

A MODEL FOR ASSESSING THE ACTIVE PRESENCE OF INSTITUTIONS ON SOCIAL MEDIA. ITS APPLICATION TO UNIVERSITIES WORLDWIDE

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Abstract

Today, being actively present on social networks promotes visibility in the digital environment. Active Presence requires choosing the platforms that best suit the communication needs of the audiences, developing a frequent activity (Activity) and disseminating a certain type of publications (Presence). This study defines and evaluates the level of the main dimensions of Active Presence in social networks (Facebook, Twitter and LinkedIn) of 70 universities (Europe, United States and Latin America). The results show an adequate frequency of publications with mainly own content, although with considerable differences between institutions, regions and platforms. Regarding activity, Facebook is above the daily average and among regions Latin America stands out over the United States and with greater distance over Europe. Regarding the type of presence, universities tend to use their own content on Facebook and LinkedIn, while on Twitter there is a combination of own, hybrid and shared content.

Keywords

universities, institutional communication, active presence, digital communication, social media.

1. Introduction

Universities have a key role in society, acting as one of the main drivers of progress (Kisiolek et al., 2020), contributing to the economic development of their environment and generating an undeniable social value (Kimmons et al., 2017; Kisiolek et al., 2020; Marino & Lo Presti, 2018; Overton-de Klerk & Sienaert, 2016).

Over the past three decades, the general and sectoral context of universities has changed substantially (Hemsley-Brown & Oplatka, 2006). Institutional communication has become a key tool to facilitate their adaptation to change and establish a fluid exchange with their publics (Chapleo et al., 2011; Davies, 2020; Gordon-Isasi et al., 2021; Lee et al., 2018). Furthermore, within institutional communication, communicative actions on the Internet and on 2.0 platforms have gained in importance (Ebrahim & Seo, 2019; Kisiolek et al., 2020), becoming a prominent topic of scientific research.

A literature review with a temporal analysis over 30 years reveals that active presence is key in universities' management of digital institutional communication on social networks, with presence

and activity being the two dimensions investigated most assiduously (Oliveira et al., 2022). In recent years, studies on the level of universities' digital presence have concluded that it is a key aspect of their digital communication, although they consider that their activity is quite low (Bélanger et al., 2014; Brech et al., 2017; Ebrahim & Seo, 2019; Eger et al., 2020; Fähnrich et al., 2020; Kimmons et al., 2017; Peruta & Shields, 2016). However, the study of the different aspects in isolation does not allow investigating the active presence strategies or approaches by universities on their social networks. In addition, such research indicates that most of the work applies to a single social network (eg. Fähnrich et al., 2020; Kimmons et al., 2017; Peruta & Shields, 2016; Arevalo-Martínez et al., 2017) and focuses on small samples of universities (eg. Alonso-Flores, et al., 2020) and in few countries (eg. Eger et al., 2020).

Thus, the main purpose of this study is to evaluate universities' level of active presence on their social networks, analysing the type of presence and the degree of activity carried out by a broad set of benchmark international institutions (in Europe, the United States and in Latin America). The relationship between the two dimensions will enable studying higher education institutions' general strategy of active presence on their social networks.

2. Theoretical framework

2.1. Digital institutional communication by universities

In context of high volatility, complexity and uncertainty in which universities find themselves today, these institutions must be aware of changes and take advantage of the potential of institutional communication. Higher education is also being redefined by the emergence of the Internet and must adapt to changes, taking advantage of the potential of the digital environment to interact with its multiple publics (Fähnrich et al., 2020; Hemsley-Brown & Oplatka, 2006).

Institutional communication is a key tool of university management as it helps promote the institution's mission, its values and achieve its objectives in its three main roles (teaching, research and relationship with its environment) (Chapleo et al., 2011; Davies, 2020; Gordon-Isasi et al., 2021; Lee et al., 2018). It allows informing about its running and day-to-day activity (Lee, 2019; Marino & Lo Presti, 2018), promote its teaching programmes (Fähnrich et al., 2020; Marino & Lo Presti, 2018), disseminate its research projects (Fähnrich et al., 2020; Hemsley-Brown & Oplatka, 2006; Overton-de Klerk & Sienaert, 2016) and promote its third mission and sustainability (Di Nauta et al., 2020; Fähnrich et al., 2020; Hemsley-Brown & Oplatka, 2006; Marino & Lo Presti, 2018).

The digital age brought major opportunities for universities' institutional communication, which increasingly use communicative activity via the Internet to effectively achieve their goals (Eger et al., 2020; Foroudi et al., 2017) and, for that, higher education institutions should invest resources in social media to promote high-quality relationships with their publics (Clark et al., 2017). Within the digital communication environment, social networks form a space conducive to connecting with publics (Zeler et al., 2019), enhancing the reach of organizations and their value to society (Grover et al., 2019; Kimmons et al., 2017). Social networks thus become strategic tools for communication by universities, as publics use digital platforms to obtain information and interact with university institutions. Some authors (Albanna et al., 2022; Johann et al., 2021; Wang, 2015) assert that the debate no longer concerns the inclusion of social media as communication tools, but rather how they should be managed strategically to interact and create long-term relationships with their publics in the digital environment.

Each of the social networks chosen in this article has its particularities, which could condition the results. Facebook, Twitter and LinkedIn are three of the most used social networks by universities (Greenwood, 2012). Facebook is the social network with the most quantity of users. The fanpages allow organizations to have their own public identity, sharing content related to their values and activities (Capriotti, Zeler, & Oliveira, 2021), which favors universities to develop their own stories and interact with their community (Eger et al. al., 2020). Twitter is the main microblogging platform, characterized by people re-tweeting other's content that fosters debate on current issues in real time (Capriotti & Ruesja, 2018), which fosters greater integration of higher education institutions with their environment through dialogue and exchange of information (Kimmons et al., 2017). LinkedIn is the main social network in the professional field, designed to establish work contact networks (Aguado et. al, 2019; Arevalo-Martínez et. al, 2017; Komljenovic, 2019), for which it promotes and contributes to the employability discourse that is a key aspect of university purpose (Komljenovic, 2019).

2.2. Active presence of universities on social networks.

The university sector, like any other, requires strategic management of its communication on social networks. The active presence of universities on digital platforms will influence the way information is disseminated and the relationship with their publics, becoming a strategic channel for interaction with them. Previous research has shown that more and more organizations have a profile on social networks, but few use them strategically (Capriotti et al., 2019; Capriotti & Ruesja, 2018; Cho et al., 2014). Social networks are effective tools for managing communication, but they need to be professionally managed to help achieve organizational goals.

To do this, it is crucial to be actively present (with proactive profiles) on social networks, since it allows promoting due visibility in the digital environment, which facilitates the dissemination of relevant information and promotes the exchange of communication between an organization and its publics on social networks (Capriotti, Zeler, & Oliveira, 2021). It enables higher education institutions to discover the views and preferences of the publics (Kimmons et al., 2017; Zeler et al., 2019). It helps institutions to become a source of information for all persons interested in university matters (Fährnich et al., 2020; Kimmons et al., 2017; Kisiolek et al., 2020; Marino & Lo Presti, 2018). It encourages university institutions to promote their brand (Eger et al., 2020; Foroudi et al., 2017), developing their strategies to create a differentiated positioning, allowing universities to boost their reputation (Eger et al., 2020; Foroudi et al., 2017; Marino & Lo Presti, 2018).

Active Presence on social networks requires choosing the platforms that best adapt to universities' communication needs with their publics, creating professional profiles and managing them properly, developing frequent activity sustained over time (Activity) and disseminating a certain type of publication (Presence) (Capriotti, Zeler, & Oliveira, 2021). Thus, activity and presence are the two essential components of active presence in the management of digital institutional communication on universities' social networks.

Moreover, it is essential to study the **Activity** carried out by organizations (McLachlan, 2021; Newberry, 2021; Zeler et al., 2019) to achieve high visibility. For this to happen, it does not suffice to create profiles on social networks. It is also necessary to understand social networks as tools for dialogue and continuous interaction with publics (Albanna et al., 2022). Thus, Activity analyses the active and steady use of social networks that enables and encourages sharing information and the interaction between an organization and the users (Capriotti, Zeler, & Camilleri, 2021; Capriotti, Zeler, & Oliveira, 2021). To analyse organizations' activity, the volume of publications and the mean frequency with which they are disseminated must be taken into account (McLachlan, 2021; Newberry, 2021; Zeler et al., 2019). Various studies (Capriotti, Zeler, & Oliveira, 2021; Zeler et al.,

2019) show a huge disparity in terms of the outcomes concerning the activity of organizations on social networks. This disparity in the results is because they depend on the number of companies analysed, where the study was conducted, and the social networks studied.

Meanwhile, **Presence** implies having an institutional profile on the chosen social networks and defining the type of presence on them, which provides the institution with a public identity of its own to disseminate its contents (Cho et al., 2016). Thus, social networks allow universities to design profiles according to their interests, values, and attributes. Some authors (Brech et al., 2017; Ebrahim & Seo, 2019; Peruta & Shields, 2016) point out that universities use several digital platforms to communicate with their publics, making the most of the advantages offered by social networks to achieve a differentiated institutional digital presence. To achieve adequate presence, it is important to evaluate which social networks are best adapted to the communication needs of the organizations (Kemp, 2022) and determine the type of presence aimed at being promoted on each of them, ranging from a mostly “proprietary” presence (where the institution creates and disseminates its own content) to a mainly “shared” presence (where the institution shares content of other users) in its profiles (Zeler & Capriotti, 2017).

Finally, the combination and interrelation of these two aspects will allow recognizing universities’ **Level of Active Presence** (Figure 1) in the different social networks. On the one hand, according to the number and frequency of publications (daily, weekly, etc.) it will be possible to establish a certain level of communicative activity by universities on their social networks, from “highly active” institutions (with a high volume and frequency of publication, above the recommended mean) to “little active” entities (with few or infrequent publications, less than the suggested mean) or “inactive” (with little or no activity). On the other hand, the selection of the types of publications involves defining a certain line or approach of their communicational presence. Institutions that mostly publish their own content have a “funnel” type line of publication, developing a profile with a more “centripetal” approach (Scolari, 2008), aimed at attracting followers towards their own content and retaining them or encouraging them to go deeper into institutional profile. Entities that mainly publish shared content have a “hub” type means of publication, developing a profile with a more “centrifugal” approach (Scolari, 2008), focusing on motivating followers with shared content by other authors, generating the option of linking them with other profiles or sites where they can expand on and look in greater depth into these topics. Thus, the choice of a specific combination between the type of presence chosen and the level of activity developed will define a certain strategy or general line of active presence of each university: from a “passive hub” approach (with little activity and shared content) to an “active funnel” approach (with high activity and proprietary content), which will contribute to establishing a certain form of communication with their publics.

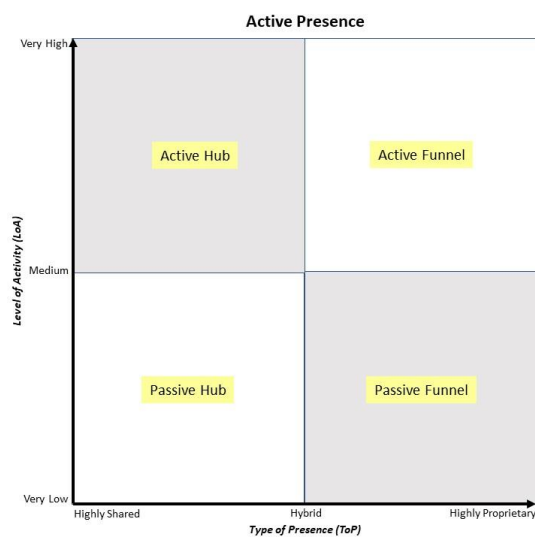


Figure 1: Active Presence

3.Methodology

To achieve our general objective set out in the introduction of the present study, the following research questions (RQ) were defined:

RQ1: What **level of Activity** do universities have on their social networks?

RQ2: What **type of Presence** do universities have on their social networks?

RQ3: Is there any **association** between Presence and Activity?

RQ4: What is the **level of Active Presence** of universities on their social networks?

To answer these questions, the study sample of universities and social networks was defined as well as the methods of data collection and analysis.

To select the universities, the main criterion was the presence and position of the universities in 2020 (last year available before the systematic collection of data), in one of the three most prestigious international rankings: *ARWU Ranking of World Universities*; *The Times Higher Education Rankings* and *QS World University Rankings*. To achieve the greatest representation of universities, three major geographical areas were defined: Europe (as a direct benchmark on an international level), the United States (taken as an area in itself, due to the number and importance of universities in the rankings and its geographical dimension), and Latin America (due to the high degree of university development in the region). Thus, the universities of the United States and Europe selected were among the top 100 institutions in these rankings. The Latin American universities, not present in the top 100 positions, were chosen based on their general position in the global rankings and by regions. In the case of Latin America and Europe, priority was given to geographical diversity, in order to achieve greater representativeness of the different countries. Based on all the above, the final study sample consisted of 70 universities: 20 from the United States, 25 from Europe, and 25 from Latin America (Appendix 1).

Three of today's most important social networks (Kemp, 2022) that are fully implemented in the universities under study were selected: Facebook is the social network with the most active monthly users worldwide; Twitter is one of the world's most used microblogging tools and is considered one of users' social networks of preference, and LinkedIn is the fifth most used social platform, as well as being the largest social network focusing on professional activity. The official institutional account of each university was identified. All profiles that could not be located or verified by the institutions themselves were discarded.

Having identified and catalogued the official accounts on social networks of the universities under study, all publications were observed and recorded in systematically. To avoid bias in the collection of information and to prevent analysis from being influenced by a specific situation or action, the publications observed were collected taking two periods of full academic activity into account as a time frame. Three months were selected in the first semester, from 15 March to 14 June (13 weeks, 91 days) and three months in the second semester, from 15 September to 14 December (13 weeks, 92 days). In total, 26 weeks and 183 days.

The study sample comprised all publications, both proprietary and shared, that the selected universities conducted in their official institutional accounts on the chosen social networks during the time period described (27,356 Facebook posts, 9,439 posts on LinkedIn, and 53,446 Tweets,

yielding 90,241 posts in total). The collection of all publications was carried out, which has enabled obtaining reliable data on the volume and intensity of universities' communication activity.

To work on the research questions, the content analysis method was chosen to analyse the publications made by the universities on their official institutional profiles of the three selected social networks, since it allows analysing and exploiting the systematized data to make inferences both in a quantitative and qualitative sense. To this end, one teamwork of three people (one supervisor and two searchers) was set up to search and retrieve publications (posts and tweets). The collection and processing of information was carried out via the platform and mass data and information collection and management system of the company *Noticias Perú* (www.noticiasperu.pe). Then, another teamwork of three people (one supervisor and two analysts) was set up for a systematic content analysis and objective data extraction. The data were initially recorded in an Excel template, and then coded and inputted into the IBM SPSS Statistics 25 statistics program for subsequent analysis and statistical processing by the research team.

To evaluate the reliability of the method used, the two analysts carried out a test on a sample of 300 publications using a random procedure. This sample is highly satisfactory for evaluating concordance and reliability between two analysts (Lombard et al., 2002). Based on the percentage calculation of agreement between the two analysts and the Activity*Presence contingency table as a basis for statistical analysis, with a 95% confidence interval, Cohen's Kappa coefficient (k) is calculated to assess the reliability of the categorical variables (Cohen, 1960; McHugh, 2012). To interpret their results, the measurement ranges proposed by Landis and Koch (1977) are applied. For "Presence", 99% agreement was obtained (Kappa value of .99) and for "Activity", 97% (Kappa value of .96), demonstrating substantial agreement in the criteria of the tool, and so it can be concluded that the measurement is valid.

Two main categories of analyses were defined: Activity and Presence. These categories had been developed and tested in previous studies (Capriotti et al., 2019; Capriotti & Ruesja, 2018)

The "**Activity**" category (RQ1) analyses the active and steady use of the social networks that allows, facilitates and encourages sharing information and the interaction between an organization and users (Capriotti et al., 2019; Capriotti & Ruesja, 2018; McLachlan, 2021; Zeler et al., 2019). Thus, the volume or amount of digital activity carried out by the institutions on Facebook, Twitter and LinkedIn was established. Studies concerning suitable publication frequency on the main social networks (Capriotti et al., 2019; Capriotti & Ruesja, 2018; Marmer, 2020; McLachlan, 2021; Newberry, 2021; Williams, 2020; Zeler et al., 2019) suggest that frequency of publication on the main social networks should be: Facebook (between 1 and 2 posts per day), Twitter (between 3 and 5 tweets per day), and LinkedIn (between 0.5 and 1 post per day).

The category of "**Presence**" (RQ2) identifies the type of posts/tweets that universities had published on their social network profiles, which demonstrates the effort by entities to create and disseminate their own contents or to share information of others (Capriotti, Zeler, & Camilleri, 2021; Capriotti, Zeler, & Oliveira, 2021; Zeler et al., 2019). Thus, we defined how institutions are producing their posts, based on three options (Zeler & Capriotti, 2017): (a) proprietary publications (created and disseminated by the entity with its own content or information), (b) shared publications (created by other entities/people and shared by the university without any of its proprietary information or content), and (c) hybrid publications (created by other entities/people and shared by the university adding its proprietary content or information).

In order to find out if there is any association between Presence and Activity by regions and/by universities (RQ3), a statistical analysis was carried out with the Chi-Square test and Cramer's V

symmetric measure to assess the intensity of association. Since there is a statistically significant association, a simple correspondence analysis was subsequently carried out to measure the relationship between the variables and between their categories. Finally, a multiple correspondence analysis with optimal scaling was performed, to graphically represent the proximity between the variables and interpret the relationships of dependence and similarity between them.

Once the main categories of analysis had been defined, the **Level of Active Presence (RQ4)** of universities on social networks was analysed, to provide a qualitative interpretation of the results value. Two scales were implemented by assigning a weighted value to presence and activity in relation to “Level of Activity” and to “Type of Presence”. The results were obtained for each social network (Twitter, Facebook and LinkedIn) and for each geographical area (Europe, USA and Latin America).

On the one hand, a scale was established to determine universities’ **Level of Activity (LoA)** (Table 1), based on the total number of posts disseminated, based on their daily mean number. A Likert scale with a value weighted to the intensity of posting activity was developed, assigning 1 point to “very low activity” and 5 points to “very high activity”. As each social network has different levels of adequate publication, to unify (and be able to compare) universities’ levels of activity on their social networks, a Level of Activity Equivalence Table was drawn up, based on the total number of posts disseminated, using their daily means, from 0 to 5 points (Appendix 2), with intervals of 0.05 points for LinkedIn, 0.1 points for Facebook, and 0.2 points for Twitter, rounding to the nearest decimal point. Starting with inactivity, a systematized Likert scale is inferred with a quantitative and qualitative approach ranging from the values of “very low activity” to “very high activity” by university institutions on their social networks.

ACTIVITY	General (daily mean)	Facebook (daily mean)	Twitter (daily mean)	LinkedIn (daily mean)	Value Assigned (Level of Activity) (LoA)	Level of Activity (LoA) (Likert Scale)
None	0	0	0	0	0 points	No Activity (0-0.9 p.)
Low	0.1 to 4.5	0.1 to 0.9	0.1 to 2.9	0.1 to 0.4	1.0 to 2.0 points	Very low (1.0 – 1.7 p.) Low (1.8 – 2.5 p.)
Medium	4.6 to 8.0	1.0 to 2.0	3.0 to 5.0	0.5 to 1.0	2.1 to 3.0 points	Medium-Low (2.6 – 3.0 p.)
High	8.1 to 11.5	2.1 to 3.0	5.1 to 7.0	1.1 to 1.5	3.1 to 4.0 points	Medium-High (3.1 – 3.5 p.) High (3.6 – 4.2 p.)
Very High	11.6 to 15+	3.1 to 4+	7.1 to 9+	1.6 to 2+	4.1 to 5.0 points	Very high (4.3 – 5.0 p.)

Table 1. Level of Activity (LoA).

Meanwhile, depending on the combination of the different types of posts, a scale was defined to determine the **Type of Presence (ToP)** of the universities (Table 2). A scale with a value weighted to each type of presence was designed, assigning values for each type of publication, between 1 and 2 points, where 1=“Shared”; 1.5=“Hybrid” and 2=“Proprietary”. This allows establishing a categorization as an essential mechanism in the classification of the information collected for the quantitative and qualitative analysis and the interpretation of the results, with categories from “high shared presence” to “high proprietary presence” of the universities on their social networks.

PRESENCE	Frequency (N)	Value assigned (VA)	Points Obtained (PO)	Result (Type of Presence) (LoP)	Type of Presence (ToP) (Category scale)
None	0	0 p.	N*VA	PO*0 = 0	No Presence (0 – 0.9 p.)
Shared	No. Posts	1 p.	N*VA	=Mean (B) (PO/3)	Highly shared (1.0 – 1.20 p.) Rather shared (1.21 – 1.40 p.)
Hybrid	No. Posts	1.5 p.	N*VA		Hybrid-Shared (1.41 – 1.50 p.) Hybrid-Proprietary (1.41 – 1.60 p.)
Proprietary	No. Posts	2 p.	N*VA		Rather proprietary (1.41 – 1.80 p.) Highly proprietary (1.41 – 2.0 p.)

Table 2. Type of Presence (ToP)

The combination of these two scales will facilitate the development of a dispersion matrix to position the different institutions and will show the **Level of Active Presence (LoAP)** implemented in their social networks. This will enable recognizing whether profiles on universities' social networks respond to a "hub" approach or strategy ("active" or "passive", with high or low activity), seeking to position the profile as a link from which to obtain relevant or reference information, which redirects the user to other spaces to find the information. Or whether, conversely, the intention is to have a "funnel" approach or strategy ("active" or "passive", with high or low activity), trying to attract and retain users in the institutional profile with content of interest and high quality created by the institution itself.

4. Results

4.1. Activity

All universities in the three regions have active profiles on Twitter and Facebook. However, there is a significant number of universities that have an inactive LinkedIn profile (no publications during the period analysed): 2 in Europe, 1 in the USA, and 9 in Latin America, accounting for 17% of the total number of institutions.

Of the 90,241 posts across the three social networks, the overall daily mean is seven posts per day per university (Table 3). Twitter is the universities' most active social network (59.2%); followed by Facebook (30.3%), and finally LinkedIn (10.5%). Such distribution is considered normal, since both mean activity on Twitter (4.1) and on LinkedIn (0.7) are within the values recommended by the authors (from 3 to 5 and from 0.5 to 1, respectively), while on Facebook (2,1) the mean activity is slightly higher than that suggested by the experts (from 1 to 2).

ACTIVITY	Total (no.)	Percentage	Mean posts/day per university (\bar{x})	Mean range/day (recommended)
Twitter	53446	59.22	4.17	3-5
Facebook	27356	30.32	2.14	1-2
LinkedIn	9439	10.46	0.74	0.5-1
Total	90241	100.0	7.04	4-8

Table 3. University activity on social networks (total posts)

The volume varies between the regions analysed (Table 4), with Latin America having almost half of total publications (48.7%), while Europe (23.9%) and the USA (27.4%) are below one-third. Activity in Latin America is ahead by some distance. The United States achieves a daily mean of publications close to the total mean. Europe has a generally low level of activity, at more than 2 percentage points below the daily mean number of publications.

ACTIVITY	Total (no.)	Percentage	Mean posts/day/univ (\bar{x})	Gap
Europe	21539	23.9	4.71	-2.33
United States	24759	27.4	6.76	-0.28
Latin America	43943	48.7	9.61	+2.57

Table 4. University activity on social networks by regions (total posts)

On Twitter (Table 5), the number of university publications differs substantially across regions: Latin America (43.5%), the United States (33%) and Europe (23.4%). From the mean range recommended by the experts (between 3 and 5 tweets/day), Latin America (5.0) and the USA (4.8) have a good level of activity, while Europe has a low level of activity (2.7).

ACTIVITY	Total (no.)	Percentage	Mean posts/day per university (\bar{x})	
Twitter	Europe	12516	23.4	2.74
	United States	17663	33.0	4.83
	Latin America	23267	43.5	5.09
Facebook	Europe	5267	19.3	1.15
	United States	4199	15.3	1.15
	Latin America	17890	65.4	3.91
LinkedIn	Europe	3756	39.8	0.82
	United States	2897	30.7	0.79
	Latin America	2786	29.5	0.61

Table 5. Activity on Social Networks by region

On Facebook (Table 5), there is a marked difference in the volume of publications between Latin America (65%), Europe (19.3%), and the United States (15.3%). Universities in Latin America have very high activity (3.91 posts/day), well above the recommended mean range. Universities in the USA and Europe, meanwhile, display activity at the lower limit of the suggested mean (between 1 and 2 publications per day).

On LinkedIn (Table 5), universities in Europe show a higher activity (39.8%), compared to 30.7% in the USA and 29.5% in Latin America. Although all regions reveal a volume of activity within the recommended mean range (0.5 to 1 post/day), the activity of Latin American universities is in the lower limit (0.61), while Europe (0.82) and the USA (0.79) are above the general mean and closer to the upper limit of the mean range.

4.2. Presence

The general results obtained allow us to observe a majority of original or proprietary publications in the profiles that the universities have on their social networks. By social networks (Table 6), Twitter differs substantially from the other two. On Facebook and LinkedIn, the percentage of hybrid and shared posts is highly insignificant (3.8%). On Twitter, however, hybrid and shared posts account for nearly 30% of the total. This shows that universities have a different strategy on Twitter with respect to Facebook and LinkedIn.

PRESENCE	Proprietary (%)	Hybrid (%)	Shared (%)
Twitter	70.3	2.6	27.1
Facebook	96.9	2.2	0.9
LinkedIn	97.3	1.6	1.2
Total	81.2	2.4	16.4

Table 6. Type of presence on social networks (total posts)

By regions (Table 7), most of the universities are characterized by a high presence of proprietary posts. This behaviour is more pronounced in Latin America (89.4%) than in Europe (73.7%) and the United States (73.1%). Although the percentages of hybrid publications are very low and similar in the three regions (2%-3%), the big difference is found for shared publications, since Europe and the USA are between 23 and 25%, compared to Latin America which remains at 8.5%.

PRESENCE	Proprietary (%)	Hybrid (%)	Shared (%)
Europe	73.7	3.2	23.1
United States	73.1	2.1	24.7
Latin America	89.4	2.1	8.5

Table 7. Type of presence by region (total posts)

The results by social networks (Table 8) point out that on Twitter, European universities stand out for a balance between proprietary (57.2%) and shared/hybrid publications (42.8%). US universities prioritize proprietary publications (63.4%) over shared/hybrid ones (36.7%). And Latin American universities make greatest use of proprietary publications (82.6%) compared to shared/hybrid content (17.4%).

		Proprietary (%)	Hybrid (%)	Shared (%)
Twitter	Europe	57.2	3.8	39.0
	United States	63.4	2.4	34.3
	Latin America	82.6	2.2	15.2
Facebook	Europe	97.1	2.4	0.5
	United States	96.7	2.3	1.0
	Latin America	96.9	2.2	1.0
LinkedIn	Europe	95.8	2.5	1.7
	United States	98.4	0.6	0.9
	Latin America	98.0	1.3	0.7

Table 8. Presence on Social Networks by region

The data are very similar for Facebook and LinkedIn, with very small differences between universities by region. In fact, more than 95% of institutions disseminate proprietary content, with the results obtained on hybrid and shared content being residual.

4.3. Associations between Activity and Presence

After analysing both activity and presence, an association can be seen between the number of publications made by the universities on their social networks and the typology of said publications in the sense of whether they are proprietary, hybrid or shared. Cramer's V coefficient indicates that there is a moderate statistically significant association ($V = .247$; $p = .000$) between the variables Activity and Presence with a value of $X^2_4 = 11004,712$ and with a significance level of $p = .000$.

From the simple correspondence analysis, to find out the association between the two variables and their categories, two factors are obtained: dimension 1 explains 99.9% of the accumulated inertia (Table 9) and, therefore, is sufficient to explain the analysis, which shows the fact that universities' Facebook and LinkedIn profiles are characterized by publications of proprietary content, and the Twitter profiles contain hybrid and shared publications (Figure 2).

Dimension	Singular value	Inertia	Chi square	Sig.	Proportion of inertia		Confidence singular value	
					Accounted for	Accumulated	Standard deviation	Correlation ²
1	.349	.122			.999	.999	.002	-.018
2	.012	.000			.001	1.000	.003	
Total		.122	11004.712	.000 ^a	1.000	1.000		

^a. 4 degrees of freedom

Table 9. Summary of Activity*Presence simple correspondence analysis

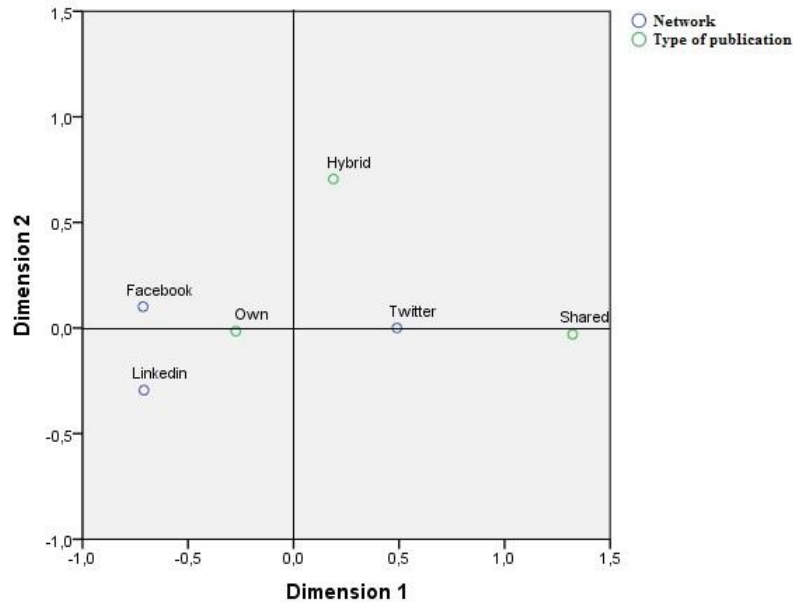


Figure 2. Row and column points. Symmetrical normalization.

However, when analysing in further depth to understand the relationship between activity and presence, university region is observed as being slightly associated with type of presence (20.8%) and with activity (19.5%) (social network used) and the categories of presence and activity are associated 33.2%, as shown by the correlation transformed variables (Table 10).

Dimension: 1

	University region	Type of publication	Social media
University region	1.000	.208	.195
Type of publication	.208	1.000	.332
Social media	.195	.332	1.000
Dimension	1	2	3
Eigenvalue ^a	4.487	2.510	2.003

^a. The eigenvalues of the correlation matrix have been weighted with variable weights.

Table 10. Correlation transformed variables

A discrimination analysis between activity in the different social networks used by region and type of presence (Table 11) shows that there are differences between social networks ($p = .000$) and that the discriminating power of the region (Europe, Latin America, USA) is very high, since it explains 77.4% of the differences that exist between the data by social networks although with a not very high canonical correlation of .348 (Table 12), with a high Lambda coefficient (.845) and with a significance of .000

	Wilks' lambda	F	Df1	df2	Sig.
University region	.958	1984.774	2	90238	.000
Type of publication	.879	6205.288	2	90238	.000

Table 11. Group means equality test

Function	Eigenvalue	% variance	% accumulated	Canonical correlation
1	.138 ^a	77.4	77.4	.348
2	.040 ^a	22.6	100.0	.197

^a. The first 2 canonical discriminating functions were used in the analysis.

Table 12. Eigenvalues

In addition, the multiple correspondence analysis with optimal scaling (Figure 3) allows affirming that Latin American universities are characterized by activity with proprietary content on the social network Facebook. US universities look to Twitter and use shared, proprietary and hybrid content in a similar way. European universities differ from these behavioural models with a fairly homogeneous activity in terms of the use of the three social networks, publishing mainly hybrid content, proprietary content and, to a lesser extent, shared content.

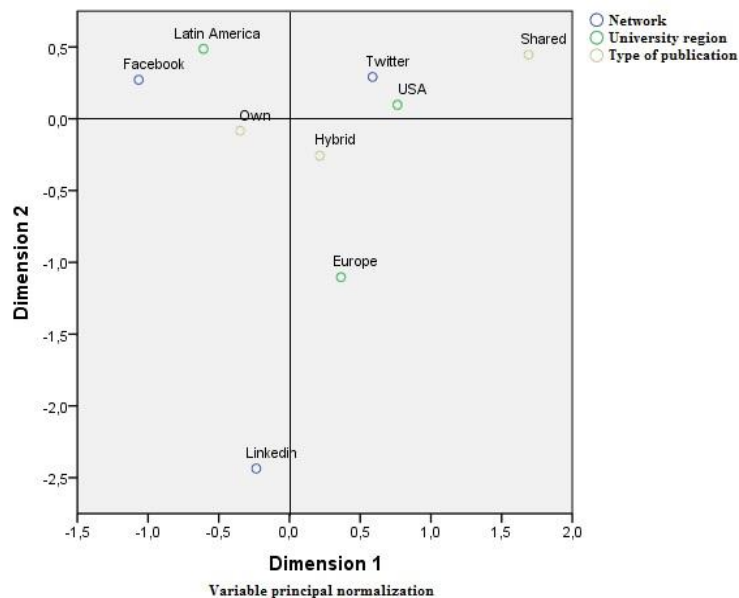


Figure 3. Multiple correspondence analysis with optimal scaling.

4.4. Level of Active Presence

Based on the results obtained concerning Activity and Presence, the **Level of Active Presence** implemented by universities on their social networks can be established.

By region (Table 13), in relation to Level of Activity (LoA), Latin America (3.5) records medium-high activity, the United States (2.6) has medium-low activity, while Europe (2.1) displays low activity. As for Type of Presence (ToP), universities in Latin America (1.90) stand out for a marked presence of proprietary content, and universities in Europe (1.75) and the USA (1.74) have rather a significant proprietary presence.

ACTIVE PRESENCE	LoA	ToP
Europe	2.1	1.75
United States	2.6	1.74
Latin America	3.5	1.90
General	2.70	1.82

Table 13. Level of Active Presence by region (total posts)

By social networks (Table 14), on Twitter, universities' level of Activity (LoA) is rather low (2.50), with European institutions having a lower activity than entities in the United States and Latin America. In relation to Type of Presence (ToP), proprietary contents predominate over hybrid and shared contents (1.71), with Europe and the United States have a higher level of combination of proprietary and shares post, while Latin America presents a marked orientation towards proprietary contents. On Facebook, the Level of Activity (LoA) of institutions is medium-high (3.10), but with great differences between universities in Latin America (with a very high level of activity) and entities from the United States and Europe (with low activity). As for Type of Presence (ToP), all universities show a very high presence of proprietary content, without significant differences among regions. On LinkedIn, the Level of Activity (LoA) in all universities is low (2.40), and Europe and the United States are slightly higher than for Latin America, whose universities play a far less active role than in the two other social networks. With reference to Type of Presence (ToP), all universities choose to publish proprietary content, with a testimonial presence of hybrid and shared content.

ACTIVE PRESENCE	LoA	ToP
Twitter	2.50	1.71
Facebook	3.10	1.98
LinkedIn	2.40	1.98

Table 14. Level of Active Presence by social networks

The global results of the Active Presence of universities can be clearly visualized on Figure 4.

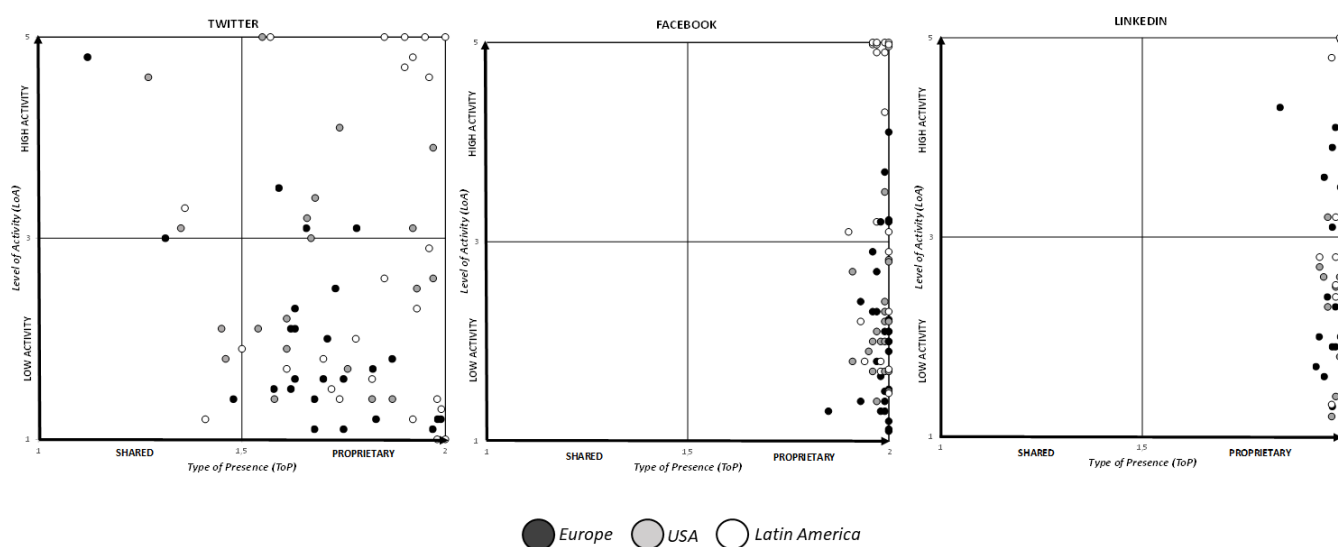


Figure 4. Dispersion Matrix. Level of Active Presence by social media

5. Discussion and implications

Based on the results obtained, a series of reflections can be made regarding the active presence of universities on their social networks.

In relation to Activity, most of the universities have a low volume of activity: only 23 universities (32.8%) reach an adequate volume of publications (4 from Europe, 7 from the United States and 12 from Latin America). This indicates a marked difference and heterogeneity of activity among the universities analyzed. There are also notable differences between social networks (Facebook is above the recommended daily mean, while Twitter and LinkedIn are in the lower bracket of the experts' recommendation) and between regions (activity in Latin America is clearly above the mean, in the United States it is slightly below the mean, while Europe stands out for activity well below the daily mean number of publications). These results can be considered positive, especially if compared to previous studies in other sectors (Capriotti et al., 2019) or in the university environment (Brech et al., 2017; Eger et al., 2020; Fähnrich et al., 2020; Kimmons et al., 2017; Peruta & Shields, 2016). This may be due to the fact that, in a context of a pandemic (the information was collected over several months in 2021), universities have increased their digital activity to compensate for the lack of physical presence, and as a communication strategy to expand their position as a source of information for their publics (Kimmons et al., 2017), disseminate their teaching programmes and activity (Fähnrich et al., 2020) or promote their brand (Eger et al., 2020). Even though, the results are in line or support what experts and other studies (Brech et al., 2017; Eger et al., 2020; Fähnrich et al., 2020; Kimmons et al., 2017; Peruta & Shields, 2016) affirm about the volume of posts disseminated by institutions.

Regarding the type of social media presence, only a very small group of universities (less than 5%) reach a majority of shared/hybrid publications: 2 from the United States, 1 from Europe and none from Latin America. There is a high homogeneity in the type of presence developed by the 70 universities. Thus, presence goes in two directions and seems to obey the very nature of each network. On the one hand, Twitter (where hybrid and shared publications account for almost 30%) is a network that fosters debate on current issues in real time, and in which hybrid and shared publications are relevant (Capriotti & Ruesja, 2018; Kimmons et al., 2017). However, Facebook and LinkedIn (where proprietary publications account for over 95%) are networks that tend rather to generate contacts, create relationships or belonging to a community (Eger et al., 2020). and for this reason perhaps proprietary contents acquire greater relevance. In this way, the results of presence are not surprising, since they fit with the nature of the social media platforms studied (Capriotti & Ruesja, 2018; Eger et al., 2020; Kimmons et al., 2017).

Statistical analysis indicates that there is a statistically significant association between activity and presence, and also identifies a diversity of strategies, both according to social networks and geographical regions. Simple correspondence analysis associates proprietary content with Facebook and LinkedIn, while shared and hybrid content is associated with Twitter. At the same time, the discrimination analysis points out that the region of the universities is the variable that explains the differences found in their communication behaviour through the different social networks. The multiple correspondence analysis with optimal scaling concludes that universities in Latin America prioritize proprietary content on Facebook more than on the other networks, universities in the United States apply a more homogeneous strategy on Twitter (using shared, proprietary and hybrid content in a balanced way) in relation to the other two, and universities in Europe mainly use hybrid and proprietary publications, although without great differences between social networks.

Taken together, the results of activity and presence on social networks enable ascertaining the general strategy of active presence of higher education institutions on their social networks. Figure 5 shows the strategy of Active Presence carried out by the 70 universities.

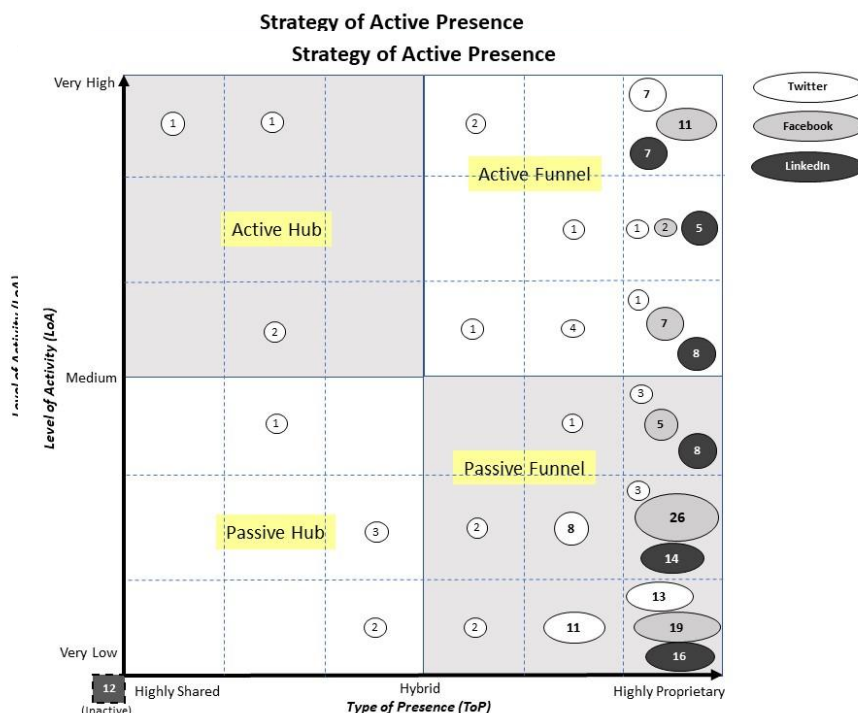


Figure 5. Strategy of Active Presence

In relation to Activity, the “Passive” strategy is the most consolidated, as it is carried out by more than 1/3 of institutions (around 70% of universities on Facebook and Twitter, and 65% on LinkedIn). In reference to Presence, the “Funnel” strategy is implemented mostly, by 100% universities on Facebook and LinkedIn, and by 85% on Twitter.

Thus, among the four general strategies of Active Presence, there is a majority group of institutions that correspond to the “Passive Funnel” approach (about 1/3 of institutions, between 60% and 70% on the three social networks) with a general line of communication based on making many proprietary publications, but with little activity on their social media. A second important group of universities implements an “Active Funnel” strategy (with many proprietary contents and a good or a high level of activity on social networks), which is carried out between 25% and 35% of the universities. The other two strategies of Active Presence (the “Passive Hub” and the “Active Hub”) are very minority, with less than 10% of entities on Twitter, and none in Facebook and LinkedIn.

6. Conclusions

Considering the statistical analysis carried out and the results obtained, it can be suggested some general conclusions about the active presence of universities on social media.

On the one hand, universities are generally committed to a frequency of publication that is in line with the recommendations made by experts for each of the social networks researched, although the difference between universities is very considerable. Regarding social networks, Twitter clearly stands out for its level of activity, following the logic of a social network that is constantly updated to keep up to date with debates on current issues. However, the scant activity of universities on

LinkedIn is surprising, which can be considered a non-strategic performance of educational institutions in a network of a professional nature that links them closely with the world of work. By region, in Latin America the activity of universities is more intense on Facebook, mainly seeking to create a sense of community between the institutions and their audiences (Eger et al., 2020; Peruta & Shields, 2016). In Europe they are more active on LinkedIn, favoring relationships in the professional field for a closer relationship between academia and the labor market (Aguado et al., 2019; Arevalo-Martínez et al., 2017; Komljenovic, 2019), which it is key because job placement contributes to increasing the reputational capital of the university in a highly competitive environment (Chapleo et al., 2011). In the United States there is greater activity on Twitter, which allows us to infer a tendency to be an active and participatory actor in current affairs (Capriotti & Ruesja, 2018; Kimmons et al., 2017).

On the other hand, the analysis concludes that universities are mostly inclined towards proprietary content on Facebook and LinkedIn, while on Twitter shared and hybrid publications are combined with their own ones. Then, universities are clearly adapting their communication strategy of presence to the logic of the operation in Facebook (Capriotti, Zeler, & Oliveira, 2021; Eger et al., 2020) and Twitter (Kimmons et al., 2017). However, on LinkedIn, perhaps it is convenient for universities to review the current type of presence on this platform, since establishing networks and connections with the professional world requires a more hybrid presence, to encourage a more fluid dialogue and exchange between the academic world and the work environment (Arevalo-Martínez et al., 2017; Komljenovic, 2019).

Thus, in general, the universities analysed have a marked tendency to generate and disseminate mainly proprietary content and an adequate frequency of publication of such content to reach their publics on their social networks, although a notable divergence is observed between a majority group of institutions that have a little active profile and another smaller group of entities that display adequate or prominent active behaviour. Even so, the ability to be present in the different social networks, adapting to their particularities, helps universities promote their 3 main roles in society: the training and development of people, the generation and transfer of knowledge and the linking and integration with their environment (Kisiołek et al., 2020; Marino & Presti, 2018).

Finally, this article proposes a general model to evaluate the active presence of organizations on social networks, integrating a variety of knowledge carried out during the last 20 years in the academic field. This will allow other researchers to use the analysis methodology, which will strengthen this area of knowledge. Although the research analyses only one sector and a certain type of institutions (universities) on specific social networks (Facebook, Twitter and LinkedIn), in future research it will be relevant to apply it in other types of organizations and social networks, to test and adjust the variables and dimensions, and confirm the validity of the model.

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Declaration of Interests

The authors declare that they have no known competing interests or personal relationships that could have appeared to influence the work reported in this paper.

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