

# An Evaluation Scheme for Performance Measurement of Facebook Use: An Example of Social Organizations in Vienna

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## PREPRINT VERSION

*Claudia Brauer, Christine Bauer, & Mario Dirlinger (2014). An evaluation scheme for performance measurement of Facebook use: an example of social organizations in Vienna. Proceedings of the 1st International Conference on HCI in Business in conjunction with 16th International Conference on Human-Computer Interaction (HCIB/HCI 2014) (Lecture Notes in Computer Science (LNCS)). Heraklion, Crete, Greece, 22-27 June, pp 121-132. DOI: 10.1007/978-3-319-07293-7\_12*

The final authenticated version is available online at Springer via [https://doi.org/10.1007/978-3-319-07293-7\\_12](https://doi.org/10.1007/978-3-319-07293-7_12)

**Abstract.** Online social networks, and Facebook in particular, have evolved from a niche to a mass phenomenon. Organizations have recognized the importance of using Facebook to achieve their organizational goals. Still, literature lacks a systematic evaluation scheme for measuring the performance of an organization's Facebook use. When investigating how organizations use Facebook, research tends to focus on for-profit organizations, overlooking the way social organizations use Facebook. This article introduces an evaluation scheme that includes nine categories of performance measurement. Applying the scheme to Facebook's use by social organisations in Vienna, we demonstrate the scheme's applicability. Plus, by using various indicators and benchmarks, we evaluate the level of sophistication of each organization's use of Facebook. We investigated all 517 social organizations based in Vienna, including those in all fields of practice, based on publicly available Facebook data from January to June 2012. The analysis reveals that the majority of social organizations are beginners at utilizing Facebook's potential.

## 1 Introduction

Online social networks have evolved from a niche to a mass phenomenon that epitomizes the digital era [1]. With a daily average use of 30 to 60 minutes [2] by one billion users [3], the world's largest social network, Facebook, has become an integral part of everyday life [3]. In recent years, organizations have recognized the importance of using Facebook to achieve their organizational goals. Research on the use of Facebook tends to focus on for-profit companies or end users, and rarely investigates how social organizations use Facebook, especially in German-speaking regions. The few existing studies mainly discuss the general importance of social media for social organizations (e.g., [4-6]). Because these studies commonly use qualitative research methods, there are few quantitative results on the use of Facebook in social organizations. For example, Waters [7] investigated the use of social media in non-profit organizations. The analysis of expert interviews and focus groups showed that social organizations use Facebook to build and maintain relationships with their stakeholders. Other studies, in contrast, have revealed that social organizations use Facebook primarily to describe the organization but do not leverage the interaction possibilities and networking opportunities that Facebook offers. Furthermore, research shows that the majority of social organizations start using social media without having an integrated social media strategy or a sophisticated Facebook strategy. Most studies on Facebook use in social organizations comes from the United States (e.g., [8]); in German-speaking regions, empirical research on that topic is

scarce. Annually since 2009, Kiefer [5] has investigated the use of online social networks in a cross-sectional study of 60 German non-profit organizations [5, 9, 10]; however, this research only considers organizations in three fields of practice (environmental/nature protection, international affairs, social affairs). While Kiefer's work may identify Facebook as the strongest online social network of non-profit organizations, it has not garnered profound insights about the use and the development potential of online social networks. To date, there is no scientific work based on real data that investigates the use and the development potential of Facebook for social organizations.

Against this background, the present article is dedicated to the following research questions: How can the use of Facebook be evaluated in terms of performance measurement? How do social organizations perform with respect to their use of Facebook? To what extent are these organizations utilizing Facebook's potential?

This article introduces an evaluation scheme that includes nine categories of performance measurement. Using social organizations in Vienna as our example, we demonstrate the scheme's applicability and, with various indicators and benchmarks, we evaluate the level of sophistication of each organization's use of Facebook. We investigated all social organizations based in Vienna (N=517), including those in all fields of practice, based on publicly available Facebook data from 1 January 2012 to 30 June 2012. We analyzed the organizations' use of the various Facebook functionalities as well as the 2479 publicly available Facebook posts for the respective time period.

Due to the topic's relevance and the lack of comparative studies, this research contributes to both science and practice. The next section presents a literature review of Facebook use by non-profit organizations and discusses performance measurement of this use. Subsequently, the data collection is described and the research results and evaluation scheme are presented. Finally, research results are discussed and new fields of research are identified.

## 2 Related Work

In this section, we present related work concerning online social networks, with a focus on Facebook use by non-profit organizations. Then, we describe performance metrics for measuring the success of a Facebook page for social organizations.

### 2.1 Facebook Use in Non-profit Organizations

Some studies have already investigated the importance of social media for non-profit organizations [4-6, 9-12]. For example, Waters [7] revealed that non-profit organizations use Facebook to interact with their stakeholders and to build and maintain relationships with relevant stakeholders. Although some studies have investigated the use of online social networks for social organizations in particular, little research has focused on the use of Facebook. For example, Waters, Burnett, Lamm and Lucas [8] studied the importance of Facebook based on a content analysis of 275 randomly selected non-profit organizations in the United States. They found that non-profit organizations do not comprehensively use the information and communication opportunities of Facebook, and that the majority of social organizations have not yet established an integrated Facebook strategy. Other studies have found that non-profit organizations do not comprehensively use the interaction [5, 8] and networking opportunities [10] of Facebook, and that the majority of social organizations have developed neither an online social media strategy nor a specific Facebook strategy [13].

### 2.2 Performance Metrics for Measuring Facebook Use

Only a few scientific articles are dedicated to the performance measurement of online social networks, or Facebook in particular, which may be due to the novelty of the topic. While some authors refer to performance measurement of any kind of online social networks under the term "social media analytics", other authors focus on Facebook and still use the general term "social media analytics" [14, 15]. In contrast to academic literature, practitioners (e.g., Jim Sterne, Avinash Kaushnik, etc.) and several associations (e.g., Interactive Advertising Bureau, International Association for Measurement and Evaluation of

Communication, etc.) have deeply discussed the topic of performance measurement of online social networks, specifically Facebook. They suggested a variety of performance metrics to measure the success of Facebook use (e.g., number of “likes” (fans), number of posts, number of photos uploaded, number of links, number of comments, number of foreign contributions, number and percentage of responses to posts of other users, etc.). In addition, various metrics have been developed to compare different online social networks (e.g., virality, interactivity of posts, use of multiple media in posts). In the present article, we have developed an evaluation scheme based on these metrics.

### 3 Research Procedure

In order to answer the research questions, we conducted an empirical study of Facebook use among social organizations in Vienna. Our analysis is based on publicly accessible data, from which we calculated the various performance metrics.

#### 3.1 Research Sample

Our first step was to retrieve the names of all social organizations in Vienna that were registered in the online database, “Social Austria”, of the Federal Ministry of Labour, Social Affairs and Consumer Protection; this resulted in a set of 1682 social organizations based in Vienna (retrieved on 12 April 2012). After removing organizations from the data set that were assigned to multiple fields of practice, we had a list of 517 social organizations. 25 organizations were removed from the list because they were either not within the scope of the definition of a social organization by Dimmel [16] or were already closed.

Then, for every organization on the list, we investigated whether it had registered a Facebook page. Only 73 of the 492 (14.8%) social organizations in Vienna had its own Facebook page. For 127 (25.8%) organizations, the umbrella organization or the carrier of the organization operated the Facebook page. 18 organizations used Facebook via a “Facebook personal profile” and 104 via “Facebook Community”. 292 social organizations (59.4%) did not have a Facebook page.

#### 3.2 Coding Schemes for the Analysis of Facebook Pages and Posts

The coding scheme for the analysis of the Facebook pages was developed ex ante based on Waters, Burnett, Lamm and Lucas [8].<sup>1</sup> Using this coding scheme, the various applications within Facebook (e.g., “information”, “views”, and “applications”) were analyzed. In addition, the Facebook pages were analyzed to determine which applications, out of all those offered, were used by the social organizations.

Furthermore, for deeper insights into how social organizations use Facebook, we conducted a content analysis of the posts in the organizations’ Facebook timelines (all posts from 1 January 2012 to 30 June 2012). The coding scheme was developed inductively from raw data and was adapted during the coding phase. For every Facebook post, we captured a formal description and a description of the content. The formal information included the date of the entry, the number of “likes”, the number of comments, and the sharing frequency of the post within Facebook. Regarding the content of posts, we recorded whether the posts were manually entered or automatically retrieved (for instance via other online social networks), and whether they contained links, photos, videos, or audio files. Finally, we classified all Facebook posts by topic.

## 4 Research Results

### 4.1 Fields of Practice

As can be seen from **Table 1**, social organizations in the “Multicultural / International” (28.6%), “Work / Occupation” (22.9%), and “Migration” (21.8%) fields of practice use Facebook to a great extent. However,

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<sup>1</sup> The coding schemes can be requested from the authors.

these percentages have a limited significance, because the number of organizations varies considerably between the different fields of practice. Looking at the absolute values, the fields of practice of “Social general” (n=39), “Health / Disease” (n=31), and “Work / Occupation” (n=30) have the most Facebook pages. The fields of practice of “Delinquency” (22 organizations) and “Administration” (13 organizations) are hardly represented via Facebook. Although the field of practice of “Family / Partner / Single parents” has a total of 137 organizations, the percentage of those social organizations with a Facebook page is relatively low (10.9%, n=15). Moreover, there is a significant correlation (Pearson correlation,  $p < 0.01$ ) between the number of organizations per field of practice and the use of a Facebook page.

**Table 1.** Social organizations ranked by percentage of Facebook pages per field of practice

Field of practice	# of organizations / field of practice	# of organizations with a Facebook page	Share of Facebook pages per field of practice
Multicultural / International	28	8	28.6%
Work / Occupation	131	30	22.9%
Migration	55	12	21.8%
Education	85	18	21.2%
Social general	185	39	21.1%
Health / Disease	161	31	19.3%
Housing / Accommodation	62	11	17.7%
Psyche	121	21	17.4%
Disability	188	28	14.9%
Children / Young adults	178	26	14.6%
Senior	86	12	14.0%
Men / Women	126	17	13.5%
Addiction	60	7	11.7%
Consumer / Legal regulations	44	5	11.4%
Family / Partner / Single parents	137	15	10.9%
Delinquency	22	1	4.5%
Administration	13	0	0.0%
<b>Total</b>	<b>1682</b>	<b>281</b>	<b>-</b>

#### 4.2 Design of Facebook Pages and Use of Applications

On their Facebook pages, the majority of the analyzed social organizations provide a description of the organization (84.9%, n=62), identify their target groups (79.5%, n=58), and provide contact information (80.8%, n=59). Almost all social organizations link their Facebook page to their website (93.2%, n=68). Few organizations link in the notification area of the Facebook page to other online social communication channels (11%, n=8). Of those that do, the organizations have linked their Facebook page to Foursquare (n=3), YouTube (n=2), Twitter (n=2), MySpace (n=1) and Flickr (n=1).

The photo application is the most commonly used Facebook application. During the investigation period, 1360 photos were uploaded, with an average of 23 photos uploaded per social organization. The events application is also highly utilized (50.7%, n=37). About a third of the social organizations have integrated the geographic map application, where the location of the organization is automatically shown on a map (34.2%, n=25). In contrast, donation applications (4.1%, n=3), videos (15.1%, n=11), and notes (6.8%, n=5) are hardly integrated into the Facebook pages. Individualized Facebook applications (e.g., netiquette, mission statement, offer, jobs, petitions, invitations, catalogue order, charity event, blog, and newsletter) are used by some organizations (21.9%, n=16). The group application is not used by any social organization.

The number of “likes” is a key metric for measuring the success of a Facebook page as well as an organization’s Facebook activities. The average number of “likes” per organization is 672 (sd=1.403, max=8.066, min=1). In contrast, Waters, Burnett, Lamm and Lucas [8] found in their study an average number of only 193 (sd=547.71, max=6.062) “likes” per organization. Moreover, in the present study, a significant correlation (Pearson correlation,  $p < 0.01$ ) between the number of “likes” and the field of practice

was determined. Another key metric is the number of “people talking about this” per post. This metric is an indicator of the interactivity on a Facebook page within the previous seven days. The studied social organizations had an average “talking about” number of 14 ( $sd=29.74$ ) during the investigation period, with 27 organizations having a “talking about” number of zero. Two social organizations reached a value for “talking about” of more than 100 (171 and 125, respectively). Due to the novelty of this Facebook application, there are currently no benchmarks published.

In total, 2479 posts were published by the social organizations on their Facebook pages during the investigation period, which corresponds to an average of 34.43 posts ( $n=72$ ,  $sd=45.62$ ) per organization. 13 organizations (18.1%) did not publish any Facebook posts during the investigation period. One social organization published 308 (max. value) posts within that time, which corresponds to a frequency of 1.7 messages per day. Considering that the second-ranked organization published only 154 Facebook posts, the organizations’ usage behavior is clearly diverse. The average daily post frequency of the social organizations was 0.19, which illustrates the discrepancy in posting behavior between the leading organization and the other organizations.

### 4.3 Content of Posts

Most Facebook posts concerned social policy issues ( $n=402$ ), announcements of an organization’s events ( $n=401$ ), and product / service offers ( $n=393$ ). Still, only half of the organizations (51.4%,  $n=37$ ) posted content about social policy issues during the investigation period. Furthermore, the economic importance and impact of social organizations is reflected by their high demand for employees [17]; few social organizations, however, announced job vacancies via Facebook ( $n=19$ ). In contrast, the messages application was often used by the organizations to provide information about their services and products. More than a tenth of all posts contained information about an organization’s own offers (11.3%,  $n=284$ ). Furthermore, the social organizations often announced internal and external events via Facebook (401 posts; 16.2%). This number only includes posts from 47 (out of 73) social organizations, since 26 organizations never announced an event via Facebook. Still, the rather high frequency of events posting may be due to imitation among competitors or attempts to establish an opinion leadership. The relationship between event announcements and follow-up news of the event (2:1) illustrates that there is room for improvement concerning follow-up on the events. The high number of Facebook posts about opinions on social policy issues reflects the essential goal of social organizations and demonstrates that Facebook is used as an external communication channel rather than as a tool for communicating with internal stakeholders. The relatively low number of posts about issues of organizational structure also indicates that Facebook is used for external rather than internal communication.

Fundraising is another of the social organizations’ most frequent post topics (190 posts; 7.7%). Fundraising posts were published by 39 of the 73 social organizations. In these posts, the organizations call for donations, report on fundraising activities and fundraising dedications, and express thanks to donors (139 post; 5.6%). During the investigation period, the social organizations published an average of 2.64 posts about fundraising issues. In addition, three social organizations have implemented a specific Facebook application for soliciting donations. Overall, Facebook’s potential for fundraising is not being exploited to its full extent; there is room for improvement.

Examples of individual success stories were published 30 times out of all the Facebook posts (1.2%). Few posts dealt with volunteer management (2.4%,  $n = 59$ ). 60 posts (2.4%) included greetings for holidays or seasonal events. Approximately 3% of the posts contained humorous pictures, videos, and recommendations for cultural events.

### 4.4 Interactivity and Virality

Our analysis of the number of “likes”, number of comments, and frequency of shared posts provides information about each organization’s level of interaction with Facebook users [18]. In the analyzed period, an average of 287 posts per organization were marked with “like” ( $sd=723.78$ ), which corresponds to 4.46 “likes” per post. 17 social organizations did not receive any “likes”; however, 13 of those organizations had not published any posts within the investigation period.

23 social organizations did not receive any comments on their posts in their Facebook timelines. The highest number of Facebook comments received by a single organization was 359, a much higher number than all the other social organisations received ( $m=26.1$ ,  $sd=59.09$ ). The highest number of “shares” (of comments) and the highest number of responses to posts that were written by users ( $m=4.88$ ) were achieved by the same social organization. Further analysis shows that a high frequency of self-written posts does not necessarily indicate a high interactivity with users.

#### **4.5 Relation Between Self-Written Posts and Posts Written by Other Users**

The relationship between self-written posts and those written by other users is a key metric of an organization’s interaction with Facebook users [18]. During the investigation period, 15.5% of posts were written by users, and 35 social organizations did not receive any posts written by users. In this context, it should be mentioned that 12 organizations deactivated the possibility for users to respond to posts.

Overall, posts written by other users resulted in an average of 8.33 “likes” per post and 0.74 comments per post. Posts written by users had reached a total of 391 “likes” and 143 comments. In comparison, the responses to posts written by users had lower interactivity impact and achieved on average only 0.86 “likes” and 0.31 comments.

Another indicator of a successful Facebook page is a high number of posts by users that were commented on by the organization [18]. The analysis revealed that 70.4% of posts written by users were marked with “like” or commented on by the respective organizations. Other Facebook users responded significantly more often to user-generated posts with “likes” (69.7%,  $n=318$ ) or comments (17.8%,  $n=81$ ) from the organizations, compared to user posts without reactions by the social organizations, where a total of only 16% of user posts had been marked with “like” ( $n=73$ ) and 13.6% of posts were commented on ( $n=62$ ).

#### **4.6 Multimediality of Facebook Posts**

More than a fifth of the studied Facebook posts contained photos ( $n=12$ ) or links to photos or to photo-sharing portals (outside of Facebook) ( $n=4$ ). 79.1% of the posts did not contain any photos or links to photos, although, according to Facebook, posts with attached photos achieve about 120% more interaction with Facebook users [19]. This is also reflected in our data. Posts with photos resulted in 3.07 times more “likes” and 3.02 times more comments than posts without photos. Posts with photos were also more often shared than those without photos.

In general, videos were rarely used. 105 of the 2479 posts embedded videos or linked to videos on specialized social media platforms such as YouTube and Vimeo (4.2%). The video application of Facebook was only used in 5 posts. In total, more than half of the posts (53.9%,  $n=1336$ ) included links to other online services (outside of Facebook).

Data suggests that 56.2% of the social organizations linked in at least one post ( $n=41$ ) to their organization’s official website. 308 links (34.2%) referred to external websites containing press releases or press articles. Interestingly, 69.5% of all links to press articles or press releases were published by only three social organizations.

#### **4.7 Links from Facebook to Other Online Social Networks**

Various indicators can be used to analyze whether an organization has implemented an integrated social media strategy. Almost all organizations linked to the organization’s website (93.2%,  $n=68$ ) in the notification area. More than half of the organizations linked via posts to the organization’s website (56.9%,  $n=41$ ). Only 8 organizations linked to other social media channels on their “about” pages. 45 of the 73 organizations (61.6%) had implemented a link from their website to their Facebook page and 21 organizations (28.8%) used social plug-ins that provide “like” and “share” buttons on their websites. 40 social organizations implemented such links on a prominent page (e.g., the homepage) of their websites, which indicates that Facebook has a high relevance for these organizations.

## 5 Evaluation Scheme and Results

Based on the indicators described in Section 4, an evaluation scheme was developed to assess the developmental stage of each organization's Facebook page: "Beginner", "Advanced", "Intermediate", or "Expert". The presented indicators (Section 4) were grouped into nine categories. Category 1 evaluates the existence of an organization description and contact data in the information area of the Facebook page. Category 2 describes whether a social organization uses a profile and a cover photo. Category 3 characterizes the use of photos. Based on the median of uploaded photos within the investigation time period (as a benchmark), at least 23 photos have to be uploaded to Facebook Photo View to achieve the maximum 2 points in this category. Category 4 refers to the number of "likes", taking into account the date of registration of the Facebook page. Therefore, the minimum of "likes" was defined as 0.5 "likes" per day within the first three years (again based on our data set, where the minimum value of 0.5 lies between the median and mean of the "like", taking into account the organization's registration date). Category 5 assesses whether an organization uses applications such as the map, events, or fundraising applications. Category 6 refers to the frequency of self-written posts. The post frequency should be at least one post per week, with a maximum of one post per day; this range corresponds to, during the investigation period, a minimum of 25 posts and a maximum of 181 posts [20]. Higher post frequencies result in lower interaction rates; thus, one post per day is defined as the maximum value. Category 7 analyzes the average number of responses per Facebook post. The minimum values per post were set to at least 3 "likes", 0.3 comments, or 0.3 "shares". These numbers were derived from the means and medians of the responses to the respective posts (as discussed in Section 4). Category 8 evaluates whether a minimum percentage of the posts, as recommended by Facebook, include photos. 20.1% of all analyzed Facebook posts contain photos; thus, the respective organizations are assigned points if at least every fifth post contains a photo. Category 9 analyzes Facebook users' reactions to posts written by users based on the number of "likes" and number of comments. In 7 of the 9 categories, two points are achievable (see **Table**): These categories describe the basic requirements for adequate use of a Facebook page. We consider the use of applications (Category 5) and the integration of photos into posts (Category 8) as advanced Facebook use. Accordingly, we weighted these indicators less than the basic requirements in our evaluation scheme. Therefore, only one point can be achieved in these two categories. Based on this evaluation scheme, four stages can be derived as follows: "Beginner" (0-7 points), "Advanced" (8-10 points), "Intermediate" (11-13 points), and "Expert" (14-16 points).

**Table 2.** Evaluation Scheme for the Use of Facebook by Social Organizations in Vienna

Category	Description of Category	Points	Dimension
1	Description of the organization and contact information	2	Design of page information, views, and applications
2	Using a profile and cover picture	2	
3	At least 23 uploaded photos in the Photo View	2	
4	Minimum of 0.5 "likes" on the Facebook page per day during the first three years of use	2	
5	Use of applications (e.g., donations, events, map, etc.)	1	
6	Post frequency is at least one post per week and a maximum of one post per day	2	Design of the timeline, reaction to Facebook posts written by other users
7	Minimum requirements of the average responses per post: 3 "likes", 0.3 comments, 0.3 "shares"	2	
8	At least every fifth post contains a photo	1	
9	100% response rate to comments, criticisms, and questions in external posts	2	
<b>Total</b>		<b>16</b>	

Based on the evaluation scheme, 5 of the 73 organizations (6.8%) were assigned the maximum of 16 points. In total (Table 3), 11 organizations (15.1%) can be classified as "Expert", which means that these organizations fulfilled almost all requirements and may be considered as "best practices". About one-fifth of the social organizations (20.5%, n=15) received 11 to 13 points, and therefore these organizations are

classified as “Intermediate”. The category “Advanced” includes 14 organizations (19.2%). A total of 33 organizations were assigned less than 8 points (45.2%) and therefore are classified as “Beginner”.

**Table 3.** Result overview concerning the evaluation scheme

Category	Organizations (absolute values)	Ratio
<b>Beginner</b>	33	<b>45.2%</b>
<b>Advanced</b>	14	<b>19.2%</b>
<b>Intermediate</b>	15	<b>20.5%</b>
<b>Expert</b>	11	<b>15.1%</b>

## 6 Discussion and Conclusion

Facebook offers social organizations a range of possibilities to help achieve their organizational goals and build and maintain relationships with stakeholders. So far there have been no empirical studies about the use and development of Facebook by social organizations in the European and German-speaking countries. The present paper contributes to closing this research gap by analyzing all social organizations in Vienna regarding their Facebook pages and posting behavior.

Interestingly, a large number of posts were simply holiday greetings and expressions of thanks for donations, which are typical examples of posts by organizations that are less experienced with social media. Also, a rather low number of social organizations link their Facebook pages to other social network platforms, which indicates that the development and implementation of an integrated social media strategy in social organizations in Vienna is the exception; the potential of online social networks is not being fully utilized. Previous studies [5, 7, 8, 13] have demonstrated both the potential and weak use of social media for fundraising and volunteer management. The present study confirms that social organizations in Vienna have not exhausted Facebook’s potential for fundraising and volunteer management.

The low interactivity rates demonstrate that the majority of social organizations may improve the formal design and content-related aspects of their posts. There are more than twice as many beginner organizations than more experienced ones.

The 73 analyzed organizations were classified into four categories by using a self-developed evaluation scheme. Only 11 organizations are classified as “Expert” (15.1%). Most organizations have been classified as “Beginner” (45.2%, n=33). This value has to be considered in relation to the total number of social organizations in Vienna: In the investigation period, only 14.8% of all social organizations in Vienna had registered a Facebook page. Furthermore, on average the evaluated organizations had reached 7.8 out of 16 points, which corresponds to the “Beginner” category. Thus, overall we conclude that social organizations in Vienna only limitedly use Facebook to achieve their organizational goals.

Our evaluation scheme may be adopted for other organizations. While it may be used as is for evaluating the success of Facebook strategies by other social organizations, the reference values (benchmarks) used in the scheme have to be adjusted to reflect the Facebook metrics of the industries to which the organizations belong.

The present work also has limitations: Only publicly available data was used, and metrics based on Facebook Insights could not be taken into account. Furthermore, the present study is limited to social organizations in Vienna, resulting in regional limitations of the findings. However, the majority of Austria’s social organizations are located in Vienna, which suggests that the results also have value on a national level.

Future research may compare Facebook use between social organizations and commercial organizations. Moreover, the development of a comprehensive performance measurement system for measuring activities in various online social networks is a relevant research topic. With respect to this, a study about the importance of social media guidelines for social organizations would be interesting.



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