Evaluating Facebook pages for small hotels: a systematic approach

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Abstract

Social networking websites play an increasingly important role in hotel promotion and marketing. However, designing effective social networks profiles still presents quite a challenge. To support the development of quality hotels' profiles, we introduce a systematic approach based on an evaluation model that includes a number of heuristic factors and user ratings. The model was developed for Facebook, the most successful social networking website. The evaluation scheme was developed via (a) an online brainstorming with influential bloggers and experienced web designers and (b) the classification and integration of the evaluation characteristics and criteria. To test the applicability of the model, we performed an exploratory study on selected Facebook pages of small hotels in Italy and submitted them to a user evaluation. The results validated our model and highlighted that hotels can implement the model to optimize their pages in a number of ways to better exploit their Facebook presence.

Keywords: social networking websites; evaluation model; Facebook, hotel pages.

1 Introduction

Many hotels are investing on social networking or media sharing platforms. Recent surveys show the increasing rate of tourists who generate content on the so-called Web 2.0 platforms, and rely on comments and reviews to plan their trips, choose and book accommodations.[1] In greater detail, Facebook has gained a dominant position and is by far the most popular and used social networking website ever.[2] Its penetration rate in Europe was 50% in 2012[3], and since then it has become a major reference tool in the travel and tourism online industry, used by consumers in any phase of their travel activities (Bulencea and Egger, 2013; Fotis et al., 2012).

As a result, several studies have tried to assess the role Facebook - together with other social media - plays in the demand and supply of the eTourism market, and have shown the growing importance the platform has acquired in the industry at large (Milano et al. 2011; Zeng, Gerritsen 2014). According to PhocusWright (2011), for example, the

[1] See for example data published on www.blizzardinternet.com, www.comscore.com, www.emarketer.com, www.isnart.it.

[2] Information about the success of Facebook can be found at www.alexa.com/siteinfo/facebook.com; http://www.marketingcharts.com/updates/top-10-social-networking-websites-forums-march-2014-41850/.

[3] Data about world Internet usage, population and many statistics are featured at www.internetworldstats.com.

social network referred more than 15.2 million visitors to hotel websites in 2010, a 35% increase vs. 2009, and a 428% jump vs. 2008. It is therefore important for tourism operators and hoteliers to have a good and well-rated online presence on social networks, and especially on Facebook (Hsu, 2012; Sigala et al., 2012; Leung et al., 2015). The role of social networking websites, and of Facebook in particular, has been investigated mainly from a marketing perspective (see for example, (Kotler et al, 2014; http://www.socialmediaexaminer.com/social-media-marketing-trends-for-small-business/), but also in the area of web-based business models (see for example, (Li, 2010) and web reputation monitoring (Marchiori E, Cantoni, L, 2011)). The relevance of Facebook for company is also confirmed by the same Facebook platform, which offers an ad hoc service: https://www.facebook.com/business. However, small and medium-sized hotels - given their proverbial lack of resources, knowledge and experience - cannot afford long learning curves and very much need to identify the criteria for a successful implementation.

Presented in this paper is an exploratory work that aims at implementing a new model to support the evaluation of hotels' Facebook pages. A Facebook page is the correct way to establish a company's presence.[4] It is similar to a personal profile, but also offers tools to help manage and track users' engagement. Functions are provided to assign roles to the page administrators, and define different levels of permission and moderation for content to be published in a variety of forms (textual posts, photos, videos etc.). Other available tools help promote the pages and boost audience. The 5,000 friends limit set for Facebook personal accounts doesn't apply to Facebook pages.[5]

The approach presented here is based on a process that defines evaluation models. This process was designed to define a model in two tables that contain, respectively, qualitative and quantitative characteristics. The model has been validated against a set of relevant properties. Its applicability and effectiveness have been tested in an exploratory study. The process and the two-table model provide a theoretical contribution in a field in which most of the existing assessments focus only on a few parameters, such as, for example, the value of the conversion rate.

The objective of the evaluation model is to help hoteliers improve their Facebook pages, achieving the highest possible levels of customer satisfaction and provide a tool to support their online positioning and compare implementations vs. competitors. The evaluation model considers two sets of quality factors identified in a two-step process. In the first step an online consultation with influential bloggers and expert web designers was conducted. The second step consisted of a classification and consolidation of the evaluation characteristics and criteria. The obtained model includes a table for an inspective expert analysis and a table for user rating. The model was first validated against a set of desirable properties. An evaluation with a sample of users was then carried out to test applicability, i.e. to check if the model can be implemented without any specific training and at limited cost, obtaining usable output for hotels owners and web marketers. To that end, the model has been applied to evaluate a set of Facebook pages of Italian hotels. The results highlighted a number of factors worth improving to better exploit Facebook's potential. The process taken to define the model

[4] A description of the approaches hotels are using on Facebook is given in (ReviewPro 2011).

[5] Other information about the differences between a page and a personal profile on Facebook is available at: https://www.facebook.com/help/217671661585622.

is described in some detail in the next few pages, should quick adjustments be needed to keep up with future Facebook evolutions.
The rest of the paper is structured as follows: Section 2 describes the context in which our model has been devised. Section 3 explains the activities undertaken to outline the model before applying it to the evaluation of Facebook hotel pages. Section 4 describes the validation process. Section 5 illustrates the exploratory study conducted to test the model's applicability comparing the Facebook pages of a few independent Italian hotels. In Section 6 the findings are discussed and the open questions and limitations addressed, pointing out possible future actions.

2 Existing evaluation models and schemas

Given that social networking websites are sites, the first solution for a model to evaluate their quality should be found looking for models defined for any website. Unfortunately these models do not adequately address the very nature of this kind of sites (Bingley, et al. 2010). Besides, or even worse, social networking websites are a subset of Web 2.0 sites (O'Reilly, 2005) with specific characteristics, so that also models defined for Web 2.0 are not automatically appropriate. This variety of websites is reflected in a huge number of evaluation models and schemas. An analysis of the literature shows that existing models range from all-purpose models defined for Web 1.0 websites (Law et al., 2010), [6] too generic for our goals, to models focused on a specific type of Web 2.0 website, usually including a restricted number of factors (see e.g., Schegg, et al., 2008), (Giri et al., 2014)).
As for the evaluation of Web 1.0 sites, a study on the significance of these models is available in (Antonioli Corigliano M, Baggio R, 2006) where it is established that they are almost equivalent in terms of reliability. Another approach, named 7Loci, is based on a meta-model that can be used to instantiate evaluation models according to the requirements of all the stakeholders (Mich et al., 2003). Both approaches include aspects related to "virtual communities" (as the first communication groups on a site page were called), but do confirm the need of more specialised models to evaluate social networking websites.
Focusing on the models related to Web 2.0 sites, they can be classified into two groups:

- general models for the evaluation of any kind of Web 2.0 online space, including all websites based on Web 2.0 tools for publishing and sharing User Generated Content, or UGC;
- specialised models, developed for a given social networking site, or with a specific goal, often analysing only technical features.

Group 1 - general models for the evaluation of any kind of Web 2.0 online space - also comprises models adapted from those developed to assess the quality of Web 1.0 sites, adding the characteristics resulting from a more active contribution of users and their relationships. For example, the model described in Olsina et al. (2008) addresses the content issues extending the ISO 9126-1 standard model for the external and internal quality of a website, and includes content quality – broken down into content accuracy, suitability, accessibility, and legal compliance sub-characteristics – alongside usability, functionality, efficiency, reliability, efficiency and maintainability. A critical review of previous research in the field of quality assessment for Web 2.0 sites can be found in

[6] A large bibliography of models defined to evaluate the quality of websites is given at http://etourism.economia.unitn.it/bibliography_items/index/1.

Orehovacki (2010). The author also provides the theoretical basis to develop a set of attributes geared to measure the quality of Web 2.0 applications, but these attributes are too generic to analyse Facebook hotel pages at an adequate level of detail, and their application would eventually require extensive customisation and specification before tackling a specific social networking profile[7]. This is a common drawback for the models in this group. Although they include factors that deal with content publishing and monitoring by the members of the online community, they are too wide-ranging to be implemented in the assessment of social networking sites with a view to gathering operational information. At the same time, these models contain websites characteristics that can be used as candidate factors to modelling Facebook pages. Among them are the parameters used to quantify users' contributions (UGC) on a social networking website.

Models in Group 2 - specialised models, developed for a given social networking site, or with a specific goal - generally emphasise the need for metrics to evaluate ROI (Return on Investment) and other indices for a specific social networking site, e.g. a Facebook or a Twitter presence. These indices are related to the size and vitality of a website, and include parameters such as the number of members; the frequency of the visits; the level of participation etc. (see for example the table in (Neiger et al., 2012)). A recent example of specialised evaluation schemes is found in Nguyễn and Socialbakers (2015) where a set of evaluation metrics, alternative to the Facebook insights, is described. Other models focus on the analysis of the web reputation on one or more social networking website.[8] Furthermore, specialised models take into account mainly the point of view of marketers.[9] Others models in this group, focus on functionalities and tools offered by the technical platform (Ellah and Bokhari, 2012) and cannot be directly applied to the evaluation and comparison of profiles on a social networking platform. Successful Facebook pages for Italian brands are listed by Vincos (http://vincos.it/), in cooperation with Blogmeter, where a single engagement parameter sums up the number of likes, comments, shares and posts. With regard to Facebook, most of the recommendations for businesses are based on schemes or checklists that include very general advice. As such they are insufficient and typically too dependent on technical issues that have to be frequently updated. According to James (2014), for example, "Analyze your advertising efforts", "Add a Facebook *Like* button -- wherever possible" and "Partner up" are key elements. Another scheme, available in (Martens, 2014), suggests some steps to set-up a Facebook page for small enterprises: Getting started, Goals and measurement, Engagement, Page management, Facebook ads, Advanced tips.

As for tourism websites, much literature focuses on evaluation models in the Web 1.0 era (see Antonioli Corigliano and Baggio, 2006; Law et al. 2010; Mich et al., 2003; Mich and Franch, 2008; Morrison et al., 2004; Triacca et al., 2005), but very little has been done on the evaluation of social networking platforms or Facebook pages. They typically include questions about engagement or other performance indicators as those used in web analytics (e.g., reach); others do check the presence of social networking tools and services on the website, but do not proceed to analyse them. In (Bingley, et al. 2010) the authors classified and analysed comments on blogs in different categories of

[7] In the present document, profile refers to a generic *web presence* on a given social networking website, not to e.g. Facebook profiles or pages (http://facebook.about.com/od/Basics/fr/Facebook-Profile-Vs-Facebook-Page-Vs-Facebook-Group.htm).

[8] See the schema proposed in www.socialmediaexaminer.com/how-to-build-a-free-social-media-monitoring-dashboard.

[9] See blogs such as The influential marketing www.rohitbhargava.com; Hubspot, www.hubspot.com.

tourism websites, evidencing different interactional patterns. Other evaluation criteria and schemes are those used for competitions, among them the "The Top 20 Hotels & Resorts on Facebook" that used total likes and 'people talking about' to identify the best pages (Berezny and Infographic, 2014). Guidelines for Facebook for hotels can be found on blogs like Guestcentric (2011), where non-specific, hardly workable tips are offered, e.g.: "Designing the page differentiates from competition" or "The Hotel menu item engage users".

3 Definition of the evaluation model

The model for the evaluation of the Facebook hotel pages was outlined in two steps:

- online brainstorming with influential bloggers and web marketers;
- classification and integration of the evaluation characteristics.

Preliminary activities were the analysis of the existing models and schemes, using online and offline sources, and the identification of a first set of relevant features. The result was a long list of characteristics, described at different levels of detail and including a high number of factors.

The goal of brainstorming was to extract a subset of these characteristics, suitable for a comprehensive model that would give us a systematic evaluation of the Facebook pages at an adequate abstraction level. In other words, we were looking for a model that included a reasonable number of features, and balanced completeness and applicability. The latter is a goal for any kind of model that has to abstract a limited number of characteristics from the observed object (or phenomenon) but still reduces its complexity for an adequate description according to the task at the hand (Nolan, 1997; Popper, 1959: Ch. 7 - Simplicity).

3.1 Defining a first set of candidate quality factors

Based on the examination of the models found in literature (section 2) we identified a set of candidate characteristics for a quality hotel profile on a social networking website (Table 1). In compliance with Osborne's brainstorming principles (Osborne, 1953), evaluation of the factors identified by the authors was postponed to a second session, during which we analysed the list with a view to:

- spotting redundant or irrelevant characteristics;
- highlighting any ambiguity in their definitions;
- suggesting missing features;
- adding comments or remarks useful to calibrate the model;
- associating appropriate data types (Boolean, numeric, date, etc.) to a given characteristic and possibly introducing a range of values and criteria for their interpretation.

Table 1 First list of characteristics for a quality hotel profile on a social networking website

Characteristic	Interpretation: data type, values, examples	Comment
Success indices	No. of registered members (e.g. Twitter, no. of followers; no. of following; Facebook: number of fans/likes)	Ratio for some profiles, e.g. Twitter

Date of last photo album	Date	Official: published by the hotel
Number of albums	Numeric	Official: published by the hotel
Number of photos	Numeric	Official: published by the hotel and un-official, published by users
Number of videos	Numeric	Official: published by the hotel
Date of last video	Date	Official: published by the hotel
Number of posts	Numeric	Official posts, published by the hotels
Dates of the last posts	Date	Official: published by the hotel
Comments to posts	Numeric	No. of comments for the latest posts; to be established how many posts and how to evaluate the global performance (sum, average)
Success of the posts	No. of 'shares' for the last posts; e.g., retweets for Twitter; likes for Facebook	To be established how many posts have to be considered
Link to the hotel website	Boolean	
Link to the hotel's other profiles	Complex: URL of the profiles and Boolean	
Creation date	Date	
Graphic design consistent with the website	Boolean	
Customized graphic design	Boolean	Compared to the standard graphic design offered by the platform
Info: map	Boolean	Add description devices, initiatives offered by the platforms
Info: events	Boolean	
Info: hotel's address and contacts	Boolean; e.g., address, phone number, email,	
Info: facilities	Boolean; e.g. parking, swimming pool, park, sports	
Non standard menu items	List	Compared to the standard menu offered by the platform
Interactivity: engagement	List of applications, functionalities, initiatives	

For the first factor in Table 1, the number of 'members' registered to a given profile[10] on a social network is often used as an index of its success. As a matter of fact, it cues the size of the online community associated with the profile and its potential audience or target. Then, the table proceeds to include a set of factors used to see if the profile is taking advantage of the multimedia nature of the Web: photos, albums, videos and texts

[10] See footnote 5 for the use of profile (presence on any social networking website) vs. page (profile on Facebook).

can be published on (almost) all the social networking websites. For all of these factors it is also relevant to look for recent items (checking the date of the latest official photo or album posted, i.e. uploaded by the hotel not by users). Interactions on most social networks take place via posts, so the feedback for any given post must be reviewed in terms of users' comments and engagement (i.e. posts shared with other contacts via email) on other social networking sites.

Graphic design and consistency with the hotel website are relevant issues contributing to the hotel's digital image and have been regarded as such during the brainstorming session as discussed in the next session. Lastly, information and facilities are also taken into consideration, as the hotel's page allows publishing them, together with the link to the hotel website. This way, the social networking platform offers additional web space (or channel), enhancing and boosting online visibility.

The authors analysed the first version of the model described in Table 1 and came to the conclusion that a systematic approach based on a (usable) model including quantitative and qualitative features had to take into account a number of characteristics, specific for a given type. For example, some of the functionalities are supported by Facebook, but are not included on Flickr (e.g. textual posts), or the same characteristics had to be defined in different way for different platforms (e.g. success index). To obtain a useful model, a trade-off between specialisation and generality, similar to that highlighted for existing evaluation models described in section 2, had to be achieved.

Our goal in defining a model to evaluate the quality of a hotel profile on a social networking site was to satisfy a flexibility requirement, as suggested in the requirement modelling literature (Pressman, 2001). At the same time, retaining an adequate abstraction level was also necessary. In technical terms, we had to define a parsimonious model (Stockburger, 1998)[11]. To this end, we decided to define a set of characteristics for a given quality social networking website – i.e. Facebook – and keep them as general as possible for the model to quickly adapt to different situations. See Figure 1 for an example of a Facebook page, or page timeline. The header contains two pictures, the larger Cover Photo and the Profile Picture. Content published is available in the yearly archives on the right-side column since the page was opened. The left-side column provides information about the people who visited the page. The most important section is the blog-style central column where messages or multimedia files can be posted. Information about the hotel can be entered in the About page (second Section Tab); photos and videos can also be uploaded in a dedicated section (third Section Tab), where photos can be grouped into albums.

[11] "The goal of the scientist is to create simple models that have a great deal of explanatory power. Such models are called parsimonious models. In most cases, however, simple yet powerful models are not available (…). A trade-off occurs between the power of the model and the number of simplifying assumptions made about the world.", http://www.psychstat.missouristate. edu/introbook/sbk04.htm

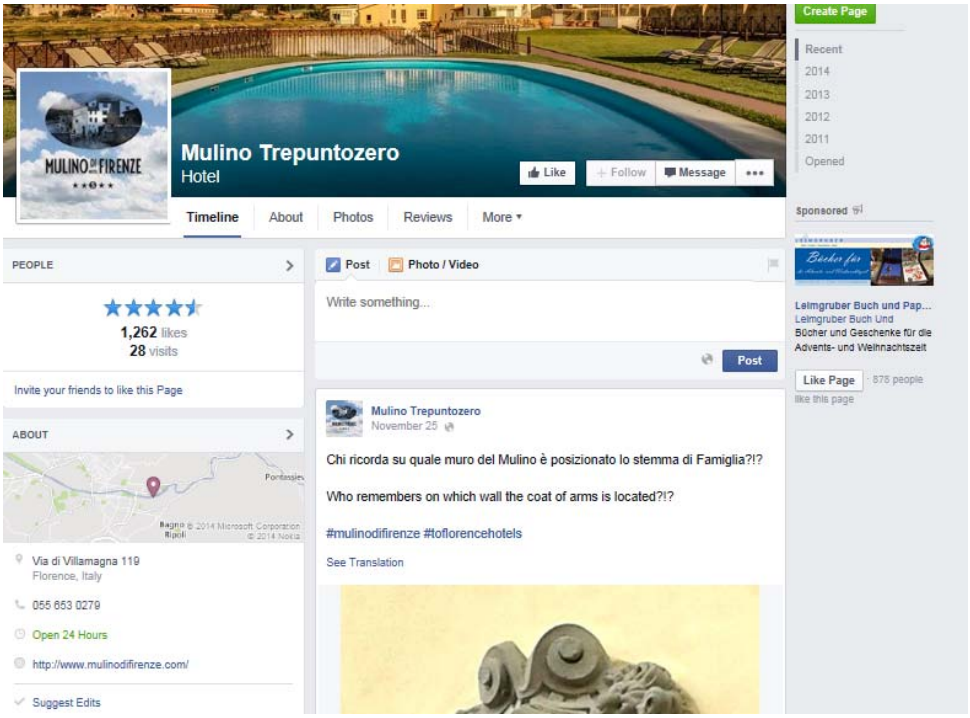

Fig. 1 Example of a Facebook Timeline page [accessed November 2014]

3.2 Brainstorming online with influential bloggers and web marketers

An online brainstorming session was conducted to support decision-making about the factors relevant to our model. An email with two open-ended questions was sent to a number of bloggers and web marketers and 13 out of 30 replied. Bloggers were selected according to their expertise in tourism and hospitality. The redemption rate is quite high considering that eliciting knowledge from the experts is a well- and long-known bottleneck (Cullen and Bryman, 1988). Most have been publishing their own blogs for many years and act as consultants in planning the digital strategies for operators and organisations in the tourism sector.

Question 1. What are the elements that are especially appreciated by a visitor of a social network page and lead to think that the company proposing the page is able to effectively and well use the social network, and therefore it may be worthwhile following it?

Question 2. What can be the most important features that testify a good presence of the company on a social network? (i.e.: graphics, contents, number of contributions and contributors, gadgets etc.).

Interestingly, almost all the respondents referred to Facebook and Twitter when they replied, even if that was not explicitly stated in the email. The analysis of the answers corroborated some of the characteristics chosen in the previous activities, and gave useful suggestions on how to specialise them for Facebook.

3.3 Classification and integration of the evaluation characteristics

The written answers of the online brainstorming were analysed by the authors and a frequency analysis allowed identifying the most relevant concepts expressed in order to classify the features into three groups. The resulting areas are: a) quality and intensity of the relationships and communication; b) content information; c) graphic design and

media. The identified characteristics were further classified into two lists, separating quantitative (Table 2) and qualitative factors (Table 3). Evaluation criteria for the quantitative characteristics were then established. To obtain a synthetic index for the Facebook page of a given hotel we introduced criteria to assign a *yes* or *no* to non-Boolean characteristics in Table 2: a range or a threshold was determined so that values inside the range or over the threshold correspond to *yes*. A final score can then be obtained by summing up the number of positive results (*yes*). Although heavily criticised by a many scholars (Cohen, 1983; McCallum et al., 2002), the dichotomisation of a variable offers a number of advantages, mainly in the simplification of analysis and evaluation. Moreover, as shown in some studies (DeCoster et al., 2009; Farrington and Loeber, 2000), there are cases in which the practice can be justified. For the purpose of this study, in fact, we resorted to this technique for three main reasons. From a practical point of view, it simplifies the assignment of a score to the Facebook page under study, as we were looking for a practical method to help in the process of positioning a Facebook page among competitors with a view to gathering suggestions for improvement. Second, as discussed also in DeCoster et al. (2009), the objective of our research was to investigate how a dichotomised measure performs in the field and to obtain a possible objectively computable indicator. Third, dichotomising values removes large-scale differences potentially surfacing in the measurements of the quantities considered and makes it easier to combine them. We then compared (and completed) these measurements with a (probably) more appropriate qualitative evaluation of the same pages based on Table 3.
Many criteria have to be taken into account for the dichotomisation of variables: the type of hotel, for example; monthly updates of the multimedia content could correspond to a positive answer for the Facebook page of small, non-chain hotels, while more frequent uploads must be planned for larger hotels. Then again, high values for, say, hotels' posts do not always correspond to a positive outcome, as followers could perceive them as spam. A comparison with competitor hotels could then be useful to find out if a page is adequate. Understanding whether the efforts made to support interactive communication need a boost or identifying the key characteristics to be addressed in order to improve a hotel's Facebook page is also highly recommended. The characteristics and examples of criteria to answer *yes* or *no* are presented in the second column of Table 2. Criteria to convert numeric values to Boolean were chosen so that both comparability and discriminability for the final table are guaranteed. As it is, triggers to assign *yes* can neither be too high nor too low or all pages would receive only negative or positive values, respectively. The criteria proposed in Table 2 come in handy when the hotel's Facebook pages to be evaluated are highly variable, or low quality, that is, they are not too strict. For example, 'Talking about this' meets a positive value as long as it is available on the page: if all the hotel pages feature it, a minimum number for this parameter had to be established taking into account the range of values for the set of pages analysed, as suggested by general principles of measurements (Barford, 1967). In Table 2, italic font is used for changes made after the validation step described in section 4. As can be seen some of the "popular" measures such as the number of followers are missing. The experts interviewed remarked that an *absolute* number of followers has little meaning (also probably due to the possibility of inflating these numbers in artificial ways) while the trend dynamic is an important element, as well as the engagement of the users.

Table 2 Quantitative characteristics for a hotel page on Facebook

Quality factor	Example of criteria
Interactivity-communication	
Talking about this	Yes if available on the page
Were here	Yes if given on the page
Share (was Number of recommendations*)*	Yes if given on the page
Frequency of the last 5 official posts (*posted by the hotel*)	Yes if at least 5 in a month
Like	Yes if, on average, at least 1 per post
Number of user comments to the last 5 official posts *(excluding those posted by the hotel)*	Yes if, on average, at least 1 per post
Number of likes for the last 5 official posts	Yes if, on average, at least 1 per post
Number of hotel's answers to the comments made to the last 5 official posts	Yes if, on average, at least 0.5 per post
Activity per month (was Friend activity*)*	Yes if given on the page
Content-information	
Events	Yes/No
Booking form	Yes/No
Info: address	Yes/No
Info: phone numbers	Yes/No
Info: map	Yes/No
Info: email	Yes/No
Info: parking	Yes/No
Info: Likes and Interests	Yes/No
Info: URL of the hotel website	Yes/No
Media-graphic design	
Number of photos published by the hotel	Yes if at least 10 photos were posted in the timeline header
Date of the last *official* photo *in hotel posts*	Yes if less than one month ago
Number of photos *(not albums) published by users*	Yes if, on average, at least 10
Date of the last photo *published by users*	Yes if less than one month ago
Number of videos published by the hotel	Yes if, at least 1
Date of the last video *published by the hotel*	Yes if less than six months ago
Number of videos published by the users	Yes if, at least 1
Date of the last video *published by the users*	Yes if less than six months ago
Apps	Yes if at least 1
Graphic design consistency with the hotel's website	Yes/No

Qualitative characteristics can be assigned a score according to the Likert scale; a five values scale is proposed in Table 3, but different scales can be used if necessary. This type of evaluation must involve users and, due to the subjectivity of the questions, different users will come up with different evaluations of the same Facebook page. However, as already shown for the more common website evaluations, even a limited number of users is able to provide a reasonable reliability of the results (Antonioli Corigliano and Baggio, 2006).

From the discussions, the authors derived also a short series of questions (Table 3) to be used as qualitative assessment instrument to be administered to a sample of users for validating the results coming from the measurements performed by using the criteria of Table 2 (see section 4.2).

Table 3 Qualitative questions

Question		Score
1	How easy is to find the Facebook page?	
2	How positively do you rate the sentiment of posts?	
3	How do you rate the content in general (is it suitable for the hotel's target?)	
4	How representative is the Cover Photo?	
5	How do you rate the photos uploaded (if any)?	
6	How do you rate the videos uploaded (if any)?	1=min; 5=max
7	How do you rate the interactive applications (if any)?	
8	Is the graphic design consistent with their website?	
9	How likely are you to 'like' the page?	
10	How likely are you to contribute to the discussion?	
11	How likely are you to recommend the page to a friend?	

4 Validation of the model

4.1 Validation of the quantitative table

The quantitative table was validated by verifying whether it satisfies the following properties, adapted from modelling literature (Gabaix and Laibson, 2008):

- *non-ambiguity*: characteristics and questions are easy to understand and cannot be interpreted in different ways;
- *comparability*: related to the scale problem; different pages can be compared by using the results, that is characteristics can be assessed in a calibrated way;
- *discriminability or sensitivity*: related to the measurement problem; it requires different results for pages of different quality;
- *reproducibility*: similar results obtained from the answers of different people looking at the same pages (or, at least, with minimum variability in the answers);
- *usefulness*: the output can be used by the page owner and page developers to improve it.

To validate the applicability of the quantitative part of the model (Table 2), four hotels in the Florence area were selected. Their Facebook pages were examined by four experts, two web engineers and two web marketers, in a two-step process. In the first step, the experts were asked to apply Table 2 to each of the four hotels and share their remarks or comments.

In the second step, we interviewed the experts to double-check the 5 properties listed above. The results were then integrated into a single document used to revise Table 2. The main output is summarised in Table 4. With regard to *non-ambiguity*, the experts expressed concerns about how a given characteristic ought to be checked. For example, 'Date of the last photo' was changed into 'Date of the last *official* photo *in hotel posts';* 'to the last 5 official posts' was changed into 'Number of users' comments to the last 5 official posts *(excluding those posted by the hotel)'*. One of the characteristics, i.e. 'Number of recommendations' became 'Share', to take into account the Timeline-based Facebook interface (see Figure 1).

For *comparability*, it was suggested that for all the non-Boolean data types, both numeric and Boolean values were to be gathered. The first could be used to compare

results for the same page on a regular basis (e.g., once a month, as suggested by Facebook's timeline), while the Boolean values help assign a score to each criterion and calculate a final score, e.g. a sum of the positive answers for the Facebook page.
Discriminability and *reproducibility* are supported by the quantitative nature of the factors included in the table, which in turn guarantee a more objective evaluation.
As to *usefulness*, one of the hotels' owners interviewed confirmed that numeric values helped compare some of the results measured at different times, i.e. applying the table on a regular basis. He also stated that the features in the table would give his webmaster the opportunity to further improve the hotel's Facebook page in a systematic way.

Table 4 Summary of the outcomes of the validation of the quantitative characteristics of the model

Property	Experts' comments and actions to address them
Non-ambiguity	Some of the characteristics were difficult to check: it was not clear how to interpret them; others were not intuitive. Changes made to the descriptions of some factors to avoid misinterpretation and eliminate ambiguities.
Comparability	Tested by using the table for four Facebook pages: two pages were immediately associated with excellent and poor quality, and two in-between.
Discriminability	Tested positive, which means the 'precision' of the characteristics, is neither too high nor too low. Results pointed to the need to calibrate the thresholds of the 'yes' answers for some of the characteristics.
Reproducibility	Same results across the board once the ambiguities highlighted in the first round were eliminated.
Usefulness	Evaluated with a hotel owner who confirmed he was able to interpret the results and made changes to their page in a more focused way.

4.2 Validation of the qualitative table

A questionnaire based on the issues presented in Table 3 was administered to a sample of 50 respondents with a view to validating the qualitative table, choosing people with average Internet and Web browsing skills. Respondents were randomly selected among groups of young adults (aged 25 to 40), both students and workers. Although not extensive, the sample is however large enough for our purpose, i.e. testing an evaluation scheme without inferring user attitudes at large (see e.g. Hill, 1998; Guest et al., 2006).
The Cronbach's alpha for the answers to the different questions is shown in Table 5 (for each hotel and for the entire sample). As shown, the reliability for the questionnaire can be deemed as rather good, as confirmed by other measurement.

Table 5 Reliability statistics for the qualitative questionnaire

Hotel	Cronbach's Alpha	No. of Items
HOTEL 1	.922	11
HOTEL 2	.877	11
HOTEL 3	.850	11
HOTEL 4	.878	11

ALL HOTELS	*.927*	*11*

As a matter of fact, the analysis of the key components identified the presence of one element that accounts for 58.7% of the variance. The Kaiser-Meyer-Olkin measure of sampling adequacy is 0.898 (the measure varies between 0 and 1) and the Bartlett's test of sphericity has a p-value $<< 10^{-5}$ (the procedure tests whether there are no significant correlations in the data set, which would show that the factor model is inappropriate (for more details see, for example, (Baggio and Klobas, 2011) or (Hair et al., 2009). All these outcomes show the validity and reliability of the characteristics (variables) chosen and point to a model fully capable to give a meaningful evaluation of the Facebook page under study.

5 Applicability of the model

5.1 The Hotels

The evaluation model was used to assess twenty Italian hotel Facebook pages. The first ten were nominated for the *Best Facebook page* at the 2012 Hospitality Social Awards (www.hospitalitysocialawards.it) and their pages qualified for the model's applicability test (Barford, 1967; Hill, 1998). The others were randomly chosen from the lists of hotels in some of the best-known tourism destinations (Rome, Milan, Florence and other destinations in Tuscany, Naples, see Table 6) and were included in the list for a more thorough examination. In the first stages of the analysis Ciasa Alpina Relax Hotel turned out to have a Facebook personal profile – i.e. for non-commercial use - rather than a Facebook page created for business purposes.

Table 6 The hotels' Facebook pages

1	Cavallino Bianco Family Spa Hotel, Ortisei	facebook.com/Cavallino.Bianco.Family.Hotel
2	*Ciasa Alpina Relax Hotel, Moena*	*facebook.com/ciasalpinamoena*
3	Hotel Bellevue Syrene, Sorrento	facebook.com/bellevuesyrene
4	Hotel Cernia Isola Botanica, Marciana	facebook.com/hotelcernia
5	Hotel Principe di Savoia, Milano	facebook.com/principedisavoia
6	Le Rose Suite Hotel, Rimini	facebook.com/lerose.suitehotel.rimini
7	Locanda al Piave Hotel, San Donà di Piave	facebook.com/locandaalpiave
8	Pineta Hotels, Coredo (TN)	facebook.com/PinetaHotels
9	Pizzicato B&B, Vico del Gargano	facebook.com/PizzicatoEcObEb
10	T Hotel, Cagliari	facebook.com/THotelCagliari
11	Relais & Chateaux Il Falconiere, Cortona	facebook.com/HotelFalconiere
12	Golf Hotel, Punta Ala	facebook.com/GolfHotelPuntaAla
13	Hotel Tirrena, Isola d'Elba	facebook.com/HotelTirrena
14	Hotel Hermitage, Milano	facebook.com/HotelHermitageMilano
15	Napoleon Hotel, Roma	facebook.com/napoleon.hotel.roma
16	Hotel Excelsior, Napoli	facebook.com/HotelExcelsiorNapoli
17	Hotel Brunelleschi, Firenze	facebook.com/Florence.Hotel.Brunelleschi
18	Mulino Trepuntozero, Firenze	facebook.com/pages/Mulino-Trepuntozero/109857942372200
19	Villa Olmi Resort, Firenze	facebook.com/pages/Villa-Olmi-Resort/118989748133424
20	Hotel Emma, Firenze	facebook.com/pages/Hotel-Emma-Firenze/107265369387711

5.2 The evaluation

The quantitative evaluation table (Table 2) was customised for the study by defining appropriate criteria for the characteristics. To this end, a preliminary analysis of their values established a range for each feature. The numeric values used originate from data collected between December 2012 and January 2013 and were analysed with a set of exhaustive criteria. During the table's first implementation, a 5-value scale was applied to the ranges used for the characteristics (Ambrosi, 2014). For the study described in this paper we simplified the criteria used, reducing them to dichotomous (Boolean) values to provide small hotel owners with a user-friendlier assessment tool. This dichotomisation is a tricky aspect and must be tailored to the sample under examination. For the non-Boolean characteristics classified as Interactivity-communication in Table 2, the dichotomisation thresholds were calculated after recording the full values and considering the order of magnitude of the median values. A similar approach was used for the non-Boolean variables in the Media-graphic design section of the table (apart from dates for the publication of photo albums and videos for which a half the value of photos was considered).
The criteria used are reported in Table 7. Due to the quantitative nature of the table, results had to be the same if different people used it; in order to minimise the risk of evaluation errors (material errors) while navigating the Facebook pages (inspection), two evaluators assessed the characteristics in Table 2, and checked incongruous results.

Table 7 Criteria used in the study

Quality factor	**Criteria used**
Interactivity-communication	
Talking about this	0 if <= 100
Were here	0 if <= 1000
Share	0 if <= 10
Frequency of the last 5 official posts	0 if <=10 posts in the last 2 weeks
Like to the last 5 official posts	0 if sum <= 100 to last 5 posts
Number of user comments to the last 5 official posts	0 if sum <= 10 to the last 5 posts
Number of likes for the last 5 official posts	0 if sum <= 100 to last 5 posts
Number of hotel's answers to the comments made to the last 5 official posts	0 if 0 answers
Activity (per month)	0 if 0 activities
Content-information	
Events	0 if < 10
Booking form	Yes/No
Info: address	Yes/No
Info: phone numbers	Yes/No
Info: map	Yes/No
Info: email	Yes/No
Info: parking	Yes/No

Info: Likes and Interests	Yes/No
Info: URL of the hotel website	Yes/No
Media-graphic design	
Number of photos published by the hotel	0 if <=100
Date of the last official photo in hotel posts	0 if >= 1 week
Number of photos (not albums) published by users	0 if <=10
Date of last photo published by users	0 if >= 5 weeks
Number of videos published by the hotel	0 if <=1
Date of last video published by the hotel	0 if >= 5 weeks
Number of videos published by users	0 if <=1
Date of last video published by users	0 if >= 5 weeks
Apps	0 if <=1
Graphic design consistent with hotel website	1 if at least logo is used

As to the qualitative table of the model (Table 3), the items were used in a survey in which the respondents gave their score to the questions. The results for the two tables of the model are presented in the following section.

5.3 The results

The overall evaluation (sum of scores per section of the table) of the quantitative features in Table 2 is reported in Table 8 and Figure 2 (hotels are numbered as in Table 6).

Table 8 Results for quantitative characteristics in Table 2

Hotel	Interactivity-Communication	Information content	Media-graphic design	Total	Average
H01	6	5	8	19	6.3
H02	6	6	4	18	5.3
H03	3	8	7	17	6.0
H04	3	6	4	17	4.3
H05	6	7	3	17	5.3
H06	5	7	5	16	5.7
H07	0	7	8	16	5.0
H08	6	6	5	15	5.7
H09	3	7	5	15	5.0
H10	4	6	7	14	5.7
H11	1	9	4	14	4.7
H12	1	6	4	13	3.7
H13	0	6	1	13	2.3
H14	3	7	4	12	4.7
H15	1	7	4	12	4.0
H16	0	5	3	12	2.7
H17	2	5	5	11	4.0
H18	0	8	5	8	4.3
H19	0	8	4	7	4.0
H20	0	2	1	3	1.0

The first table of the evaluation model is comprised of three sections. Section 1 includes characteristics related to interactivity issues. None of the hotels scored higher than 6 for Interactivity, even if the thresholds were quite low. Frequency of posts seems to be most critical for small hotels, clearly reflecting how hard it is for them to keep up with the needs of social media communication.
Section 2 includes characteristics related to sine qua non services and information for a hotel's Facebook page. Item 1 and 2 are key elements as events attract visitors, even if not directly connected with the hotel; yet only four of the hotels sampled post events on their Facebook page. Eight added an app (or a facility) for tourists to book a room online, thus taking little advantage of Facebook's environment for their own business. Most published the hotel's contact information; one, however, posted no address and phone number. Surprisingly, only five hotels out of twenty provide information about parking facilities, and five have no map to help tourists reach the hotel.
In terms of media and graphic design (third section of the table), only four hotels fared well; all the others seemingly opted for the standard Facebook layout without any major changes. The number and the frequency of picture and video uploads is quite low. In particular, the video posts are practically non-existent for all the hotels under test.
The results for the qualitative evaluation based on Table 3 for the hotels' Facebook pages are given in Fig. 3, the dotted line indicates the sample average.
These results are summarised in Fig. 4. As shown, users' evaluations rank above the average score only for the first question, 'How easy is to find the Facebook page?' All the other questions fared relatively low. The lowest scores were allocated to videos and apps, that is the most innovative and expensive features to add to a Facebook page. Very low scores were expressed also for the last three questions, in which users had to say how likely they were to *like* the page, to contribute to the discussion and recommend it to a friend; these results can be explained with the effort required (*liking* a page is less time-consuming than pitching in in the discussion), but anyway indicate a limited willingness to be engaged and, in essence, to appreciate what presented. The score for this question shows that visiting a Facebook page, even a good one, does not necessarily guarantee virtual word of mouth.

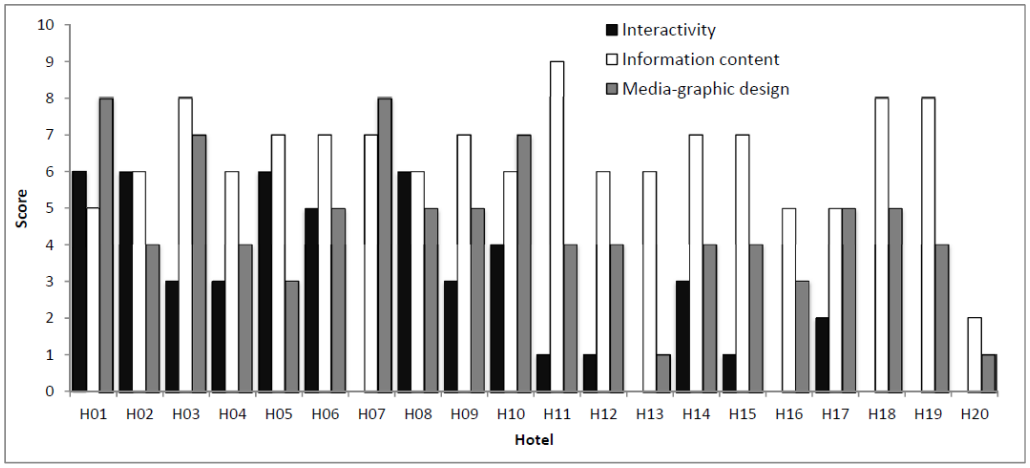

Fig. 2 Results for quantitative characteristics

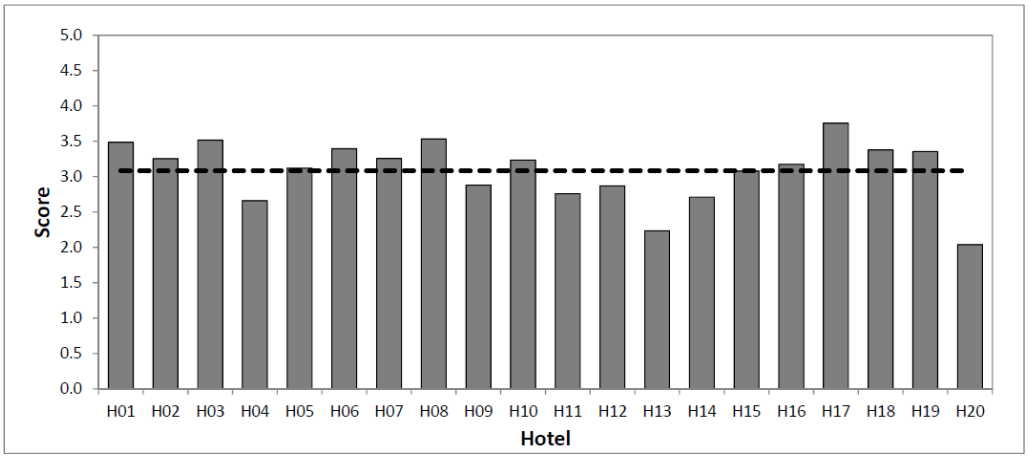

Fig. 3 Average score for qualitative characteristics for the hotels' Facebook pages [March 2012]. The dotted line shows the sample average

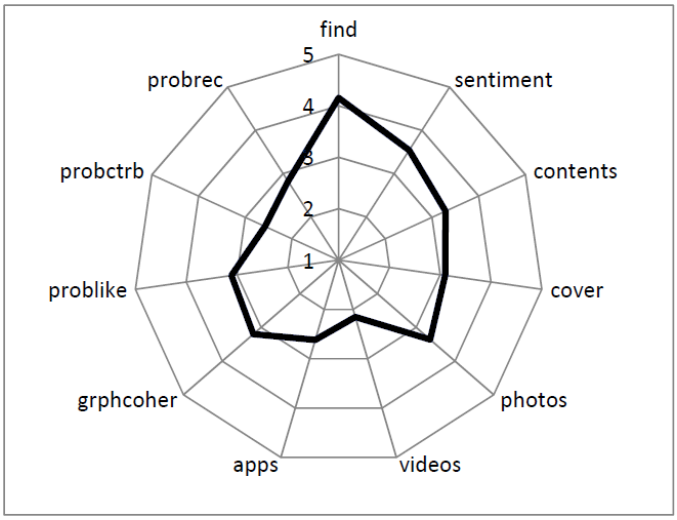

Fig. 4 Results for qualitative characteristics in Table 3 [March 2012]

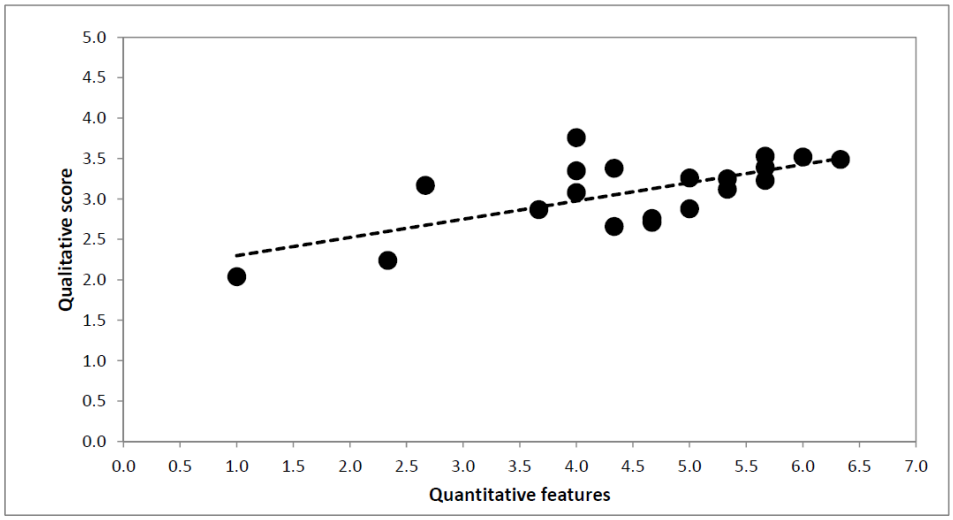

Fig. 5 Qualitative and quantitative features for the hotels' Facebook pages [March 2012]

When comparing the average scores obtained for the quantitative and qualitative features, we found a good correlation (Fig. 5: $R^2 = 0.464$) with a high significance for the calculated coefficients (p-value < 10^{-3}).
This result can be interpreted in two ways. On the one hand, it shows that even one part of our evaluation model provides a reasonably accurate outcome, thus facilitating the assessment of a Facebook page's quality. On the other, it shows how the appreciation of what published online generates (or is influenced by) the results of the page in quantitative terms. We do have, therefore, the tools to assess a page's quality either way: by measuring the quantitative features, or simply submitting the page to user evaluation. In practical terms, alternating or combining the two techniques would give the owner of a Facebook page the opportunity to either monitor the evolution of the page activities by simply counting values or gain insights on its progress by asking a reasonably limited sample of Facebook users (see for example: Baggio and Antonioli Corigliano 2009).

6 Concluding remarks

Presented in this document is an approach worth considering when the quality of the Facebook page of a hotel needs to be evaluated or improved. As discussed in the introduction, this has become a key task for all those hotels – but also any other organisations – who have started using the Web 2.0 environment and want to achieve their objectives in terms of promotion, visibility, marketing and sales.
First and foremost, the paper offers a theoretical contribution, as it outlines a new approach for evaluating hotels' Facebook pages. The approach is based on a systematic process and a two-table model that integrates qualitative and quantitative characteristics. The model has been, albeit preliminary, validated to see whether it satisfies a number of requirements an adequate model should fulfil (Gabaix and Laibson, 2008) and to test its applicability. As highlighted in the exploratory study, the model can be used by hoteliers to monitor the performance of their Facebook pages on a regular basis, recording the values of the quantitative table into an Excel sheet. In particular, the quantitative characteristics in the first section of Table 2 can be monitored to verify users' engagement. Content-information characteristics prompt the hotel to add them to the page if missing. Lastly, most of the media-graphic design features are a useful reminder for uploading photos, album or video on a regular basis.
The application of the model based on a quantitative and a qualitative table confirmed its effectiveness, that is, it can be applied without specific training and at limited cost, providing useful output for both hotels owners and web marketers. A thorough application of the parsimony principle (the well-known Ockham's razor), helped us provide a practical tool that takes into account all the key features yet stays manageable and usable.
The model meets the basic requirements and the tests we have conducted corroborate this notion. In greater detail, the quantitative table with the Boolean criteria in Table 7 significantly simplified the model's application. Usability, in terms of the three components encompassed in the ISO[12] definition – i.e. effectiveness, efficiency and satisfaction – was confirmed in all the tests conducted after Table 2 was revised. None of the experts' remarks referred to how difficult to understand a question was

[12] A complete definition is given at http://www.w3.org/2002/Talks/0104-usabilityprocess/slide3-0.html

(learnability) or how hard it was to apply the criteria. These two questions, by the way, were never associated with the application of the qualitative table (Table 3) in the study described in Ambrosi (2014) or the research illustrated in this paper and neither were remarks by the users, who only received the Facebook addresses of the hotel pages (Table 6). Some of them have a personal Facebook page, and henceforth know the main features of this social networking platform, but most had only a very superficial knowledge. Similar observations apply to hoteliers, involved in the process of validation or in considering the study results. Questions and answers were processed with a simple Excel worksheet, a basic application that offers many functions and does not require too specialised knowledge.

Like in any other similar endeavours, our proposal faces a number of limitations. One of the most critical drawbacks is that even if the characteristics to be included in the model were chosen to provide an adequate abstraction level and guarantee a good generality, they would have to be checked and updated because of the frequent changes that occur in the online world (and especially on Facebook). Experiences gained during the process of definition of the model – that started in January 2012 – highlighted that such changes often impact more aspects. For example, the timeline-based interface was introduced at a later stage of our research and forced us to change a series of previously defined characteristics, mainly on the quantitative side of the model.

Moreover, the description of the process followed to define the model allows for systematically revising and adapting the evaluation tables so that they match the changes implemented on the platform or specific needs of a particular hotel.

Also, even if the model was defined taking into account a parsimony principle, its application for a large number of hotels (e.g. to compare them) may be time-consuming and henceforth costly. To address this issue, future work should foresee the implementation of a tool to automatically extract most of the values related to the quantitative features from a Facebook page (see Table 2). Fortunately, the APIs (application program interfaces) made available by Facebook can ease this task. Here too, however, frequent variability in the APIs may put some stress on the *stability* of such a tool. In any case, a tool-supported evaluation could also help provide an extensive analysis in order to broadly verify the validity of the model proposed here.

An interesting area for future work pertains to the customisation of the model to social networking websites other than Facebook. In this regard we'd like to point out that the characteristics listed in Table 2 and 3 of the model are largely independent from any specific social networking website (being derived from a general table, Table 1). In such a case, the evaluation criteria associated with them can greatly differ. Similar considerations might be in order when different accommodation structures or other companies or organisations are taken into account. This remark is even more important as recent changes introduced to Facebook have reduced the visibility of brands and companies online: see for example (Loten et al, 2014).

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