research study is the focus of HEIs in German-speaking countries. Further research studies about the usage of Social Media Analytics in other countries are required. Due to high penetration of social networks in the USA and Asian countries further research in these regions is recommend and would be interesting to in comparison with the present research results. Another limitation of our research study results from low number of participating HEIs in German-speaking countries. As mentioned before, Social Media Analytics is a very young and multi-disciplinary research field; therefore only a small number of experts took part in the international delphi study. Nonetheless the present research results provide first exploratory insights into Social Media Analytics in HEIs exemplified by Facebook. Further research studies are required to validate and extend our initial results. Finally one limitation results from the focus on Facebook. Due to a great variety of online social networks it is difficult to analyse all social online networks. In particular it would be a very challenging and rewarding future research effort to develop a performance metric framework for all online social networks.

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