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Twitter's contribution to improving strategic communication in Latin American universities

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Abstract
An analysis was performed to identify the key points for achieving effective strategic communication in universities via Twitter. An evaluation and comparison was made of how 263 universities used Twitter by looking at their followers, tweets, retweets, replies and hashtags. The main purposes for its use were identified as boosting communication among members of its community and disseminating institutional information. Many Latin American universities are active on Twitter, but they need community managers to manage their official profiles to optimise communication and to increase their reach by making the most of their users' activity.

Keywords
community manager, communication, promotion, Twitter, universities

Contribución de Twitter a la mejora de la comunicación estratégica de las universidades latinoamericanas

Resumen
Se analizan las claves para una comunicación estratégica eficaz de las universidades en Twitter. Se evalúa y compara el uso que 263 universidades hacen de Twitter mediante susseguidores, tweets, retweets, replies y hashtags. *Así se obtienen las tendencias prioritarias de su uso para dinamizar la comunicación entre los miembros de su comunidad y difundir información institucional. Muchas universidades iberoamericanas tienen presencia activa en Twitter, pero necesitan a un* community manager *para gestionar sus perfiles oficiales, optimizar su comunicación e incrementar su alcanceaprovechando la actividad de sus usuarios.*

Palabras clave
community manager, *comunicación, promoción, Twitter, universidades*

1. Introduction: Twitter in the university environment

Web 2.0 constitutes an ecosystem in which any user can contribute and share content in a creative way (Forkosh-Baruch & Hershkovitz, 2011; Grosseck & Holotescu, 2010). It has become a setting for teaching-learning and makes an interesting contribution to the creation of knowledge (Tilfarlioglu, 2011). Universities view Web 2.0 as a valuable source of information and increasingly take part in social networks with the members of their educational community (Chamberlin & Lehmann, 2011; Hergüner, 2011). Most of them keep their profiles up-to-date and interact with members of their community, thus enabling quick and direct feedback. This contributes to improving their corporate image (Kierkegaard, 2010), to optimising their service strategies and to encouraging participation in the educational community.

Social networks are an invitation to universities to integrate new social technologies and adopt them as indispensable resources (Griffith & Liyanage, 2008). Twitter, Facebook, YouTube and other networks allow virtual encounters to acquire a social value (Agarwal & Mital, 2009). Undeniably, they are communication channels (Boyd & Ellison, 2007; Linvill, McGee & Hicks, 2012; Alloway & Alloway,

2012), and they are increasingly used in the university environment (Roblyer et al., 2010; Kietzmann et al., 2011; Guzmán, Del Moral & González, 2012). The social practices of university students are linked to the use of networks (Madhusudhan, 2012); they are aware of their usefulness (Haneefa & Sumitha, 2011) and 76% of them use these networks to complete tasks and do activities with their fellow students (Del Moral & Villalustre, 2012). Furthermore, lecturers use them to interact with their students (Junco, Heiberger & Loken, 2011).

In fact, Twitter facilitates interaction between millions of users who have an account, by following each other's activity (Ebner, Lienhardt, Rohs & Meyer, 2010). Some of the main advantages are: the use of tweets – short posts that have a maximum of 140 characters – (Chamberlin & Lehmann, 2011; Veletsianos, 2011) that reflect personal opinions, which can include links, photos, videos and hashtags (words or phrases beginning with #) for discussing different issues or events that emerge spontaneously between users (Huang, Thornton & Efthimiadis, 2010). Other basic elements are: retweets, following, followers and replies. Tweets enable people to interact online by replying to a user that tweets; sharing a tweet produces a retweet and the information spreads virally (Boyd, Golder & Lotan, 2010; Chamberlin & Lehmann, 2011). 'Following' are the users that a particular user follows, and 'followers' are the users that follow a particular user.

Dabbagh and Kitsantas (2012), Forkosh-Baruch and Hershkovitz (2011), Özsoy (2011), and Shafique, Anwar and Bushra (2010) support the idea of using Twitter for exchanging information, communicating and interacting with students. Özsoy (2011) asserts that it allows users to come closer together and to discuss ideas because interaction is so fast. Ebner et al. (2010), and Stieger and Burger (2010) recognise that, in the university environment, it is useful for sharing information and fostering discussions among students who are interested in specific issues (Rinaldo, Tapp & Laverie, 2011). It encourages learning by getting the community to participate (Rampai & Sopeerak, 2011), and promotes exchanges of opinions and experiences among people in different groups and projects, which can be rewarding (Rinaldo et al., 2011). Hashtags enable conferences, seminars, etc. to be transmitted in real time, surveys to be conducted and questions to be addressed directly to speakers.

Twitter helps to disseminate information about conferences, courses, grants, etc., keeps users up-to-date (Fields, 2010; Milstein, 2009), encourages them to take part in forums, conferences and seminars (Grosseck & Holotescu, 2010), and invites the educational community to take part in social activities (Atkinson, 2009). It is useful for sharing promotional campaigns linked to the capacity for territorial consolidation of some universities, to advertise the courses on offer, to improve their competitiveness (for example, the Campus of Excellence in Spain), to attract new students, to publish the services on offer, to provide information about their cultural programme, and so on (Fields, 2010; Milstein, 2009; Mistry, 2011).

The study presented here firstly identified the two main purposes of Twitter use by Latin American universities: a) to foster the dissemination of information of interest to the university community and b) to facilitate communication and interaction among its members. It secondly identified the key points of how it could be turned into a useful tool for creating an effective communication strategy. To begin with, this article covers some general considerations about Twitter use in an academic environment and the methods employed by university communities to take advantage of it, both to encourage members' participation and also to improve their corporate image. It then goes on to

present the empirical study, whose multivariate analysis enabled the evaluation and comparison of Twitter use by 263 Latin American universities in the Webometrics ranking (Prieto, 2012), all of which had active official accounts.

2. Empirical study: methodology

The focus of this study was quantitative and the objectives were: 1) to describe the diversity of institutional uses of Twitter made by the sample of 263 Latin American universities in the Webometrics ranking (Prieto, 2012); and 2) to identify the opportunities that Twitter offers them for raising the visibility of the university as an academic institution and for promoting the sharing of information, experiences and activities among members of the university community.

2.1. Procedure and data collection

The data were collected from the Internet in a similar way to the procedure used by Bae & Lee (2012) in their research on Twitter use in organisations. In other words, relevant data were collected from the tweets, retweets and replies – taken as indicators – in the official Twitter accounts/profiles of each university, hence the number of followers that each university had and the number of users that each university followed were measured.

Two web analytics tools were used, TweetReach and TweetStats. TweetReach, which specialises in measurements on each user's Twitter account, was used to count the number of tweets and replies. TweetStats compiles the tweets in each user's account, and also the hashtags and tweets in their official accounts. They were scored from 1 to 5 according to the reach of each tweet (Likert scale: 1 = very low reach and 5 = very high reach). Subsequently, these tweets were classified to identify their priorities: consolidation of their presence, reinforcement of their corporate reputation and brand image, increase in communication and interaction among the members of the educational community, and so on. The aim of doing this was to infer the opportunities that Twitter presence and activity offered to Latin American universities.

The following variables were defined in order to categorise the universities in the sample:

(a) Variables relating to the context of the universities: 1) country; 2) age; 3) number of students enrolled; 4) ownership

(b) Variables relating to the universities' Twitter presence and activity: 1) followers; 2) following; 3) tweets; 4) replies.

The data were collected by means of associating tags relating to the defined categories, with the subsequent classification of tweets by each university during the period studied (January to March 2012). A descriptive analysis of the level of Twitter use by each university in the sample was performed on the basis of these data. Subsequently, multivariate techniques, such as linear regression, were used to identify the relationship between variables, and cluster analysis was used to classify

Twitter use, taking account of the tendencies of the followers of the university accounts according to the level of association between variables. For this analysis, Ward's method was considered for adjusting the data and evaluating the squared Euclidean distance between clusters. Finally, Pearson's Chi-squared statistic was applied in order to study the dependence of the variables: number of students, tweets and followers. The estimated level of confidence was 95%. The statistical analysis software used was SPSS (version 18).

2.2. Sample

The study sample was made up of the 263 Latin American universities listed in the Webometrics ranking (Prieto, 2012), and they were grouped according to the defined variables:

1) Country: Spain (29.3%) and Brazil (19.8%) accounted for 49.1% of the distribution of the universities in the sample by country (Table 1). The remaining percentage was shared between Mexico (7.2%), Argentina (6.1%), Colombia (6.1%), Chile (5.3%) and the Antilles, Bolivia, Costa Rica, Cuba, Ecuador, El Salvador, Guatemala, Honduras, Nicaragua, Panama, Paraguay, Peru, Portugal, Puerto Rico, the Dominican Republic, Uruguay and Venezuela (together accounting for 26.2%).

Country	Number	Percentage	Cumulative percentaje
Antilles	1	0,4	0,4
Argentina	16	6,1	6,5
Bolivia	4	1,5	8,0
Brazil	52	19,8	27,8
Chile	14	5,3	33,1
Colombia	16	6,1	39,2
Costa Rica	7	2,7	41,8
Cuba	1	0,4	42,2
Ecuador	8	3,0	45,2
El Salvador	3	1,1	46,4
Spain	77	29,3	75,7
Guatemala	2	0,8	76,4

Country	Number	Percentage	Cumulative percentaje
Honduras	7	2,7	79,1
Mexico	19	7,2	86,3
Nicaragua	5	1,9	88,2
Panama	5	1,9	90,1
Paraguay	4	1,5	91,6
Peru	7	2,7	94,3
Portugal	4	1,5	95,8
Puerto Rico	3	1,1	97,0
Dominican R.	1	0,4	97,3
Uruguay	2	0,8	98,1
Venezuela	5	1,9	100,0
Total	263	100,0	100,0

Table 1. Distribution of the universities by country. Source: Own elaboration.

2) Age: a) under 20 years (16.8%); b) 21-40 years (23.3%); and c) over 40 years (59.9%). Universities over 100 years old formed the biggest group, with a mean age of 130 years (standard deviation = 165). The youngest universities were the Federal University of Latin American Integration (UNILA) (3 years), the Technical University of Costa Rica (UTCR) and the International University of La Rioja (UNIR) (5 years), and the oldest were the University of Salamanca and the University of Coimbra (795 and 723 years, respectively).

The Spanish universities that were less than 40 years old made up the biggest group, together with the Brazilian universities that were more than 40 years old (Table 2), and the Argentinean, Colombian and Mexican universities.

Country	Ownership		Age		
	Public	Private	<20 years	21-40 years	>41 years
Antilles	1	0	0	0	1
Argentina	14	2	3	3	10
Bolivia	3	1	0	0	4
Brazil	45	7	5	2	45
Chile	9	5	0	6	8
Colombia	9	7	1	2	13
Costa Rica	5	2	1	3	2
Cuba	1	0	0	0	1
Ecuador	4	4	0	1	7
El Salvador	1	2	0	1	2
Spain	50	27	31	24	22
Guatemala	0	2	0	0	2

Country	Ownership		Age		
	Public	Private	<20 years	21-40 years	>41 years
Honduras	3	4	1	4	2
Mexico	**15**	4	0	5	**14**
Nicaragua	3	2	0	2	3
Panama	2	3	1	3	1
Paraguay	3	1	0	2	2
Peru	3	4	0	1	6
Portugal	4	0	0	1	3
Puerto Rico	3	0	0	0	3
Dominican Republic	0	1	0	1	0
Uruguay	1	1	1	0	1
Venezuela	4	1	0	0	5

Table 2. Distribution of the universities by ownership and age. Source: Own elaboration.

3) Ownership (public or private): Of the universities in the study, 69.6% were public and the rest (30.4%) were private (Table 2). The majority of the public universities in the study were in Spain (50), followed by Brazil (45), Mexico (15) and Argentina (14). Similarly, the majority of the private universities were in Spain (27), Brazil (7) and Colombia (7).

4) Number of students enrolled: Three numerical ranges were established: a) fewer than 20,000 (56.6%); b) 20,001-40,000 (26.2%); and c) more than 40,000 (17.2%). The mean value for the number of enrolled students was 38,226 (standard deviation = 44,263). The University of Buenos Aires had the highest number of students (316,050), followed by the National Autonomous University of Mexico (UNAM) (290,000). The institutions with the lowest number of students were the University Abat Oliba (CEU) (782) and the Catholic University Santa Teresa de Jesús of Ávila (Spain) (758).

3. Results

3.1. Descriptive data for the sample

Of the universities in the study, 93.2% had official Twitter accounts, and all of them had at least three accounts. In fact, the universities had a mean of 11 Twitter accounts (standard deviation = 6.90). The universities with the highest number of profiles were: the National University of Distance Education (UNED, Spain) (27), the Technical University of Valencia (UPV) (25) and the University of Antioquia in Colombia (25). The universities with the lowest number of profiles were: the Autonomous University

of Chiriquí (Panama), the *Universidad Abierta Interamericana* (Argentina) and the University of Costa Rica, which had only one account each. In every case, one profile was taken as the official account, and all the other profiles were considered secondary accounts.

The universities with the highest number of profiles were in Colombia, the Dominican Republic, Brazil and Chile (Table 3). The highest number of tweets was recorded in universities in El Salvador, Venezuela, the Dominican Republic and Chile. The accounts most followed were those of universities in Venezuela, Chile, Colombia and Peru. And the highest number of followers was found in universities in Venezuela, Chile, Mexico and Colombia.

Countries	Profiles		Following	
Antilles	5	2.529	1.042	2.300
Argentina	7	1.289	256	2.517
Bolivia	.	.	.	0
Brazil	12	2.193	453	6.376
Chile	12	2.829	1.613	11.453
Colombia	15	2.220	1.385	7.435
Costa Rica	5	938	278	2.636
Cuba	.	.	.	0
Ecuador	8	1.708	123	1.401
El Salvador	9	6.388	342	3.882
Spain	9	1.531	642	3.064
Guatemala	5	1.893	96	3.045

Countries	Profiles		Following	
Honduras	4	861	4	1.327
Mexico	10	2.153	929	11.006
Nicaragua	4	92	13	309
Panama	3	797	92	1.012
Paraguay	4	829	149	430
Peru	8	1.369	1.204	4.350
Portugal	8	320	406	1.378
Puerto Rico	3	1.338	644	3.123
Dominican Republic	13	3.641	44	5.112
Uruguay	.	.	.	0
Venezuela	10	6.052	2.967	13.057

Table 3. Distribution of the universities by country and by Twitter indicators.
Source: Own elaboration.

The most Twitter activity came from universities in Chile, Colombia and Venezuela. There was a lack of activity from universities in Bolivia, Cuba and Uruguay. It was evident that the universities' activity on Twitter was very uneven, as inferred by the indicators studied:

1) Followers. The mean value was 13,104 (standard deviation = 27,924.1). The University of Chile had the highest number of followers (119,100), followed by the National Autonomous University of Mexico (UNAM) (111,377). Some universities had hardly any followers, such as Comillas Pontifical University (Spain) and the Autonomous University of Chiriquí (UNACHI, Panama).

2) Following. The mean value was 253 accounts that the official profiles of the universities in the sample were following (standard deviation = 425.9). The maximum values were reached by the University of Granada (14,015), and then the Central University of Venezuela (12,400). The universities following the lowest number of accounts were the Pontifical Catholic University of Minas Gerais (PUC-MG) (Brazil) and the Pontifical Xaverian University (Colombia).

3) Tweets. The universities that had the highest number of tweets were the Pontifical Catholic University of São Paulo (PUC-SP) (Brazil) (26,032), and the Central University of Venezuela (UCV, 12,087),

and the universities that had the lowest number of tweets were Ramon Llull University (URL, Spain) and the Pontifical Xaverian University (Colombia). The mean number of tweets was 2,078 (standard deviation = 2,695.8).

4) Replies. The mean number of replies received by the universities was 9 (standard deviation = 4.8). The universities that generated the highest number of replies were the University of Barcelona (38) and the University of the Sinos Valley (UNISONOS, Brazil), the *Corporación Universitaria Minuto de Dios* (Colombia) and the University of Panama (37 each); and those that generated the least replies were the Federal University of Espirito Santo (Brazil), the Technical University of Madrid (UPM) and Jaume I University in Castellón (Spain), with only 1 reply each.

5) Hashtags for disseminating their services. The universities generated the most hashtags for libraries (96.1%), calls of various types (94.4%), invitations and promotions of their services (93.0%), descriptions of their corporate image (93.0%) and news (91.4%).

6) Hashtags for encouraging communication. Of the topics tweeted by the universities, 100% of them were aimed at the students and 69.3% were tweets by lecturers.

3.2. Institutional Twitter use

Based on the descriptive data for the sample, and the data obtained from the user accounts, the pertinent contrasts were performed and following results were obtained:

Indicators of Twitter activity	Mean	Standard deviation	Number of universities
Followers	13.104	27.924,10	245
Following	253	425,9	245
Tweets	2.078	2.695,80	245
Replies	9	4,8	245

Table 4. Summary of activity in the accounts of the universities studied.
Source: Own elaboration, based on Twitter (2012).

a) Twitter, a tool for communicating with members of the educational community

A high level of standard deviation was found in Twitter activity (Table 4), which demonstrated an uneven level of participation by the universities, and although not all of them tweeted, many universities used it as a communication tool based on the participation of its users.

There was a direct relationship between the position occupied by the universities in the Webometrics ranking and their use of Twitter. Occupying the highest positions in this ranking implied a higher number of tweets and of Twitter accounts. It was observed that the universities at the top of the ranking used Twitter the most (the correlation of the position was significant for $p < 0.05$, number of profiles 0.204; followers 0.169).

The linear regressions indicated that there was no direct relationship ($p > 0.05$) between the age of the universities and their presence on Twitter. The relationship between the number of students and the number of profiles and followers was significant (p-value = 0.000) (F = 20.005). Their correlation was moderate for all the variables, although there was a greater influence on the relationship between age and the number of accounts (r-Pearson = 0.165), and the relationship between the number of students with the number of followers (r-Pearson = 0.412) and with the tweets (0.147).

It was shown that the oldest universities used Twitter the most and that those with more students had more followers and more tweets. In general, universities followed other users to find out about their topics and tweets. Their presence on Twitter and the communication that was generated with their community was growing, although not in all the universities.

b) Participation of the university community in online conversations via tweets

The mean number of tweets by the universities during the study period was 2,078, according to the number of tweets shown in each of their profiles. This explained how Twitter encouraged the university community to participate in their accounts.

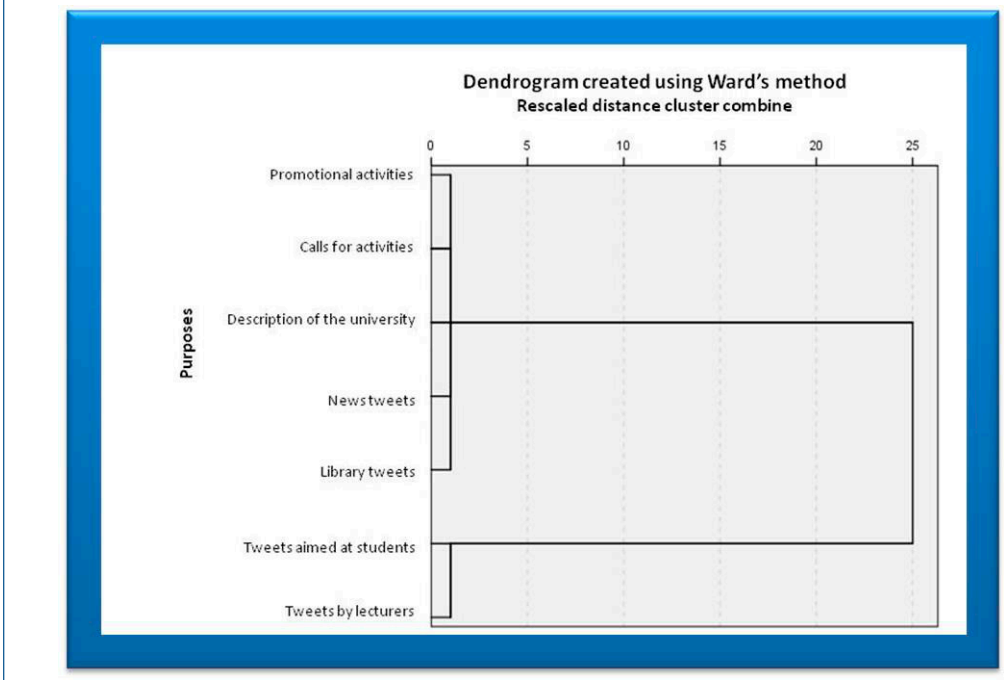

Figure 1. Dendrogram of tweet purposes. Source: Own elaboration

c) Purposes of Twitter use by universities

Twitter was the social network most used by the universities. A mean of 13,104 followers followed the universities' tweets.

An analysis of the hashtags allowed the purposes of Twitter use to be broken down into two main categories (Figure 1).

After grouping together the hashtags tweeted by the university, a cluster analysis was performed on the 231 valid cases using Ward's method to measure the squared Euclidean distance between clusters, and two clusters were obtained that defined two macro purposes:

1. To maintain the brand image of the university: promotion and communication

- Invitations to workshops, forums, etc.
- Calls for activities within the university.
- Topics connected with the library.
- Dissemination of promotional campaigns for services.
- Description of the corporate image of the university.

2. To foster interaction between the university and its educational community

- Tweets aimed at students.
- Dissemination of topics tweeted by lecturers.

4. Discussion

Although this social media tool and its measurements provided sources of reliable data, its usefulness depended on how the universities used it to improve the promotion of their services, by targeting not only the educational community, but also society in general.

Twitter is certainly an alternative means of communication for universities, but it will not be an effective one unless a protocol for operational strategies is created in order to maintain their presence on social networks. Hence, it cannot yet be reliably evaluated as an indicator of quality.

Without doubt, Twitter has considerable advantages, given that it facilitates flexible, entertaining and motivational communication; it enables experiences and opinions to be shared; it changes the educational dynamic by encouraging communication and stimulating the imagination; it arouses interest and fosters discussions and participation (Rinaldo et al., 2011). Likewise, it is seen as the ideal tool for communicating with students (Johnson, 2011).

Universities must adapt to new technologies, since they are the driver of innovation (Casas & Stojanovic, 2013). They also need to have community managers, just like business organisations do; the role such managers play in social networks is key to raising the visibility of their most important research and publications, to promoting their activities and to facilitating the participation of academic community members in a rigorous and professional way.

The competencies of this emerging community manager figure should include: :

- Effectively managing the official profiles of a university.
- Being able to optimise internal and external communication processes, specifically among the

members of a university's own academic community and of others', and even among society as a whole.

- Extending the reach of a university by taking advantage of the activity of its followers, whether researchers, lecturers, students or anyone else.
- Fostering the participation of different members in order to take advantage of the synergies that are generated by information flows and experience sharing for collaborative knowledge construction.

Universities, as institutions that promote the development and knowledge of their communities, should take advantage of the opportunities that social networks offer for minimising the differences between people and promoting equal opportunities for collaborative knowledge creation. Twitter in particular provides universities with a social capital – its followers – that requires special attention and needs new strategies to generate specialised information.

Conclusions

Social networks offer universities a variety of opportunities for disseminating information, communicating and interacting with a diversity of users from the educational community. They also provide universities with effective ways of improving their corporate identities and promoting their services. Many important institutions are working on strengthening their corporate image by actively taking part in Twitter, and some of them have more than one active account for tweeting, which is indicative of the importance being placed on Twitter.

The majority of the universities in the study were located in Spain and Brazil. However, Twitter was actually used most by institutions in Chile, Colombia and Venezuela, as they had the highest number of followers. This demonstrates the enormous potential of Twitter for Latin American universities, if, of course, they use it to optimise their communication strategies.

The analysis of the descriptive indicators of the universities' Twitter accounts highlighted the fact that students usually followed their own universities and that, logically, the universities with the highest number of students had more followers and tweeted the most. Therefore, the universities that tweeted the most were responding to a greater number of followers who were waiting for news to be tweeted via hashtags. In general, the universities followed other users in order to find out about their topics and publications, which consequently generated a multidirectional communication flow.

However, the difference between the mean and standard deviation for most of the variables that were studied showed that Twitter use was not uniform across all the universities. According to the cluster analysis performed by classifying the hashtags they tweeted, this study confirmed that there were two main purposes for their Twitter use: the first was the promotion and consolidation of their corporate image, and the second was communication with members of the educational community.

The corresponding hypothesis tests indicated that neither the age, ownership, nor the student

numbers implied that a university would be more active on Twitter. However, the number of followers that a university had did indeed imply greater Twitter use, which resulted in higher numbers of tweets and retweets being measured.

The fact that the universities had several Twitter accounts was no guarantee of reaching a larger audience. In fact, the crucial factor was knowing how to manage the official account effectively and concentrating all efforts on that task in order to prevent duplicated information and the risk of confusing their followers.

It was confirmed that social networks offered the universities an opportunity for strategic communication so long as they took into consideration the need to have community managers to manage their official accounts, thus enabling those institutions to optimise their communications with their own communities and with their external contexts. This would allow them to extend their reach and take advantage of the coverage offered by existing followers of their accounts – of Twitter in this instance – in order to expand their the field of action and to disseminate the universities' information to an expectant audience.

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