Unpackaging stakeholders' motivation for participating in the social media of the higher education sector

A comparison of the European and US experience

Received 20 September 2018
Revised 1 April 2019
Accepted 12 August 2019

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Abstract

Purpose – Increasingly, universities are adopting social media as a strategy to improve their competitive advantage. However, little is known of whether or not stakeholders are actually engaging with universities in such online environments. The purpose of this paper is, first, to analyze the level of stakeholders' engagement via social media, particularly Facebook, in European and US universities. Second, to examine the influencing factors that boost online interactions, in particular, "location," "transparency," "size," "academic performance" and "activity."

Design/methodology/approach – An engagement index and a multivariate regression analysis were carried out. Regarding the sample, European and US universities belonging to the "Top 100" of the Academic Ranking of World Universities were analyzed.

Findings – Despite the large online community that US universities possess, European universities attain the higher level of online engagement from its stakeholders. In particular, the greatest level of engagement is achieved by European universities of greater size, in terms of students, with lower academic performance and a lower level of online activity.

Social implications – This study contributes to existing literature by identifying the actual social impact of social media to build successful relationships with the stakeholders of higher education entities.

Originality/value – This paper can contribute to the current scarcity of literature concerning social media to improve new models of accountability in higher education entities with different managerial models.

Keywords Internet, Facebook, Social media, Stakeholders' online engagement

Paper type Research paper

1. Introduction

Universities, as fundamental institutions of society, must maintain strong and lasting relationships with their principal stakeholders in order to contribute at all levels of the economy (Benneworth, 2013). Each group of citizens has its own demand due to the multiple impact that universities have, both at an external (economic and social) and internal level (research and transfer of knowledge) (Jongbloed *et al.*, 2008). In order to respond to the demands of stakeholders, universities must demonstrate high levels of transparency (Gallego-Alvarez *et al.*, 2011) and attain a level of stakeholder engagement that allow them to receive relevant feedback for continuous improvement (De Aguilera *et al.*, 2010) in terms of accountability and governability (Gallego-Alvarez *et al.*, 2011).

The concept of engagement encompasses and facilitates two crucial aspects in the survival of the organization: long-term relationships with its stakeholders and human capital (Sashi, 2012; Taylor and Kent, 2014). Among its main features is the need to promote the influence and guide the process of interactions between stakeholders, that is, to start and build relationships (Taylor and Kent, 2014).

Online Information Review

1468-4527
DOI 10.1108/OIR-09-2018-0273

Hence, the use of bidirectional communication models between the university and its main stakeholders are key to engage the universities' stakeholders in an effective and efficient manner (De Aguilera *et al.*, 2010). In addition, and as a consequence of the demands of stakeholders, changes that require a transition from traditional media to newer models are based on the new ICTs. However, this change is not easy to carry out due to the highly bureaucratic nature and complexity of these institutions (Constantinides and Zinck Stagno, 2011) which are dependent on the socio-political landscape (De Aguilera *et al.*, 2010).

Paniagua and Gómez (2012) note that social media permits the dissemination of a large amount of information, partly because of characteristics such as interactivity, transparency and immediacy. In addition, universities can use this new technology as a promotional tool to attract new students (Peranginangin and Alamsyah, 2015). Likewise, aside from being a communicative channel, social media has become a didactic medium used to transfer knowledge (Cancelo Sanmartín and Almansa Martínez, 2013). For this reason, participation in social media has become vital for any higher education institution anywhere in the world in order to engage with their environment (Peranginangin and Alamsyah, 2015).

Communication policy can be applied to the management models used by universities which have been changing in order to adapt to social demands (Kiat-Kok *et al.*, 2008; Musselin, 2013; Michavila and Martinez, 2018). Among the existing university management models, two stand out for their widespread adoption (Flórez *et al.*, 2017): the managerial model and the stakeholders' model. The first, is an Anglo-American model which focuses on control mechanisms and professional management (Flórez *et al.*, 2017). The second, the European model, generally pays greater attention to the requirements of the main stakeholders to participate in their self-government (Kehm, 2012).

In addition to the particularity of the different forms of management of these entities, the mission of the universities clearly differs from that of other organizations, since they are unique as agents in the production, transmission and dissemination of knowledge (European Commission, 2003). Moreover, academics have a great deal of autonomy in terms of making decisions in their principal activities, namely research and teaching (Musselin, 2006; Kehm, 2012). In addition, as noted by Musselin (2006), the independence of organizational structures (faculties, departments and institutes) contributes to the particularity of this sector which makes it different compared to private corporations and public administrations.

Despite the aforementioned differences between universities and other organizations, little attention has been paid to how universities use social media and the communicative strategies they apply (Paniagua and Gómez, 2012; Cancelo Sanmartín and Almansa Martínez, 2013). In this respect, most of the research focuses on a particular college or a particular country or region (De Aguilera *et al.*, 2010; Karpinski *et al.*, 2013). Hence, a comparative analysis of the online engagement between universities with different managerial models is yet to be explored.

European universities and those of the USA present different forms of self-government. In addition, the most important and best universities in the world are located in Europe and the USA (Times Higher Education, 2017). Within this context, this research aims to address the following research questions:

RQ1. Are there significant differences in the level of online engagement achieved by European and US universities?

RQ2. What are the drivers that affect online engagement in European and US universities?

The findings of this study aim to contribute to the existing literature by identifying trends and gaps that should be improved upon for the better use of social media, particularly Facebook, to enhance stakeholders' engagement in higher education. It can also provide

fresh insights about the influencing factors for the greater use of ICTs in universities, such as providing a channel for improving information access, fostering participation and facilitating online services for their different stakeholders.

To achieve the aforementioned objectives, this study is structured in six sections. Following this introduction, Sections 2 and 3 provide a literature review related to stakeholders' engagement via social media and its influencing factors. The Section 4 explains the methodology used. Section 5 discusses the results obtained. The final section presents the most relevant conclusions and the implications of this research.

2. Stakeholders' engagement in higher education via social media

Messias *et al.* (2015) state that modern education is centered on individual, reflection, interconnectedness and commitment. In this digital age, social media can serve as a channel of communication between diverse groups such as students, teachers and researchers in order to provide a platform for further integration in campus life (Schroeder *et al.*, 2010). Social media also allows students to express their ideas freely, leading to increased communication between them and the faculty (Ballera *et al.*, 2013).

With regard to the literature on social media and higher education, three main streams of research are identified. The first concerns how the use of social media affects academic performance (Liu and Tsai, 2012; Chawada *et al.*, 2013). The second encompasses studies about the usefulness and expectations of social media as an academic tool in relation to academic engagement (Dabbagh and Reo, 2011; Selwyn, 2012; Benson and Morgan, 2018). Finally, the third group is focused on the use of social media as a communication and social tool for improving stakeholders' engagement (De Aguilera *et al.*, 2010; Constantinides and Zinck Stagno, 2011; Cancelo Sanmartín and Almansa Martínez, 2013; Sutherland *et al.*, 2018; Easa, 2019).

Delving further into this third group, the concept of online engagement is related to online interactions on social media sites such as "likes," "shares" and "comments." This engagement is key to explore the satisfaction users derive from such virtual environments (Ray *et al.*, 2014). Previous studies that focused on universities' social media and stakeholder engagement are developed in a country context and, within a qualitative analysis, mainly focused on students' perceptions. In this respect, previous studies observe that students consider social media a useful mechanism to create a university community (Davis *et al.*, 2012; Sutherland *et al.*, 2018). However, there are still issues related to reliability and privacy of the information published by the entities that belong to the university such as faculties (Easa, 2019). Hence, social media complements other traditional communication channels (Constantinides and Zinck Stagno, 2011). Regarding types of social media platforms, Facebook, aside from offering entertainment, is considered apt for enhancing engagement among groups, sharing knowledge and may also be used as a tool for teamwork (Mouri and Ali Arshad, 2016). Hence, Facebook is considered as one of the best options to create better rapport between the university and its stakeholders (Yeo, 2014).

Despite the current literature which states that stakeholders welcome the presence of universities in social media, there is still a lack of studies that analyze in depth how far messages published in the social media pages of universities actually generate interactions with their stakeholders. In addition, there are very few comparative analyses that observe the differences or similarities of how universities use social media and to what extent these strategies are actually successful in achieving online engagement. This study aims to cover such a gap, specifically, finding the differences in the level of participation of the main stakeholders through the information posted on the official Facebook pages of European and US universities.

3. Explanatory factors of engagement

The theoretical foundations for this study are drawn from communication management and the social sciences in general, as the presence of universities in social media provides stakeholders with access to the organization's information, and potentially, the possibility of dialogic communication between them and the organization. By taking into account various point of views and perspectives, several theories can be considered. From the organizational perspective, agency theory (Jensen and Meckling, 1976) and signal theory (Spence, 1973) mainly explain the importance of fixing information asymmetry between two parties in an organization. From the stakeholders' perspective and in line with Bonsón and Ratkai (2013), stakeholder theory, the theory of dialogical communication and legitimacy theory can be used to explain the participation of stakeholders, both external and internal, in an organization's social media.

According to the stakeholder theory (Freeman, 1984), organizations should achieve their objectives with consideration of different stakeholders. In this regard, all entities should inform their stakeholders about the activities carried out, thus achieving loyalty which in turn serves as a background for a long-term social relationship (Deegan and Samkin, 2009). In this respect, social media can facilitate the participation of all stakeholders and thus contribute to effective accountability (Bonsón and Ratkai, 2013; Bonsón *et al*., 2014).

According to the theory of dialogic communication, Kent and Taylor (1998) have developed a framework that explains how it is possible to build and maintain online relationships between an organization and their stakeholders. This dialogic communication theory points out that improving interactivity online builds social relationships, increases confidence in the company and gives greater satisfaction to the users of these interactions (Bonsón *et al*., 2014). To date, this is the theory that best explains how online social relations are established (Bonsón *et al*., 2014).

Moreover, Suchman (1995) posits that legitimacy is created subjectively as it strongly depends on the perception that the audience has of the organization. Likewise, the author argues that, "legitimacy management rests heavily on communication" (Suchman, 1995, p. 586). Therefore, organizations are interested in strategies which can boost the level of interactions between the firm and the society, using ICTs in order to ensure stakeholders' comprehensibility and approval of the activities they carry out (Cuadrado-Ballesteros *et al*., 2014).

Based on these theories, the following factors have been selected in order to achieve the second objective: organizational size (Serrano *et al*., 2009; Haro *et al*., 2016); reputation (Men, 2012); and location (Bonsón and Flores, 2011; Sáez *et al*., 2014). Other factors to be considered include transparency and online activity in the public sector (Haro *et al*., 2018) and communication and public participation (Agostino, 2013). This paper examines the factors most appropriate for its objective considering those factors that were previously considered in the corporate and public sector as well as other aspects that are specific to the university sector. Therefore, the following factors are analyzed: "location," "transparency," "size," "academic performance" and "activity."

3.1 Location

According to the stakeholder theory, depending on the organization's location, it may have to make a greater effort to address the different interest groups and their wide variety of cultures and customs (Reverte, 2009). Moreover, Bonsón and Flores (2011) and Sáez *et al*. (2014) state that the location of an organization influences the evolution of the use of web technologies as part of its communication strategy. Although differences exist between countries in terms of education, these have gradually become less extreme. However, there still exist differences between the policies and decisions taken by universities depending on where they are located (Pinto *et al*., 2009). Management models differ between Europe and the USA (Flórez *et al*., 2017), and therefore, communication strategies may also vary.

US universities are more likely to be focused on accountability, managerial effectiveness and efficiency (Girotto *et al.*, 2013), whereas higher education institutions in Europe have adopted a stakeholders approach, including them in managerial bodies in order to allow their participation in management issues (Flórez *et al.*, 2017). In view of these potential differences, a related hypothesis is:

H1. Location explains stakeholders' engagement with the Facebook pages of universities.

3.2 Transparency

According to Ackerman and Sandoval-Ballesteros (2006), transparency and citizens' engagement go hand in hand and facilitate decision-making. Likewise, Cerrillo-i-Martínez (2012) indicates that the active participation of the public in social media contributes to increased transparency. Universities, as institutions of public interest, cannot be left behind in this matter. Based on the stakeholder theory and with regard to universities, Cerrillo-i-Martínez (2012) states that it is not enough to offer a large quantity of information to satisfy the demand of the stakeholders; however, it is also very important to pay attention to the quality of the content and that access to it be available through different mechanisms. In this respect, social media offers the opportunity to increase transparency by using different channels which are widely used by the public (Mergel, 2013b) through dialogical communication and quick feedback (Taylor and Kent, 2014). Therefore, the next hypothesis will seek to demonstrate the positive relationship between transparency and engagement in higher education:

H2. Transparency positively affects stakeholders' engagement with the Facebook pages of universities.

3.3 Size

Size is usually related to greater visibility and influence of the organization in society and thus to greater exposure to public scrutiny (Reverte, 2009). According to the theory of legitimacy, it is posited that larger universities would be more interested in offering contents with relevant and demanded information in order to improve their reputation, image, and relationships with their stakeholders (Garde, 2013). In this regard, social media could be a channel to help develop the correct strategies of e-government (Snead, 2013). With regard to the public sector, Serrano *et al.* (2009) point out that the interest of the government in publishing information increases according to the size of its population. Accordingly, Haro *et al.* (2016) found a positive relationship between the size of the institution and stakeholders' engagement via Facebook. Thus, it can be assumed that the larger the size, in terms of the student population, the greater is the need for interactions. Here, social media offers the best way to carry it out. Taking into consideration that larger universities are more likely to use social media, the following hypothesis is proposed:

H3. Size positively affects stakeholders' engagement with universities' Facebook pages.

3.4 Academic performance

The stakeholder theory points out that long-term organizational outcomes are determined by stakeholder relationships (Donaldson and Preston, 1995). The main reason to dedicate effort to stakeholders' engagement via social media is to enhance the acceptance of the organization, implying an improvement of the firm's reputation (Dijkmans *et al.*, 2015). Within the context of universities, academic outcomes are one of the prestige indicators of greatest social interest (Flórez *et al.*, 2017). Such reputation or prestige is achieved by improving different organizational systems in order to position the university in the

different university rankings (Leydesdorff and Shin, 2011), which measure the quality of education and academic results (Ferrer and Morris, 2013). In fact, these results affect different groups: students, both current and future, in choosing their studies; employees in the hiring process; and even the process of raising funds and undertaking reforms (Hazelkorn, 2008). Consequently, it would be reasonable to expect that those universities leading in academic performance would be the most incentivized to use ICTs as mediums to inform their stakeholders of the entity's strong commitment to academic excellence (Rodríguez *et al.*, 2013). Taking these considerations into account, the following hypothesis is proposed:

H4. Academic performance positively affects stakeholders' engagement via the Facebook pages of universities.

3.5 Activity in social media

Updating information, including relevant and changing content and offering quick feedback on social media sites, encourages greater levels of interaction with stakeholders of the organization and, therefore, improves the dissemination of information (Kent and Taylor, 1998; Haro *et al.*, 2018). In line with dialogical theory, Zavattaro and Sementelli (2014) point that it is very important to consider social media not just as a one-way channel for promotional use, but should be seen as a way to keep improving the participation of stakeholders through interaction strategies. In the university sector, as a unique actor in the dissemination of knowledge (De Aguilera *et al.*, 2010), it is very important to offer frequent and updated content in order to involve the stakeholders and to comment on many of the social interest aspects, thus creating an active online community (Sutherland *et al.*, 2018). Accordingly, it could be considered that a higher level of activity can lead to a greater level of commitment. Nevertheless, other authors have found that a greater level of activity does not necessarily favor greater levels of engagement (Mergel, 2013a; Bonsón *et al.*, 2014; Haro *et al.*, 2016). Despite the relevance of the variable, there are no conclusive results in the research to date. Therefore, the following hypothesis is proposed:

H5. The online activity of a university explains the level of stakeholders' engagement with the Facebook pages of universities.

4. Methodology

4.1 Comparative analysis USA vs Europe

A descriptive-comparative analysis was conducted to examine the level of engagement of the Facebook profiles of the sampled universities. This analysis examines the popularity, commitment and virality of universities' Facebook pages, following the metrics developed by Bonsón and Ratkai (2013) to measure the level of customers' engagement but introducing a different approach as proposed by Agostino (2013). In this case, engagement is measured by taking into account the number of students in each university, through the level of public communication (LPC), which shows the level of engagement compared to other universities.

In particular, Facebook allows universities to have their own profile and continuously monitors the number of fans. This means that its popularity can be measured in terms of number of "likes." The second dimension is the commitment that reflects a more interactive engagement, one in which customers participate more actively and is measured by the number of "comments." Finally, virality was created to show the effectiveness of viral posts on Facebook, and therefore, demonstrates the involvement of stakeholders in the active disclosure of publicized posts by universities. It is measured by the number of "shares" which shows how many times a post was shared with someone else.

As shown in Table I, the numbers of posts, likes, fans, comments and shares were collected for each Facebook profile in order to calculate the proposed metrics.

In addition, the Mann–Whitney *U*-test was applied to determine whether there were significant differences between European and US universities in terms of the level of stakeholder engagement, following previous research methodology on social media and online information disclosure (Roblyer *et al*., 2010; Garde, 2013). This test is considered to be the nonparametric equivalent of the *t*-test. It is well suited for the analysis of two independent groups that present the following characteristics: when the samples do not have a high number of cases or for unequal samples, also when the assumptions of normality and homoscedasticity cannot be made, and when the discriminant variable for the two groups is ordinal or continuous (Mann and Whitney, 1947; Nachar, 2008; Sheskin, 2011). Furthermore, this test is more powerful than parametric one when the samples are unequal, and when the variance of the smaller sample is lower (Zimmerman, 1987).

In accordance with the above, the Mann–Whitney test was selected to estimate the difference in the variables necessary to calculate the online engagement index. As it was not possible to verify the equality of the variances, the final samples were not equal and the smaller sample was associated with a smaller variance.

4.2 Explanatory analysis

The second phase of the research consisted in analyzing factors which influenced the level of engagement achieved by universities applying a multiple regression analysis. This was done by constructing a multivariate linear regression model to determine the factors that affect the commitment of stakeholders in the field of higher education. The dependent variable "Engagement" (E) was measured as shown in Table I and the independent variables are presented in Table II.

Name	Sign.	Formula	Measures
Popularity	P	Total likes/total posts	Average number of likes per post
	P*	(P/LPC)	Popularity of messages among students communication
Commitment	C	Total comments/total posts	Average number of comments per post
	C*	(C/LPC)	Commitment of students communication
Virality	V	Posts with shares/total posts	Average number of shares per post
	V*	(V/LPC)	Virality of messages among students communication
Engagement(E) = Popularity (P*) + Commitment (C*) + Virality (V*)			

Note: LPC is measured as the ratio between the number of fans and the number of students from each university
Source: Bonsón and Ratkai (2013) and Agostino (2013)

Table I. Metrics for measurement stakeholder' engagement

Factor	Measurement	Expected relationship
Location	According to continent (Bonsón and Flores, 2011), noting 1 in the case of US universities and 2 for European	Positive/ negative
Transparency	Global transparency index developed by Saraite *et al* (2018)	Positive
Size	No. of students (Garde, 2013)	Positive
Academic performance	% of articles indexed in the Science Citation Index Expanded and the Social Science Citation Index	Positive
Activity	No. of publications in the Facebook pages during analyzed period (Haro *et al*., 2016)	Positive/ negative

Source: Own compilation

Table II. Independent variables

Taking all of this into consideration, the proposed model for the dependent variable is the following:

$$E = \alpha + \sum_{i=1}^{84} \sum_{j=1}^{5} \beta_j \chi_{ij} + \mu_i,$$

where α is the constant term, β_j is the vector coefficient that is calculated, $\chi_{i,j}$ represents the variables that influence the information spread and μ_i is the random error, presumably with identical and independent distribution with an average of 0.

4.3 Sample

The sample includes universities in the top 100 of the Academic Ranking of World Universities (ARWU). Universities are ranked according to several indicators of academic or research performance, including alumni and staff winning Nobel Prizes and Fields Medals, highly cited researchers, papers published in Nature and Science, papers indexed in major citation indices, and the per capita academic performance of an institution[1]. Due to its solid and transparent methodology, the ARWU ranking is considered the most influential and widely used international ranking system of its class (Lukman *et al.*, 2010; Garde, 2013; Pavel, 2015; Alma *et al.*, 2016).

From the 100 entities, 9 universities were discarded for not belonging to the analyzed region and seven for not having active Facebook profiles, "active" being defined by the UK Government Cabinet Office (2009) as those with a minimum of three posts per day. The final sample, therefore, comprised of 84 universities. Given the subject of this study, a comparative analysis of the global sample was divided into two samples of 30 and 54 universities corresponding to Europe and the USA, respectively. The differences between the size of both samples did not imply any statistical problem in line with Gibson and Slate (2010), Garde (2013) and Bonsón *et al.* (2014). It is worth noting that to avoid statistical problems, the Mann–Whitney test was used as it was deemed suitable for analyzing unequal samples.

To carry out this study, the Facebook pages of the 84 sampled universities were analyzed. The profile of each Facebook page was found in the web pages of the universities and this link was used to obtain the name of the Facebook profile. In particular, the data were compiled using *ad hoc* development of software for this research, both for data extraction and for its subsequent aggregation. Specifically, the software developed was responsible for retrieving data available from Facebook pages using queries based on Power Query M language to Facebook Graph API. The period of analysis was February 2017.

The analysis of the top European and US universities could provide fresh insights about the trends in the sector and the factors that foster engagement via social media, particularly through Facebook.

5. Results and discussion

5.1 Comparative analysis Europe vs USA

In general terms, US universities are more active on social media than those from Europe, posting an average of 46 posts vs 29 posts per month. It is worth noting that in both cases the number of fans of the Facebook pages is much greater than the number of students enrolled in the university. Hence, it seems that European and US universities have generated online communities that embrace not only students but also other types of stakeholders. Nevertheless, the online community of US universities is even larger than the European institutions.

With respect to interactions generated, the universities in the USA receive a greater number of interactions from its stakeholders than those in Europe. In particular, the number of posts from US universities is almost four-times higher in terms of "likes" and "shares" than their European counterparts. However, in both cases, an average of one commentary per post is received. Thus, it seems that universities' posts encourage mainly clicking actions and do not lead to a deeper dialogic relationship between the users and universities (Figure 1).

Delving further into the 3381 posts analyzed, it is observed that the distribution of posts on the Facebook pages of US universities ranges from 8 posts (Case Western Reserve University in Cleveland) to 187 posts (Baylor College of Medicine in Houston). With respect to the European universities the values fluctuate between 5 posts (Ludwig Maximilians University of Munich) and 89 posts (Manchester University). In relation to the fans, it is worth mentioning that there are three universities (Harvard, Oxford and Cambridge) that have the largest number of followers. In particular, the fans of Cambridge surpass 1m and in the case of Harvard reach nearly 4m. In contrast, Helsinki University has 1.814 fans (Table III).

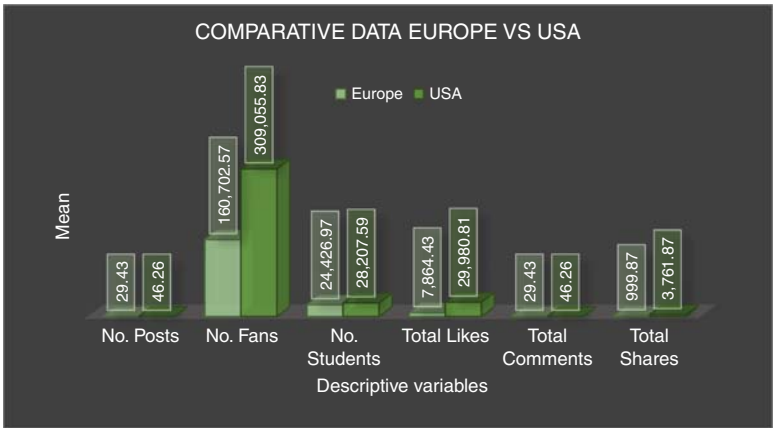

Figure 1.
Activity and interactions: European vs US universities

Location	Variables	Cases	Min.	Max.	Mean	SD
Europe	No. of Posts	30	5	89	29.43	20.00
	No. of Fans	30	1,814	2,299,789	160,702.57	461,170.81
	Total Likes	30	606	53,611	7,864.43	13,330.42
	No. of Posts Liked	30	5	89	29.43	20.00
	Total Comments	30	5	89	29.43	20.00
	No of Posts Commented	30	18	1,873	228.83	381.82
	Total Shares	30	39	8,697	999.87	2,072.67
	No. of Posts Shared	30	5	89	29.43	20
USA	No. of Posts	54	8	187	46.26	32.52
	No. of Fans	54	5,105	3,943,497	309,055.83	545,560.90
	Total Likes	54	457	183,639	29,980.81	35,009.95
	No. of Posts Liked	54	8	187	46.26	32.52
	Total Comments	54	8	187	46.26	32.52
	No. of Posts Commented	54	21	3,601	646.41	621.93
	Total Shares	54	26	17,760	3,761.87	4,313.22
	No. of Posts Shared	54	8	187	46.26	32.52

Source: Own compilation

Table III.
Stakeholders' engagement in universities: descriptive statistics

According to the engagement dimensions (see Table IV), it is observed that the popularity of Facebook pages, measured by the number of "likes" received per post (P), attains the highest scores: obtaining an average of 745 in the case of the USA and 280 for Europe, reaching a maximum of 5370 and 1765 "likes," respectively. The second dimension with the highest score is virality (V) with a mean of 99 "shares" per post in US universities and 35 in European institutions. Finally, the least used factor, the commitment dimension, shows an average of only 16 comments per post in the sample of US universities and 8 in the case of Europe.

These results are in line with those obtained by Gálvez-Rodríguez *et al.* (2018) who find that the level of participation of citizens with the official Facebook profiles of local governments through the popularity measurement is comparatively the highest. This, however, shows a low level of commitment for the effort made. In this sense, the content offered by local governments in Europe is considered interesting and useful, but not enough to share or create debates via comments (Bonsón *et al.*, 2014).

Comparing the three dimensions P, C and V, US entities attain higher results, up to triple, in the case of virality (V) of posts. However, when the LPC is considered, the popularity values (P*) in Europe are almost triple the rates of the USA. A similar result is attained for commitment (C*) where the European values are triple those attained by American universities. Thus, stakeholders from European universities are more willing to push the "like" button, "share" the information posted by these entities, and, according to the results, take part in a dialogue using this social media channel.

5.2 Explanatory analysis

The second phase of this research studied the influence of specific independent variables on the level of online engagement for universities. To this end, a multivariable regression analysis was used. Corroborating linearity of the regression by using Fisher's critical F value ($F = 2.64$; Sig. $= 0.0296$) confirmed the existence of a significant linear relationship between the dependent variable and all the independent variables. However, when the homoscedasticity failed, the model was adjusted using White's robust estimator (Lu and Abeysekera, 2014; Gálvez-Rodríguez *et al.*, 2016).

After confirming the rest of the null hypotheses of the model (normality, independence, and collinearity) and following the aforementioned methodology, a Pearson correlations analysis was conducted. This test revealed significant and positive correlations between the dependent variable and independent variables "size" and "location," and significant negative correlations with "academic performance" and "activity." In contrast, a neutral effect was found in relation to "transparency" and "stakeholders' engagement" via social media (Table V). Regarding the independent variables, it is possible to appreciate the relationship between "location" and "transparency" and "activity."

Table IV. Stakeholders's engagement dimensions in universities: mean values and Mann–Whitney *U*-test for Europe and USA

		Europe				USA				Mann–Whitney
	Variables	Min.	Max.	Mean	SD	Min.	Max.	Mean	SD	*U*-test Z
Popularity	P	19.94	1,765.83	280.11	390.31	7.29	5,370.00	745.22	953.26	−3.883***
	P*	9.69	2,104.34	275.48	457.49	2.93	481.47	95.34	97.57	−1.746*
Commitment	C	1.06	64.59	8.72	13.23	1.10	76.62	16.34	15.51	−3.687***
	C*	0.23	55.88	8.65	12.97	0.05	10.47	2.41	2.30	−2.343**
Virality	V	2.17	271.72	35.09	60.77	1.86	657.78	99.77	129.37	−4.220***
	V*	0.99	236.16	22.74	43.45	0.51	63.58	12.57	14.31	−1.036

Notes: Significant at *$p < 0.1$; **$p < 0.05$; ***$p < 0.01$
Source: own compilation

Despite the correlations found, in all cases the values detected were less than 0.8, and thus, in line with Neter *et al.* (1996), these associations are deemed not be high enough to provoke problems of multicollinearity among the variables in the proposed model.

As a result of the analysis, the explanatory capacity of the resulting model, which was measured using the R^2 formula, was 23 percent. As for the typified regression coefficients which help to value the relative importance of each independent variable in the equation, the following was found (Table VI):

$$E = 298.82 + 142.67 \cdot \text{Location} - 264.67 \cdot \text{Transparency} + 0.007 \cdot \text{Size} - 4.74 \cdot \text{Ac.Performance} - 1.87 \cdot \text{Activity}.$$

In terms of the significance of the variables, four of the five independent factors were found to be significant in the model. In relation to *H1*, location influences engagement ($\beta = 142.6866$; $p < 0.1$), confirming the differences between universities in the USA and Europe. This positive sign indicates that European institutions obtained the highest levels of engagement according to the location classification (Table II), ratifying the descriptive results (Table IV. Values P*, V* and C*). These results could origin from the different management models that exist between the USA and European universities. In this regard, the European model, which follows the stakeholder model, seems to be more successful in attaining greater attention of their stakeholders to participate in their university's social media. Moreover, this finding supports previous studies that state that location is associated with the online communication between an organization and its stakeholders, albeit in the context of a university's web page (Pinto *et al.*, 2009) and the public sector (Sáez *et al.*, 2014).

Transparency (*H2*) is not supported. That is to say, greater transparency does not seem to be an influential factor in the level of engagement ($\beta = -264.6866$; $p > 0.1$). These results are not shared by similar studies (Taylor and Kent, 2014; Haro *et al.*, 2018) that indicate that when the web transparency of the organization itself increases, so does the stakeholders' engagement with the social media of the organization. In line with

	1	2	3	4	5	6
1. Engagement	1					
2. Location	0.2901***	1				
3. Transparency	−0.1690	−0.4596***	1			
4. Size	0.2419**	−0.1289	0.1745	1		
5. Ac. Performance	−0.1847*	−0.1317	−0.0120	0.1123	1	
6. Activity	−0.2831***	−0.2732**	0.1282	−0.1007	0.0727	1

Notes: *$p < 0.1$; **$p < 0.05$; ***$p < 0.01$

Table V. Bivariate correlations for engagement

Model		Coef.	Robust Std. Err.	t
1	(Constant)	298.8189	192.776	1.55
	Location	142.6866	83.09123	1.71*
	Transparency	−264.6866	224.7343	−1.18
	Size	0.0066973	0.0022543	2.97***
	Ac. Performance	−4.744499	1.603741	−2.96***
	Activity	−1.874026	0.8762841	−2.14**
			R^2	0.2297

Notes: *$p < 0.1$; **$p < 0.05$; ***$p < 0.01$

Table VI. Results of regression

Constantinides and Zinck Stagno (2011), the reason for this result could be that for organizations that already enjoy a high degree of web transparency, their stakeholders perceive social media as a secondary communication channel and thus are less interested in engaging in online interactions, as they already have their informative needs met via the universities' websites.

Pertaining to *H3*, it was observed that university size, in terms of the number of enrolled students, was positively related to the engagement index ($\beta = 0.0066973$; $p < 0.01$). This outcome is in accordance with the established hypothesis and previous studies that evidence the positive effect of this factor in greater online engagement (Haro *et al.*, 2016). Therefore, the larger the university's student population, the greater the need for interactions with said universities. This could be because they have greater exposure to public scrutiny, which leads to more attentions, and in turn reactions, to information published in their social media. Likewise, as students are a collective very keen on using social media (Davis *et al.*, 2012; Sutherland *et al.*, 2018) there is a greater probability of obtaining significant interactions in the social media of universities.

With regard to academic performance (*H4*), the factor which is specific to the sector, it has shown to have a negative and significant effect on stakeholders' engagement via Facebook ($\beta = -4.744499$; $p < 0$, 01), not complying with the expected relation in the proposed hypothesis. This variable is one of the most important factors for universities to maintain their place in the rankings and to safeguard their reputations. Nevertheless, the results of this study disagree with those of Rodríguez *et al.* (2013). This could indicate that the mere prestige or reputation received via academic performance, which measure the quality of education and academic results, is not an enough incentive to attract the interest of universities' stakeholders in the information published by such entities via social media.

Finally, it has been shown that the level of activity on social media is a contributing factor in determining the level of engagement obtained by the sampled universities (*H5*). However, it does not comply with the expected relation in the proposed hypothesis. The results concur with Mergel (2013a), Bonsón *et al.* (2014) and Haro *et al.* (2018) who stated that high rates of activity do not necessarily imply greater engagement in social media. On the other hand, the negative relation found differs from the studies that point out that a greater level of commitment is achieved with a higher rate of activity (Zavattaro and Sementelli, 2014). Based on this result, universities should consider the importance of both frequency of posting as well as the relevance on content type.

6. Conclusions and implications

Although European and US universities are of public interest because of their impact on society, they still do not manage to fully involve their stakeholders in their social media. The participation of their stakeholders is fundamentally generated via easy clicking actions ("like" and "share") with the level of commitment obtained, in terms of written feedbacks (comments), being quite low. The fact that all the posts published by universities have been shared, commented or received at least one "like," shows that there is "interest" in what is going on in universities and consequently greater effort must be made in the communication management strategies and resources that universities use in connection with social media.

Delving further into the differences, it has been found that US universities are more active in terms of posting information compared to their European counterparts. With consideration to the size of the online community, both groups of universities are able to reach a wide range of stakeholders, in addition to students, via their social media. This is evidenced by the volume of fans, which is much higher than the number of enrolled students. In this regard, US universities are the better at attracting a larger online community than European universities. Nevertheless, European universities have achieved higher levels of online interactions from their stakeholders. Based on this result, it seems

that universities following the stakeholder model, which is focused on paying greater attention to the requirements of the main stakeholders (Kehm, 2012) are more successful in obtaining greater levels of engagement in social media. In contrast, universities following the Anglo-American model, which is based on control mechanisms and professional management (Flórez *et al.*, 2017), are more successful in generating online community, albeit obtaining lower levels of social media interactions.

With respect to the explanatory analysis, five determinants of online engagement were established. In line with stakeholder theory, two factors should be considered as influencing the level of online engagement in higher education institutions: the location of the university and its academic performance. As to location, a greater level of engagement in European universities has been verified, confirming the descriptive results when considering the number of enrolled students. This makes sense as European universities apply the stakeholder model in their management, focusing all their efforts on satisfying the requirements of their main stakeholders. This research shares the statements of previous studies about the influence of location on the implementation of communication strategies (Bonsón and Flores, 2011; Sáez *et al.*, 2014).

In addition, mere prestige or reputation for academic performance does not ensure a high level of interest in posts published by universities in social media. In this respect, the indication of less than desirable academic performance could make universities place greater effort in social media in order to attain a greater degree of influence among their stakeholders. Thus, the results differ from those of Rodríguez *et al.* (2013) who pointed out that universities were most interested in sharing information about their position in rankings of excellence, expecting positive feedback from their fans.

According to dialogical communication theory, the level of activity on social media has also been an influential factor in the level of stakeholders' engagement. In particular, if the postings on social media are deemed to be too frequent, this can have a demotivating effect on stakeholders' interactions. Hence, in line with previous studies in the public sector that stress the importance of avoiding overwhelming stakeholders with information (Mergel, 2013a; Bonsón *et al.*, 2014; Haro *et al.*, 2016), this paper confirms that similar caution should be taken in the context of universities.

Finally, in line with the theory of legitimacy, the results highlight that larger universities, in terms of enrolled students, are subjected to a greater degree of public scrutiny. Based on the results of this study, they are perceived to be important actors by their stakeholders and consequently, their posts in social media are of interest. Therefore, not only do larger public organizations have greater communication needs in order to improve their public image (Bonsón *et al.*, 2014), this study also adds that their stakeholders are actually more active in the online environment of such organizations, and more specifically in the university's context.

The outcomes of this study can contribute to both the existing literature and practitioners alike. From the academic standpoint, the findings can contribute to the lack of knowledge in the use of social media by online users from the higher education sector. Previous studies concerning higher education have analyzed the level of academic engagement generated via technologies such as Facebook which also facilitates social engagement. In addition, this study adds to the limited literature that specifically examines the motives that stimulate engagement with universities. From a practical point of view and taking into consideration that the sample is composed of the top universities in the world, these findings contribute relevant information about the trends in the sector and can serve as a benchmarking technique for similar organizations in this sector, specifically to help them analyze their position and identify possible improvements.

Universities should not delay in reacting to current information and participation requirements as social media can be used to foster stakeholders' engagement to promote

openness and transparency and to stimulate collaboration and dialogical communication. Thus, community managers should develop future content strategies to encourage participation and to favor attraction and retention of key stakeholders of these institutions. They should also take into account that a simple, inactive Facebook profile does not boost feedback.

Although this study presents valuable findings, it is not without its limitations. The opinions of both the management and staff of universities in relation to the main obstacles and barriers to using social media to enhance stakeholders' participation remains underexplored. On the other hand, it would be fitting to conduct a content analysis in order to identify further strategies that community managers could use to foster and motivate the public to participate in social media. Moreover, the variables analyzed in this study are limited, and therefore, expanding the internal and external factors related to the environment in which they operate could prove fruitful in future studies. For example, in a political context, the mood of the public, frequency and time of posting, and friendship between fans could be some of the factors to consider. Finally, future lines of research should address longitudinal analyses to identify whether stakeholders' online interaction with the universities analyzed has actually attained a dialogic communication over time.

Note

1. www.shanghairanking.com/ARWU

References

Ackerman, J.M. and Sandoval-Ballesteros, I.E. (2006), "The global explosion of freedom of information laws", *Administrative Law Review*, Vol. 58 No. 8, pp. 85-130.

Agostino, D. (2013), "Using social media to engage citizens: a study of Italian municipalities", *Public Relations Review*, Vol. 39 No. 3, pp. 232-234.

Alma, B., Coşkun, E. and Övendirelic, E. (2016), "University ranking systems and proposal of a theoretical framework for ranking of Turkish Universities: a case of management departments", *Social and Behavioral Sciences*, Vol. 235, November, pp. 128-138.

Ballera, M., Lukandu, I.A. and Radwan, A. (2013), "Collaborative problem solving using public social network media: analyzing student interaction and its impact to learning process", *International Journal of Digital Information and Wireless Communications*, Vol. 3 No. 1, pp. 25-42.

Benneworth, P. (2013), *University Engagement with Socially Excluded Communities*, Springer, Netherlands.

Benson, V. and Morgan, S. (2018), "Measuring the social impact: how social media affects higher education institutions", in Mehdi Khosrow-Pour, D.B.A. (Ed.), *Social Media Marketing: Breakthroughs in Research and Practice*, IGI Global, USA, pp. 1167-1184.

Bonsón, E. and Flores, F. (2011), "Social media and corporate dialogue: the response of global financial institutions", *Online Information Review*, Vol. 35 No. 1, pp. 34-49.

Bonsón, E. and Ratkai, M. (2013), "A set of metrics to assess stakeholder engagement and social legitimacy on a corporate Facebook page", *Online Information Review*, Vol. 37 No. 5, pp. 787-803.

Bonsón, E., Royo, S. and Ratkai, M. (2014), "Facebook practices in Western European municipalities: an empirical analysis of activity and citizens' engagement", *Administration and Society*, Vol. 4 No. 2014, pp. 1-28, doi: 10.1177/0095399714544945.

Cancelo Sanmartín, M. and Almansa Martínez, A. (2013), "Estrategias comunicativas en redes sociales. Estudio comparativo entre las Universidades de España y México", *Historia y Comunicación Social*, Vol. 18, December, pp. 423-435.

Cerrillo-i-Martínez, A. (2012), "La contribución de las TIC a la mejora de la transparencia administrativa", *ARBOR Ciencia, Pensamiento y Cultura*, Vol. 188 No. 756, pp. 707-724.

Chawada, B.L., Choksi, R.P., Choksi, S.B., Dari, U.T., Pawar, A.B. and Bansal, R.K. (2013), "Addiction to social networking websites and its effect on life course of college going students in Surat city", *National Journal of Community Medicine*, Vol. 1 No. 2, pp. 174-175.

Constantinides, E. and Zinck Stagno, M.C. (2011), "Potential of the social media as instruments of higher education marketing: a segmentation study", *Journal of Marketing for Higher Education*, Vol. 21 No. 1, pp. 7-24.

Cuadrado-Ballesteros, B., Frías-Aceituno, J. and Martínez-Ferrero, J. (2014), "The role of media pressure on the disclosure of sustainability information by local governments", *Online Information Review*, Vol. 38 No. 1, pp. 114-135.

Dabbagh, N. and Reo, R. (2011), "Impact of Web 2.0 on higher education", in Gray, R., Surry, D. and Stefurak, J. (Eds), *Technology Integration in Higher Education: Social and Organizational Aspects*, IGI Global, Hershey, PA, pp. 174-187.

Davis, C.H. III, Deil-Amen, R., Rios-Aguilar, C. and Canche, M.S.G. (2012), "Social media in higher education: a literature review and research directions", available at: https://works.bepress.com/hfdavis/2/ (accessed March 20, 2019).

De Aguilera, M., Farias, P. and Baray-Var Fernández, A. (2010), "La comunicación universitaria: modelos, tendencias y herramientas para una nueva relación con sus públicos", *Revista Icono14*, Vol. 8 No. 2, pp. 90-124.

Deegan, C. and Samkin, G. (2009), *New Zealand Financial Accounting*, McGraw-Hill, Sydney.

Dijkmans, C., Kerkhof, P. and Beukeboom, C.J. (2015), "A stage to engage: social media use and corporate reputation", *Tourism Management*, Vol. 47, April, pp. 58-67.

Donaldson, T. and Preston, L.E. (1995), "The stakeholder theory of the corporation: concepts, evidence and implications", *Academy of Management Review*, Vol. 20 No. 1, pp. 65-91.

Easa, N.F. (2019), "Social media strategies and students' satisfaction at egyptian universities", *International Journal of Customer Relationship Marketing and Management*, Vol. 10 No. 1, pp. 1-16.

European Commission (2003), *"The Role of the Universities in the Europe of Knowledge", COM (2003) 58 Final*, European Commission, Brussels.

Ferrer, J. and Morris, L. (2013), "Engaging élitism: the mediating effect of work engagement on affective commitment and quit intentions in two Australian University Groups", *Higher Education Quarterly*, Vol. 67 No. 4, pp. 340-357.

Flórez, J.M., López, M.V. and López, A.M. (2017), "Transparency and its determinants at Colombian universities", *Higher Education Research and Development*, Vol. 36 No. 4, pp. 674-687.

Freeman, R.E. (1984), *Strategic Management: A Stakeholder Approach*, Pitman Press, Boston, MA.

Gallego-Alvarez, I., Rodríguez-Domínguez, L. and García-Sánchez, I.M. (2011), "Information disclosed online by Spanish universities: content and explanatory factors", *Online Information Review*, Vol. 35 No. 3, pp. 360-385.

Gálvez-Rodríguez, M.M., Caba-Pérez, C. and López-Godoy, M. (2016), "Drivers of Twitter as a strategic communication tool for non-profit organizations", *Internet Research*, Vol. 26 No. 5, pp. 1052-1071.

Gálvez-Rodríguez, M.M., Haro-de-Rosario, A. and Caba-Pérez, C. (2018), "Improving citizens' online engagement via community managers: an explanatory study", *Information, Communication and Society*, Vol. 21 No. 10, pp. 1402-1418.

Garde, R. (2013), "Revelación online de información sobre Responsabilidad Social universitaria: Propuesta de un modelo e incentivos de divulgación", Doctoral dissertation, University of Granada, Granada.

Gibson, A. and Slate, J. (2010), "Student engagement at two-year institutions: age and generational status differences", *Community College Journal of Research and Practice*, Vol. 34 No. 5, pp. 371-385.

Girotto, M., Mundet, J. and Llinás, X. (2013), "University strategy: is it a matter of quality, managerialism and political/financial strings?", *Revista de Educación*, Vol. 361, Mayo-Agosto, pp. 95-116.

Haro, A., Sáez, A. and Caba, M.C. (2016), "The use of facebook to promote engagement with local governments in spain", in Sobaci, M.Z. (Ed.), *Social Media and Local Governments, Public Administration and Information Technology*, Springer, International Publishing Switzerland, Cham, pp. 219-241.

Haro, A., Sáez, A. and Caba, M.C. (2018), "Using social media to enhance citizen engagement with local government: Twitter or Facebook?", *New Media and Society*, Vol. 20 No. 1, pp. 29-49.

Hazelkorn, E. (2008), "Learning to live with league tables and ranking: the experience of institutional leaders", *Higher Education Policy*, Vol. 21 No. 2, pp. 193-215.

Jensen, M.C. and Meckling, W.H. (1976), "Theory of the firm: managerial behavior, agency costs and ownership structure", *Journal of Financial Economics*, Vol. 3 No. 4, pp. 305-360.

Jongbloed, B., Enders, J. and Salerno, C. (2008), "Higher education and its communities: interconnections, interdependencies and a research agenda", *Higher Education*, Vol. 56 No. 3, pp. 303-324.

Karpinski, A.C., Kirschner, P.A., Ozer, I., Mellott, J.A. and Pchowo, P. (2013), "An exploration of social networking site use, multitasking, and academic performance among United States and European university students", *Computers in Human Behavior*, Vol. 29 No. 3, pp. 1182-1192.

Kehm, B. (2012), *La nueva gobernanza en los sistemas universitarios*, Barcelona, Octaedro.

Kent, M. and Taylor, M. (1998), "Building dialogic relationships through World Wide Web", *Public Relations Review*, Vol. 24 No. 3, pp. 321-334.

Kiat-Kok, S., Douglas, A. and McClelland, B. (2008), "Shifting higher education management: examining the organisational changes among various UK university types", *The International Journal of Learning*, Vol. 15 No. 4, pp. 227-239.

Leydesdorff, L. and Shin, J. (2011), "How to evaluate universities in terms of their relative citation impacts: fractional counting of citations and the normalization of differences among disciplines", *Journal of the American Society for Information Science and Technology*, Vol. 62 No. 6, pp. 1146-1155.

Liu, Y. and Tsai, Y. (2012), "The impact of social networking services (SNS) on college students' social relationship and private life", *International Journal of Arts and Commerce*, Vol. 1 No. 8, pp. 33-44.

Lu, Y. and Abeysekera, I. (2014), "Stakeholders' power, corporate characteristics, and social and environmental disclosure: evidence from China", *Journal of Cleaner Production*, Vol. 64, February, pp. 426-436.

Lukman, R., Krajnc, D. and Glavic, P. (2010), "University ranking using research, educational and environmental indicators", *Journal of Cleaner Production*, Vol. 18 No. 7, pp. 619-628.

Mann, H.B. and Whitney, D.R. (1947), "On a test of whether one of 2 random variables is stochastically larger than the other", *Annals of Mathematical Statistics*, Vol. 18 No. 1, pp. 50-60.

Men, L.R. (2012), "CEO credibility, perceived organizational reputation, and employee engagement", *Public Relations Review*, Vol. 38 No. 38, pp. 171-173.

Mergel, I. (2013a), "A framework for interpreting social media interactions in the public sector", *Government Information Quarterly*, Vol. 30 No. 4, pp. 327-334.

Mergel, I. (2013b), "Social media adoption and resulting tactics in the US federal government", *Government Information Quarterly*, Vol. 30 No. 2, pp. 123-130.

Messias, I., Morgado, L. and Barbas, M. (2015), "Students' engagement in distance learning: creating a scenario with LMS and Social Network aggregation", paper presented at the 2015 International Symposium on Computers in Education (SIIE), Setubal, November 25–27, available at: https://ieeexplore.ieee.org/document/7451646 (accessed March 11, 2017).

Michavila, F. and Martinez, J. (2018), "Excellence of universities versus autonomy, funding and accountability", *European Review*, Vol. 26 No. S1, pp. 48-56.

Mouri, D. and Ali Arshad, C. (2016), "Social networking in Bangladesh: boon or curse to academic engagement?", *Management and Marketing. Challenges for the Knowledge Society*, Vol. 11 No. 1, pp. 380-393.

Musselin, C. (2006), "Are universities specific organizations", in Krucken, G., Kosmutzky, A. and Torka, M. (Eds), *Towards a Multiversity? Universities between Global Trends and National Traditions*, Transcript, Bielefeld, pp. 63-84.

Musselin, C. (2013), "Redefinition of the relationships between academics and their university", *High Education*, Vol. 65 No. 1, pp. 25-37.

Nachar, N. (2008), "The Mann-Whitney U: a test for assessing whether two independent samples come from the same distribution", *Tutorials in Quantitative Methods for Psychology*, Vol. 4 No. 1, pp. 13-20.

Neter, J., Kutner, M.H., Nachtsheim, C.J. and Wasserman, W. (1996), *Applied Linear Statistical Models*, 3rd ed., McGraw-Hill Companies, Irwin, Chicago, IL.

Paniagua, F.J. and Gómez, B.J. (2012), "Hacia la comunicación 2.0. El uso de las redes sociales por parte de las universidades españolas", *Icono 14. Revista de Comunicación y Tecnologías Emergentes*, Vol. 10 No. 3, pp. 346-364.

Pavel, A. (2015), "Global university rankings – a comparative analysis", *Procedia Economics and Finance*, Vol. 26, pp. 54-63, available at: www.sciencedirect.com/science/article/pii/S2212567115008382?via%3Dihub

Peranginangin, Y. and Alamsyah, A. (2015), "Social engagement analysis in online conversation of Indonesia higher education case study: Telkom University", paper presented at the 3rd International Conference on Information and Communication Technology (ICoICT), Bali, May 25–27, available at: https://ieeexplore.ieee.org/document/7231427 (accessed March 15, 2017).

Pinto, M., Guerrero, D., Fernández-Ramos, A. and Doucet, A.V. (2009), "Information provided by Spanish university web pages on their assessment and quality processes", *Scientometrics*, Vol. 81 No. 1, pp. 265-289.

Ray, S., Kim, S.S. and Morris, J.G. (2014), "The central role of engagement in online communities", *Information Systems Research*, Vol. 25 No. 3, pp. 528-546.

Reverte, C. (2009), "Determinants of corporate social responsibility disclosure ratings by Spanish listed firms", *Journal of Business Ethics*, Vol. 88 No. 2, pp. 351-366.

Roblyer, M., McDaniel, M., Webb, M., Herman, J. and Witty, J.V. (2010), "Findings on Facebook in higher education: a comparison of college faculty and student uses and perceptions of social networking sites", *The Internet and Higher Education*, Vol. 13 No. 3, pp. 134-140.

Rodríguez, M.P., Garde, R. and López, A.M. (2013), "Online disclosure of corporate social responsibility information in leading Anglo-American Universities", *Journal of Environmental Policy and Planning*, Vol. 15 No. 4, pp. 515-575.

Sáez, A., Haro, A. and Caba, C. (2014), "A vision of social media in the Spanish smartest cities", *Transforming Government: People, Process and Policy*, Vol. 8 No. 4, pp. 521-544.

Saraite, L., Haro, A., Gálvez, M.M and Caba, C. (2018), "Exploring determining factors of web transparency in the world's top universities", *Spanish Accounting Review*, Vol. 21 No. 1, pp. 63-72.

Sashi, C.M. (2012), "Customer engagement, buyer-seller relationships, and social media", *Management Decision*, Vol. 50 No. 2, pp. 253-272.

Schroeder, A., Minocha, S. and Schneidert, C. (2010), "The strengths, weaknesses, opportunities and threats of using social software in higher and further education teaching and learning", *Journal of Computer Assisted Learning*, Vol. 26 No. 3, pp. 159-174.

Selwyn, N. (2012), "Social media in higher education", *The Europa World of Learning*, Vol. 1, pp. 1-10, available at: https://pdfs.semanticscholar.org/e661/e51ce237ded12da9b1ef126a842663b8fb53.pdf (accessed September 20, 2018).

Serrano, C., Rueda, M. and Portillo, P. (2009), "Factors influencing e-disclosure in local public administrations", *Environment and Planning C*, Vol. 27 No. 2, pp. 355-378.

Sheskin, D. (2011), *Handbook of Parametric and Nonparametric Statistical Procedure*, 5th ed., Academic Press, Boca Raton, FL.

Snead, J.T. (2013), "Social media use in the US Executive branch", *Government Information Quarterly*, Vol. 30 No. 1, pp. 56-63.

Spence, M. (1973), "Job market signaling", *Quarterly Journal of Economics*, Vol. 87 No. 3, pp. 355-374.

Suchman, M.C. (1995), "Managing legitimacy: strategic and institutional approaches", *Academy of Management Review*, Vol. 20 No. 3, pp. 571-610.

Sutherland, K., Davis, C., Terton, U. and Visser, I. (2018), "University student social media use and its influence on offline engagement in higher educational communities", *Student Success*, Vol. 9 No. 2, pp. 13-24.

Taylor, M. and Kent, M.L. (2014), "Dialogic engagement: clarifying foundational concepts", *Journal of Public Relations Research*, Vol. 26 No. 5, pp. 384-398.

Times Higher Education Rankings (2017), The World University Rankings, available at: www.timeshighereducation.com/ (accessed April 15, 2017).

UK Government Cabinet Office (2009), *Template Twitter Strategy for Government Departments*, UK Government Cabinet Office, London.

Yeo, M.M.L. (2014), "Social media and social networking applications for teaching and learning", *European Journal of Science and Mathematics Education*, Vol. 2 No. 1, pp. 53-62.

Zavattaro, S.M. and Sementelli, A.J. (2014), "A critical examination of social media adoption in government: introducing omnipresence", *Government Information Quarterly*, Vol. 31 No. 2, pp. 257-264.

Zimmerman, D.W. (1987), "Comparative power of Student t test and Mann-Whitney U test for unequal sample sizes and variances", *Journal of Experimental Education*, Vol. 55 No. 3, pp. 171-174.

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