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Analysing effective social media communication in higher education institutions

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This paper aims to analyse the institutional communication of universities on social media by conducting a content analysis of the communication strategy of 70 higher education institutions (in the United States, Europe and Latin America). The study focuses on three social networks (Facebook, LinkedIn and Twitter) and the analysis three dimensions of social media institutional communication: posting, interactivity and content. Findings reveal that while most universities demonstrate a passive centripetal performance to posting, there is a significant divergence in relation to the level of activity. The study highlights that interactivity focus is predominantly characterised by monologues, despite institutions increasingly integrating various communication resources to foster stakeholder interaction. The majority of universities tend to prioritize exclusive or dominant content combination, with organizational content exhibiting a significantly greater presence. By an integrated analysis of these three key dimensions on social media, this paper this paper offers valuable insights for both academics and practitioners. It contributes to the scholars by facilitating further academic research on social media institutional communication and provides professionals with a practical guide for strategically managing communication on social media.

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Introduction

Several international studies such as the various Communication Monitors [i.e. European Communication Monitor (Zerfass et al. 2021), North American Communication Monitor (Meng et al. 2021)] and the Global Communications Report (USC Annenberg 2022), highlight the importance of communication strategy for the achievement of organisational objectives.

The digital arena is a suitable environment for strategic communication. The access to information, the possibility of generating enriching experiences with users, and improved metrics have encouraged many organisations to use digital platforms as communication tools (Linke and Zerfass 2012). Digital media allow practitioners to involve stakeholders in a much more collaborative and persuasive strategic approach (Holtzhausen 2008). They have generated a change in communication management, shifting from an informative mainstream approach towards a more conversational and dialogic communication model (Capriotti et al. 2021). Thus, dialogic communication is a well-accepted model for creating connections and relationships between an organisation and its stakeholders via the Internet (Kent and Taylor 1998, 2002) and for studying internet-based organisational communication strategies (Wirtz and Zimbres 2018).

Digital communication strategy has become a relevant part of organisations' overall strategic communication process since it determines how the entities present themselves, disseminate their messages, and interact with their stakeholders on digital platforms. Social media have gained prominence in digital communication strategy over the past 15 years and are increasingly integrated into public relations and communication programmes (Capriotti and Zeler 2020; Johann et al. 2021; Wigley and Zhang 2011). Some studies demonstrate that consistent use of social networks is key to improving the effectiveness of communication departments (Cuenca-Fontbona et al. 2022; Zerfass et al. 2019).

Social media is a suitable channel for universities as they are proper platforms to connect the community (Peruta and Shields 2016), promote their brand identity (Zadeh and Sharda 2022) and cultivate a strong and distinctive reputation (Fähnrich et al. 2020). However, despite numerous studies exploring various aspects of universities' communication on social networks, there is still a gap in comprehensive analysis encompassing all dimensions of institutional communication on social media. Previous research has primarily focused on studying universities' presence on platforms (García García 2018; Stuart et al. 2017), their level of activity (Beese 2019; Brech et al. 2017; Ebrahim and Seo 2019; Eger et al. 2020; Fähnrich et al. 2020), general approaches employed (Guzmán Duque and Del Moral 2013; Kimmons et al. 2017; Kisiolek et al. 2020), the communication resources used (Brech et al. 2017; Cancelo Sanmartín and Almansa Martínez 2013; Ebrahim and Seo 2019; Peruta and Shields 2016), and the content disseminated (Atarama-Rojas and Vega-Foelsche 2020; Fähnrich et al. 2020; Marino and Lo Presti 2018). Therefore, there is a need for more in-depth studies into institutional communication on social media platforms within universities, adopting a broader perspective and utilising more comprehensive samples.

The main objective of this paper is to study the institutional communication of universities on social media by identifying its key dimensions: posting, interactivity, and content. The study investigates 70 higher education institutions in Europe, the United States and Latin America and analyses their presence on three major social networks: Twitter, Facebook, and LinkedIn. By integrating these dimensions, which have traditionally been studied in isolation, this research contributes to the field of organisational communication by enhancing our understanding of social media management. It also helps practitioners optimise and enhance their social media communication strategy.

Theoretical background

Social media are optimal tools for achieving strategic communication goals (Cuenca-Fontbona et al. 2022). They have a significant impact on an organisation's performance, as they improve relationships with users, provide greater access to information and encourage direct contact with stakeholders (Parveen et al. 2014). Practitioners recognise the value of social media platforms for strategic digital communication (Chung et al. 2017), as they have a solid potential to create environments that facilitate effective relationships. The active participation of organisations in social networks also has a positive relationship with an organisational reputation (Dijkmans and Kerkhof 2015).

Organisations can use digital channels to disseminate content, actively listen, and engage in online conversations (Neill and Moody 2015). Establishing the main structural patterns or guidelines that orientate the strategic management of social media is key for achieving communication objectives. On the one hand, the active presence of organisations on social networks as part of their communication strategy is unquestionable (Losada Díaz and Capriotti 2015) since it allows entities to have their profile to manage and share their information proactively (Cho et al. 2016). On the other hand, strategic management of social media communication entails promoting interactivity, conversation and dialogue between the parties in the digital sphere (Valentini 2015) as it encourages organisations and stakeholders to share, advocate, socialise and co-create (Paintsil and Kim 2022). Social media are suitable channels for communicating business activities (Kilgour et al. 2015) and disseminating sustainability policies and practices (Zeler and Capriotti 2019). Consequently, content is another key issue of the social media communication strategy (Valentini 2015), as it contributes to defining the organisation's communicative positioning on social networks (Capriotti et al. 2023).

Thus, three key dimensions of social media institutional communication can be identified: the *posting performance*, the *interactivity focus*, and the *content combination*. These three dimensions are very closely related and influence each other. Therefore, a conceptual design including all these three dimensions is essential to organisations for analysing and drawing up adequate strategies to reach, connect and engage with stakeholders.

Posting performance. Active social media presence is key to achieving visibility, and digital visibility increases users' knowledge about an organisation. Social media allow users to view status updates and organisational posts, share them with other users, and/or comment on them, enhancing exposure and institutional outreach. Active presence also increases the possibility of generating conversations with users (Bezawada et al. 2013). Hence, the social media posting performance refers to designing and developing a consistent presence and adequate activity in social networks (Capriotti et al. 2023).

Universities can foster an active presence on social media by properly managing two key elements of their posting performance: the *Activity* undertaken and the *Presence* adopted on each platform. They define the (greater or lesser) degree of the active presence of the communication activity carried out by entities.

The *Activity* on social media defines the average frequency of publications that organisations post on platforms. However, there is a lack of unanimous consensus on the appropriate frequency of posting on social media (since researchers may have explored

different types of organisations and contexts using different methodologies and sampling frames). The effective frequency of social media posting is difficult to quantify: if universities post too frequently, they risk annoying their followers, while if they post too infrequently, users may forget that they exist (Capriotti et al. 2021). Depending on the volume and frequency of publications, the level of activity of the organisations in their social networks will be established (Capriotti et al. 2023): from *high activity* (with a high volume and frequency of posts above the recommended average) to *low activity* (with a low number of posts or low frequency, below the suggested average). Thus, universities may have a more "active" profile (with a high frequency of posts) or a more "passive" profile (with a low volume of posts) on their social networks.

Presence refers to the kind of information that is best suited for the business profile on social networks to meet communication needs. Universities can create and promote their information, but they can also disseminate information designed and posted by third parties or entities. In this sense, there are three different types of presence on social networks based on posts published (Capriotti et al. 2023): *proprietary posts*, where the organisation creates and disseminates its content on its profiles; *shared posts*, where the organisation shares content from other users on its profiles without adding additional customised information or content; and *hybrid posts*, where the organisation shares content from other users on its profiles, adding additional customised information or content. A combination of the three types of posts defines a particular approach or line of digital communicative presence: from *highly proprietary* (with a high quantity of proprietary posts) to *highly shared* (with a high number of shared posts). By publishing more proprietary content, universities favour a "centripetal" type of presence, developing a profile with a more centripetal focus (Scolari 2009), aimed at attracting followers to their topics and content and retaining them or encouraging them to go deeper into their profile. By publishing mainly shared content, entities have a "centrifugal" type of presence, developing a profile with a more centrifugal approach (Scolari 2009), focused on motivating followers with more general content and promoting the option of linking them to other profiles and spaces where they can broaden and go deeper into these topics.

Consequently, the interrelation of the two aspects will determine the type of *posting performance* developed by analysing the level of the active presence of the entities on social networks. Combining the type of presence chosen and the level of activity developed will define a particular social media posting performance:

- "Passive Centripetal" performance (little shared activity)
- "Active Centripetal" performance (much shared activity)
- "Passive Centrifugal" performance (little proprietary activity)
- "Active Centrifugal" performance (much proprietary activity)

Interactivity focus. Web 2.0 has facilitated more symmetrical interactions and increased the possibilities for negotiation in terms of power and mutual influence through dialogic and interactive forms of communication (Capriotti and Zeler 2020; Ingenhoff and Koelling 2009).

Focusing communication strategies on dialogue in social media would benefit organization-stakeholder relationships. Dialogic communication between organisations and online users occurs when both parties are willing to establish a communicational exchange (Kent and Taylor 2002). The basis for dialogic communication lies in the subjects' (i.e., the organisations' and the online users') readiness and willingness to interact with one another (Taylor and Kent 2014). Theunissen and Wan Noordin (2012) argue that successful organisations design appropriate dialogic environments that facilitate stakeholder engagement. Entities' messages can facilitate online users' engagement and may foster two-way conversations (Eberle et al. 2013).

Universities may develop their interactivity focus to create a suitable interaction with their stakeholders (Capriotti and Zeler 2020). Social media interactivity focus refers to the universities' predisposition to interact with their stakeholders, encouraging the unidirectional dissemination or a dialogic exchange of information by applying a particular communication approach to their publications and using specific digital resources that foster (or not) communicative reciprocity (Capriotti and Pardo Kuklinski 2012).

Thus, the interactivity focus in social media networks (that manifests the willingness to interact) involves two core aspects: the *general communicative approach* used for publications and the *communication resources* applied to them. They determine the (greater or lesser) degree of interactivity of the communication carried out by universities.

The *General Communicative Approach* refers to the informational or relational global orientation applied on the organisational posts that encourage (or not) followers to support their content, share it and engage in conversations with their opinions and experiences. It entails the design of content using (or not) directive speech acts (Yule 1996) (e.g., call to action, questions, requests) to increase or reduce the possibility for higher or lower user participation (Capriotti and Zeler 2020). It can enhance conversations with online users, motivating involvement with stakeholders (Kisiolek et al. 2020). Two types of Communicative Approaches can be identified (Capriotti and Zeler 2020): the *informational* approach fundamentally aims to disseminate information to inform stakeholders and to influence the entities' reputation, where the posts are mainly unidirectional, expositive and descriptive. The *conversational* approach mainly seeks to establish and build relationships by allowing dialogue and interaction between the universities and its stakeholders, where the posts are more bidirectional, relational and dialogic. The combination of the posts with the two types of approaches defines a particular level of general communicative approach: from *very informational* (with most posts with an informative approach) to *very conversational* (with most posts with a conversational approach).

Communication resources enable the development of posts to disseminate information and engage with users on social media (Fähnrich et al. 2020; Luarn et al. 2015; Stsiampkouskaya et al. 2021). Social networks provide various resources to create, disseminate and interact with the content. Entities may use various communication resources to convey information and connect effectively with users on social media by combining several instruments. Using communication resources helps content to generate greater outreach and interaction (Pletikosa Cvijikj and Michahelles 2013). Two main types of communication resources could be identified: *expositive* resources are basically unidirectional tools that facilitate the dissemination of information (i.e., texts, images, emojis, video, audio, GIFs, etc.). *Interactive* resources are essentially bidirectional tools that foster information exchange and widely allude to users' participation (i.e., links, hashtags, labels, questionnaires, etc.). Depending on the combination of types of resources, the level of communicative resources of the universities in their social networks will be established: from *very expositive* (with a majority application of expositive resources) to *very interactive* (with heavy or majority use of interactive resources).

Thus, the interrelation of these two aspects will enable the recognition of the type of *interactivity focus* promoted by assessing universities' level of interactivity on social networks (Capriotti and Zeler 2020). The combination of a selected general approach (informational or conversational) and the resources applied (expositive or interactive) in social networks will determine a specific social media interactivity focus:

- "Monologic" focus (informational approach and expositive resources).
- "Extended Monologic" focus (informational approach and interactive resources).
- "Incipient Dialogic" focus (conversational approach and expositive resources).
- "Dialogic" focus (conversational approach and interactive resources).

Content combination. Digital platforms allow organisations to effectively communicate their activities with users, providing significant advantages for disseminating content (Taylor and Kent 2014). Social media have expanded organisations' capabilities for the mass, controlled dissemination of information. Entities design their messages and broadcast them to their stakeholders quickly, easily and internationally (Chaudhri and Wang 2007). Moreover, social networks have led to increased demand for content by users (Valentini 2015). The Digital 2022 report suggests that users are interested in receiving information about brands, products and services, searching for information about these topics on social networks (Kemp 2022). Stakeholders expect to receive valuable information from organisations associated with their interests (Kilgour et al. 2015). Thus, content has become a central element of social media existence (Valentini 2015).

Entities use digital platforms to disseminate content about their identity attributes and characteristics (Balmer 2008). In this way, the content selection will contribute decisively to determining the desired communicative positioning of the organisation in social networks through the prioritisation and combination of a set of different contents. Besides this, the way in which content is communicated can impact corporate reputation, that is, the public's perceptions of the organisation (Fähnrich et al. 2020; Melewar et al. 2018). Research shows the benefits of social networks for organisational reputation (Floreddu et al. 2014; Li et al. 2013) and the positive relationship between organisations' active participation in social media and corporate reputation (Dijkmans and Kerkhof 2015).

An analysis of content management on social networks should consider the type of content provided by organisations to their stakeholders and how the information is organised and combined over time and through different platforms. Thus, the *content combination* in social networks consists of the selection, prioritisation and combination of different types of content related to the universities' activities (Fähnrich et al. 2020; Melewar et al. 2018).

Social media are optimal channels for communicating different types of content. Several previous studies about content dissemination of universities (Atarama-Rojas and Vega-Foelsche 2020; Capriotti et al. 2023; Ebrahim and Seo 2019; Fähnrich et al. 2020; Di Nauta et al. 2020) show five main general topics: teaching, research, social commitment, organizational and contextual. *Teaching*: related to academic life, its training offer and teaching activity (Ebrahim and Seo 2019; Di Nauta et al. 2020). *Research*: referred to the projects and research activity of the university, as well as the results of the research (Atarama-Rojas and Vega-Foelsche 2020; Fähnrich et al. 2020). *Social commitment*: focused on the "third mission" of the institution as well as its USR, ESG and Sustainability projects and activities (Gori et al. 2020; Di Nauta et al. 2020). *Organizational*: inform and promote its operation and general activity, as well as the daily actions of its managers, to make the administration of the university transparent to its multiple stakeholders (Atarama-Rojas and Vega-Foelsche 2020; Ebrahim and Seo 2019; Fähnrich et al. 2020). *Contextual*: the dissemination of topics or events in the general environment (social, economic, cultural, etc.) and, in some cases, disseminating an opinion or taking a position on them (Atarama-Rojas and Vega-Foelsche 2020; Ebrahim and Seo 2019).

Universities must decide the key contents (the quantity of key topics to talk about in their institutional communication through social networks) and the combination of contents (those with higher and lower presence). There will be topics ranging from a *very low volume* (very low number or percentage of publications) to topics with a *very high volume* (high percentage of posts). The key contents and their level of combination will contribute to defining the communicative positioning of the institution, presenting itself with a specific profile and making a particular combination of its key aspects visible in the digital sphere.

Thus, the quantity of key topics and their specific combination will enable the recognition of the type of content combination implemented. Four significant social media content combinations can be defined:

- "Exclusive" (one highly preponderant topic and the others of little relevance).
- "Dominant" (one preponderant topic and some -one to three- fairly relevant complementary topics).
- "Combined" (a few -two/three- quite relevant topics and the others of little relevance).
- "Balanced" (several -three to five- quite relevant topics and the others of little relevance).

Methodology

A content analysis was conducted on the institutional communication of 70 higher education institutions across the United States (due to its large and predominant presence in the rankings), Europe (a benchmark in international higher education), and Latin America (due to its high potential and level of university development) in Facebook, LinkedIn and Twitter.

The following research questions (RQ) were defined:

RQ1: What is the posting performance of the universities on their social networks?

RQ2: What is the interactivity focus of the universities on their social networks?

RQ3: What is the content combination of the universities on their social networks?

The universities were selected based on their position in the three most prestigious international rankings today: *ARWU Ranking of World Universities*, *THE TIMES Higher Education Rankings*, and *QS World University Rankings*. For the European and US universities, their position among the top 100 entities was considered. Latin American universities were chosen for their global position and by regions in the rankings since they were absent among the top 100. In Europe and Latin America, priority was given to geographical diversity to achieve greater representation of countries. Finally, 20 were selected from the United States, 25 from Europe, and 25 from Latin America (Appendix 1).

The social networks (Facebook, Twitter and LinkedIn) were selected on the basis of their popularity and relevance for universities' digital institutional communication (Kemp 2022). Facebook is the social network with the highest number of active

monthly users worldwide - 2.91 billion users - (Kemp 2022). It offers organizations a platform to share content and facilitate the development of unique narratives for universities, allowing them to engage and interact with their community (Eger et al. 2020). Facebook's user-friendly features and diverse multimedia options make it an effective tool for universities to showcase their activities. Studies demonstrated that the greater the strength of a university's presence on Facebook, the higher the levels of trust and identification with the actual university community (Nevzat et al. 2016). Twitter, currently called X, is deemed to be one of the main platforms for disseminating information - 436 million users - (Kemp 2022). It is characterized by users sharing other users' content to exchange of ideas, encourages debate, enabling higher education institutions to actively participate in broader conversations surrounding education, research, and societal issues. Studies revealed that through hashtags, retweets, and mentions, universities can extend their reach and foster meaningful engagement with their community (Kimmons et al. 2017). And LinkedIn, with 900 million users, is the largest social network devoted entirely to professional activity (LinkedIn n.d.), is the leading professional-oriented social network, plays a significant role in promoting and contributing to the discourse of employability (Komljenovic 2019). Studies indicated that LinkedIn is a suitable platform for students, alumni, and faculty to create a network and connect with industry professionals, as well as it allows universities to showcase their academic programs, faculty expertise, and research achievements to a targeted professional audience (Amaral and Santos 2020). In this way, the choice of these social networks allows us to evaluate the communication management of universities on three platforms with specific particularities and different user profiles: Facebook has a more relational and community creation orientation, Twitter (X) is more oriented to the dissemination of information and LinkedIn focuses on the professional connection of users. The analysis of three social networks will facilitate their comparison to find out whether there are significant differences between the platforms.

The units of analysis are publications made by universities in their official institutional accounts within the established time periods. It is important to note that universities often maintain multiple profiles on social networks, as various departments, schools or faculties may have their own dedicated presence to connect with its specific stakeholders. However, for the purpose of this research, the official general institutional profiles of universities have been chosen. This profiles typically represent the institutional overarching position to its different stakeholders (Atarama-Rojas and Vega-Foelsche 2020; Ebrahim and Seo 2019; Qomfo et al. 2019). By examining the publications from these official profiles, insights into the overall institutional communication strategies and practices adopted by universities can be obtained.

To guarantee complete and reliable data on the volume and intensity of the universities' communication activities, all posts collected over a period of six months during 2021 were analysed. Three months were chosen in the first semester (from March to June) and three months in the second semester (from September to December), yielding a total of 26 weeks and 183 days.

A content analysis of the posts by the universities was carried out. Information was collected and processed via the platform and mass data and information collection and management system of the company Noticias Perú (www.noticiasperu.pe). Two work teams were set up: one team of three people (one supervisor and two technicians) to search for and retrieve publications, and another team of three people (one supervisor and two analysts) for the initial data extraction and analysis.

To evaluate the intercoder reliability and agreement of the method used, the two analysts carried out a test on a sample of 300 publications using a random procedure, considered highly satisfactory to evaluate the agreement between and reliability of the two analysts (Lombard et al. 2002). Based on the percentage calculation of agreement between the two analysts and the 2×2 contingency tables as a basis for statistical analysis, with a 95% confidence interval, Cohen's Kappa coefficient (k) was calculated to assess the reliability of the categorical variables. Thus, the following percentage of agreement was obtained: for "Presence", 99% (Kappa value of .99) and for "Activity", 97% (Kappa value of .96). For the "General Approach" it was 91% (Kappa value of .82) and 90% for the "Communication Resources" (Kappa value of .93). For Topic 1, 91% (Kappa value 0.83) and for Topic 2, 90% (Kappa value 0.80). This demonstrates the high agreement in the criteria of the tool, so it can be concluded that the measurement is adequate. Having recorded the data in an Excel template, it was transferred into the IBM SPPS Statistics 25 program for statistical processing and for the researchers to obtain results.

Three categories of analysis were established: "posting performance", "interactivity focus" and "content combination". They have been developed and tested in prior studies individually (Capriotti et al. 2023; Capriotti et al. 2023; Capriotti and Zeler 2020; Losada Díaz and Capriotti 2015).

To study the social media posting performance (RQ1), two scales were designed ("Level of Activity" and "Type of Presence") by assigning a weighted value to the Presence and the Activity of the institutions, providing a qualitative interpretation of the *level of active presence* of universities on social networks.

The *Level of Activity (LoAC)* analyses the daily mean frequency of posts (Zeler and Capriotti 2019). Several studies (Feehan 2022; McLachlan 2021; Newberry 2021; Williams 2020) suggest the following suitable posting frequency: Facebook (1-2 posts per day), Twitter (3–5 tweets per day) and LinkedIn (0.5–1 post per day). Each social network has its own characteristics, the entities may use them for specific objectives, and in each one there is different recommended publication levels (Feehan 2022; McLachlan 2021; Newberry 2021; Williams 2020). To analyse the level of activity in the three social networks, based on the recommended posting frequency in each one, an equivalence table was developed, 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. Thus, starting from inactivity, a scale was defined based on the daily average number of posts disseminated, with a weighted value to the intensity of posting activity, awarding from 1 to 5 points, from the values of "very low activity" to "very high activity" (Appendix 2).

Type of Presence (ToPE) evaluates the type of posts (proprietary, shared or hybrid) by the institutions on their social networks (Capriotti et al. 2021; Cho et al. 2016). Beese (2019) emphasises the importance of disseminating content following the 4-1-1 rule: four posts of new content considered relevant to users, one self-serving post and one repost of information shared by other users. The result would be an appropriate combination of 85% self-serving posts and 15% shared posts (approximately). This rule should be slightly modified from platform to platform. A scale was established with a value weighted to the different types of presence, assigning values for each post between 1 and 2 points, where 1 = "Shared"; 1.5 = "Hybrid" and 2 = "Proprietary". This allows to establish a categorisation for the quantitative and qualitative analysis and interpretation of the results, from "highly shared presence" to "highly proprietary presence" on the social networks (Appendix 3).

The combination of these 2 scales (LoAC and ToPE) will allow producing a matrix to position the different institutions, which facilitates the recognition of the social media posting performance implemented, from a low shared activity ("passive centrifugal") to a high proprietary activity ("active centripetal").

To establish the universities' social media interactivity focus (RQ2), two scales were constructed (the "Level of General Approach" and the "Level of Resources"), giving a qualitative interpretation of universities' *level of interactivity* on social networks.

For the *Level of General Approach (LoGA)*, a nominal measurement variable was chosen with two categories (1 = informational; 2 = conversational). A scale was established to assign weightings from "very informational" to "very conversational" based on the score assigned to the different types of posts (Appendix 3).

For the *Level of Resources (LoRE)*, an ordinal measurement variable with a six-grade scale was constructed (0 = inactive; 5 = very interactive) that measures the resources used based on the assigned weights (0 = does not contain a resource; 1 = contains a resource) in each magnitude analysed (text, graphic, audiovisual, referential, hypertextual and participatory). A scale was established based on the combination of the communicative resource types used in the posts, from "very expositive" to "very interactive" (Appendix 3).

Based on the relationship between these two variables, the combination of these two dimensions (LoGA and LoRE) results in a matrix that allows identifying the social media interactivity focus developed, from a "monologic" focus (informational approach and expositive resources) to a "dialogic" focus (conversational approach and interactive resources).

To analyse the social media content combination (RQ3), five main general thematic contents related to the universities' activities were identified (Capriotti et al. 2023; Ebrahim and Seo 2019; Fähnrich et al. 2020; Oliveira et al. 2022): *Teaching* (academic life, training provision and teaching activity); *Research* (projects and research activity and research results); *Social Commitment* (social projects and activities, USR and Sustainability); *Organizational* (general running, daily performance of its managers and transparency of management), and *Contextual* (issues concerning the general and sectoral environment).

For the recognition of the *key topics*, a six-interval scale was developed based on the percentage of the posts of each type of content over the total publications: very low (less than 10%); low (10–19.9%); medium (20–29.9%); high (30–44.9%); rather high (45–59.9%); very high (more than 60%). This will also allow establishing the *Level of Combination (LoCO)*, through the combination of the different percentage presence of each type of content of the universities in social networks (Appendix 3).

Accordingly, four major content orientation were defined: *Balanced*: three or more relevant topics (with percentages greater than 20% and less than 45%, approximately) and with differences of less than 15 percentage points. *Combined*: two relevant topics (with percentages higher than 30% and lower than 45%), and the other topics not being of great relevance (with percentages lower than 20%, approximately). *Dominant*: one preponderant theme (with percentages higher than 45%) and one or two complementary topics (with percentages between 20 and 30%, approximately) and with differences of greater than 15% percentage points. *Exclusive*: one highly preponderant topic (with a percentage of more than 60%) and the other topics of little relevance (with percentages of less than 20%, approximately). In addition, an *Inactive* option was established (no content) (Appendix 3).

The appropriate selection and combination of each of the different types of content will define the universities' social media content combination, from an "exclusive" combination (with a single, highly preponderant theme) to a "balanced" combination (with several themes of balanced importance) whose orientation will be marked by the most relevant thematic content.

Table 1 Posting performance by region.

Region	LoAC	ToPE	Performance
EUR	2.1	1.75	Passive Centripetal
USA	2.6	1.74	Passive Centripetal
LAT	3.5	1.90	Active Centripetal
TOTAL	2.70	1.82	Passive Centripetal

Table 2 Posting performance on social networks by regions.

Social Networks	Region	LoAC	ToPE	Performance
Twitter	General	2.50	1.71	Passive Centripetal
	EUR	1.90	1.59	Passive Centripetal
	USA	2.90	1.64	Passive Centripetal
	LAT	3.00	1.83	Active Centripetal
Facebook	General	3.10	1.98	Active Centripetal
	EUR	2.10	1.98	Passive Centripetal
	USA	2.10	1.97	Passive Centripetal
	LAT	4.90	1.97	Active Centripetal
LinkedIn	General	2.40	1.98	Passive Centripetal
	EUR	2.60	1.97	Passive Centripetal
	USA	2.50	1.98	Passive Centripetal
	LAT	2.20	1.98	Passive Centripetal

The data were first recorded on an Excel template designed for this work. Then, they were processed with the IBM SPSS 25 program for statistical analysis by the researchers to confirm the results and find out significant differences and associations between social networks and/or regions. For the posting performance (presence and activity), firstly, a Chi-Square test and Cramer's V symmetric measure were carried out; secondly, a simple correspondence analysis was carried out; and thirdly, a multiple correspondence analysis with optimal scaling was performed. For the interactivity focus (approach and resources), a bivariate correlation analysis (Spearman's Rho) was conducted, followed by a two-way ANOVA and the Kruskal-Wallis H test. For the content combination (thematic topics), a one-factor ANOVA analysis was performed.

Results

Posting performance. The universities' social media posting performance on their profiles can be defined as a "passive centripetal" (Table 1), with a medium-low level of activity and a very high presence of proprietary content. Concerning the regions, universities in Europe and the United States (although with some differences between regions) have a general "passive centripetal" performance (low volume of activity, with mainly proprietary posts), while those in Latin America develop an "active centripetal" performance (good volume of mostly proprietary activity). For the *Level of Activity (LoAC)*, Latin America has medium-high activity, the United States performs medium-low activity, while Europe records low activity. And for the *Type of Presence (ToPE)*, the three regions have a highly preponderant presence of proprietary content: Latin America has the highest result for proprietary content, while Europe and the United States have a similar presence of proprietary content.

Regarding the social networks (Table 2), the general data suggest that on Facebook, universities maintain an "active centripetal" performance (good volume of activity, which is mostly proprietary), while on Twitter and LinkedIn (with some differences), the performance is one of "passive centripetal" (low volume of activity, with mainly proprietary publications). The result on Twitter shows that universities in Europe follow a "passive centripetal" performance, with a low level of activity and

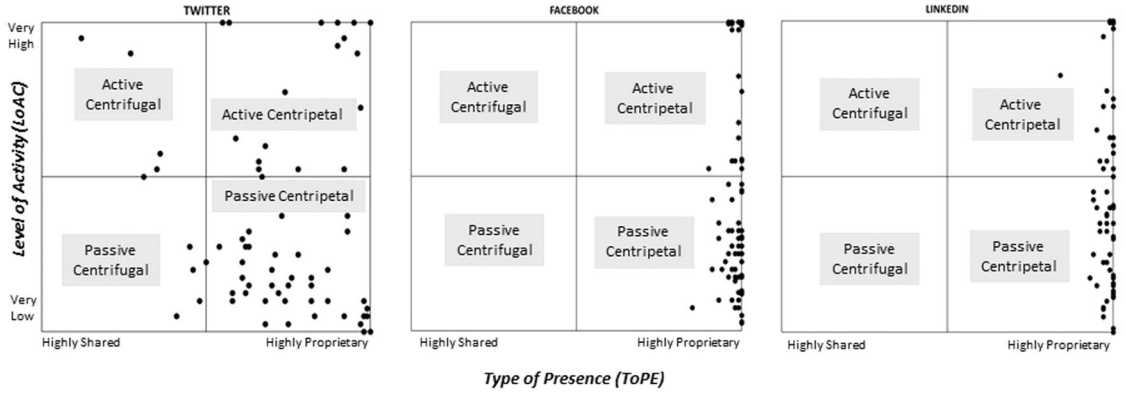

Fig. 1 Posting performance. This figure shows the posting performance by universities on social media.

mainly proprietary publications, although with a reasonable degree of hybridisation. Despite making more proprietary posts, the United States also presents a "passive centripetal" performance, but its activity is more significant. For its part, Latin American institutions develop an "active centripetal" performance, with a good volume of activity and with mainly proprietary posts. The result on Facebook reveals an "active centripetal" performance, with a high volume of activity and with mostly proprietary posts by the universities of Latin America. Europe and the United States show a similar general "passive centripetal" performance, with mainly proprietary posts but a low volume of activity. The result on LinkedIn is low in all the universities. The three regions maintain a similar general "passive centripetal" performance, with a low volume of activity and mostly proprietary posts.

However, although a general line of posting performance can be identified for each social network, the dispersion matrices (by universities) show a great variety of strategies, mainly on Twitter (with a more hybrid presence) and with similarities on Facebook and LinkedIn (Fig. 1).

Interactivity focus. The results of universities' social media interactivity focus on their profiles are very eloquent: they are clearly "monologic" (Table 3). The data show an eminently informational approach and a hybrid-expositive use of the communicative resources in the universities' posts. There are no significant differences between regions since all three have "monologic" focus. However, Latin America performs slightly better in both indicators (LoGA and LoRE), slightly above the general average.

As for social networks (Table 4), the universities follow a similar pattern in the General Approach (LoGA) in the three platforms, albeit with certain nuances in the use of resources (LoRE). On Twitter, the entities have a "monologic" interactivity focus. They are below the average on both levels (LoGA and LoRE) and display a very informational approach and hybrid-expositive resources. On Facebook and LinkedIn, the institutions have an "extended monologic" interactivity focus, obtaining better scores – above average – than on Twitter in the general approach (LoGA) and, principally, the communicative resources (LoRE). In both social networks, they display very similar behaviour (very informational) in the General Approach, although LinkedIn stands out for its hybrid-interactive use of resources. No significant differences are observed between the regions on any social network.

The breakdown by universities in a dispersion matrix shows that the institutions display fairly homogeneous interactivity focus on Facebook and LinkedIn and more heterogeneous and differentiated focus on Twitter (Fig. 2).

Table 3 Interactivity focus by region.

Region	LoGA	LoRE	Focus
EUR	1.09	2.35	Monologic
USA	1.04	2.38	Monologic
LAT	1.12	2.45	Monologic
TOTAL	1.09	2.41	Monologic

Table 4 Interactivity focus by social network and region.

Social Network	Region	LoGA	LoRE	Focus
Twitter	TOTAL	1.07	2.31	Monologic
	EUR	1.06	2.18	Monologic
	USA	1.03	2.26	Monologic
	LAT	1.11	2.40	Monologic
Facebook	TOTAL	1.12	2.51	Extended Monologic
	EUR	1.14	2.51	Extended Monologic
	USA	1.08	2.59	Extended Monologic
	LAT	1.12	2.49	Extended Monologic
LinkedIn	TOTAL	1.12	2.61	Extended Monologic
	EUR	1.11	2.59	Extended Monologic
	USA	1.07	2.66	Extended Monologic
	LAT	1.19	2.60	Extended Monologic

Content combination. Concerning content combination (Table 5), on a general level, it could be noted that the universities have an "exclusive" content combination of an organizational nature. Organizational content accounts for a large majority, followed at a great distance by teaching content, research content, social commitment, and environmental content. By region, there are some significant differences. The institutions in the United States and Europe have a clear "exclusive" combination for their publications. Still, the entities in Latin America have a "dominant" combination since, in addition to having a high preponderance of organisational content, they also have a significant amount of teaching posts.

By social networks (Table 6), Facebook differs little from Twitter and LinkedIn. On Facebook, the content combination is "dominant" with organisational posts and the teaching content is complementary, except in the United States, where the combination is clearly "exclusive". The combination in the other two social networks is "exclusive" (also of organisational themes). Europe and the United States follow the general orientation, while it is "dominant" (organisational and teaching) in Latin America.

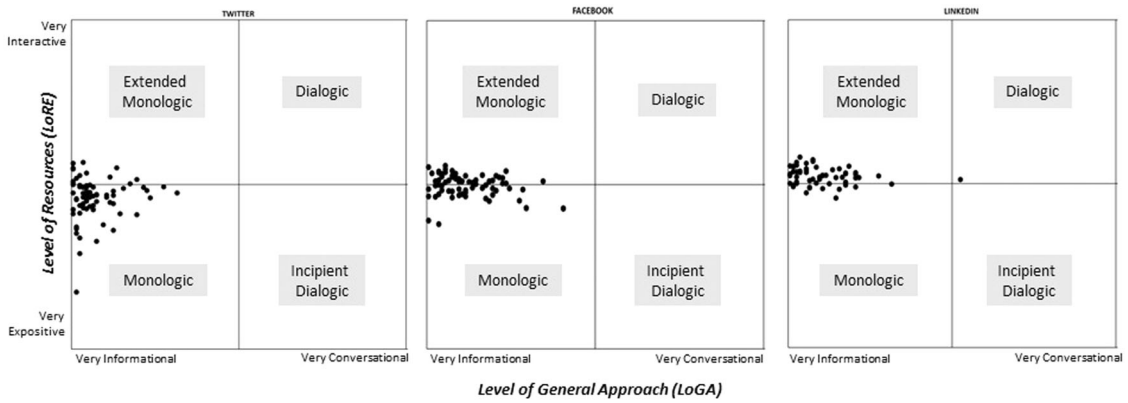

Fig. 2 Interactivity focus. This figure shows the interactivity focus by universities on social media.

Table 5 Content combination by region (%).

Region	Organizational	Teaching	Research	Commitment	Context	Combination
EUR	69.0	17.4	10.9	1.1	1.6	Exclusive
USA	76.9	12.5	8.8	1.0	0.9	Exclusive
LAT	61.6	23.8	6.0	4.6	4.1	Dominant
TOTAL	68.6	18.3	8.5	2.3	2.3	Exclusive

Table 6 Content combination by social networks and region (%).

Social Network	Region	Organizational	Teaching	Research	Commitment	Context	Combination
Twitter	TOTAL	70.2	17.2	8.1	2.0	2.5	Exclusive
	EUR	72.0	14.7	10.6	0.9	1.8	Exclusive
	USA	76.4	12.8	8.8	0.9	1.1	Exclusive
	LAT	63.3	23.2	5.0	4.1	4.5	Dominant
Facebook	TOTAL	65.8	20.8	8.5	2.9	2.0	Dominant
	EUR	62.5	23.6	10.7	1.8	1.4	Dominant
	USA	77.7	11.8	8.5	1.5	0.6	Exclusive
	LAT	59.7	25.0	6.4	5.1	3.8	Dominant
LinkedIn	TOTAL	72.7	15.0	10.1	1.2	1.0	Exclusive
	EUR	71.6	15.3	11.4	0.6	1.1	Exclusive
	USA	80.5	10.0	8.3	0.8	0.4	Exclusive
	LAT	64.9	20.6	10.2	2.6	1.6	Dominant

It should be noted that Latin American universities have a "dominant" combination in all social networks (unlike Europe and the United States), with a lower weight of organisational content and a greater relevance of teaching publications.

Although there are differences between regions and social networks, the dispersion matrix of universities shows that most institutions follow an "exclusive" or a "dominant" combination, with an outstanding preponderance of organisational content, complemented by teaching and research topics (Fig. 3).

Discussion

When assessing social media institutional communication, it is important to analyse how universities integrate the different specific dimensions (posting, interactivity and content) to disseminate information and develop stable, long-lasting relationships with their stakeholders.

Concerning social media posting performance (RQ1), in general, the universities mainly apply "Centripetal" performance (principally promoting proprietary content on their social networks), but with significant divergence in relation to the level of activity carried out (Fig. 4).

The "Passive Centripetal" performance is the most consolidated in the three social networks (71.5% on Facebook, 61.5% on Twitter, and 65.5% on LinkedIn) with communication based on proprietary posts and low activity on social media. Another relevant set of institutions have an "Active Centripetal" performance (28.5% of universities on Facebook, 34.5% on LinkedIn, and 24.5% on Twitter), with proprietary publications and a good level of activity on social networks. "Centrifugal" posting performance has a very low presence. The "Passive Centrifugal" performance is only practised by six universities, with mainly shared content and low activity. The "Active Centrifugal" performance is implemented by four universities, with shared content and a good level of activity. On LinkedIn, 12 universities are inactive.

Regarding social media interactivity focus (RQ2), "monologic" focus is the most implemented by universities (Fig. 4). Still, the results enable us to infer that institutions are changing their management of social networks towards a framework that, while continuing to prioritise the dissemination of information (informational approach), it is evolving towards more widespread use and combining various communication resources (expositive and interactive) that make content more attractive and promote interaction with stakeholders.

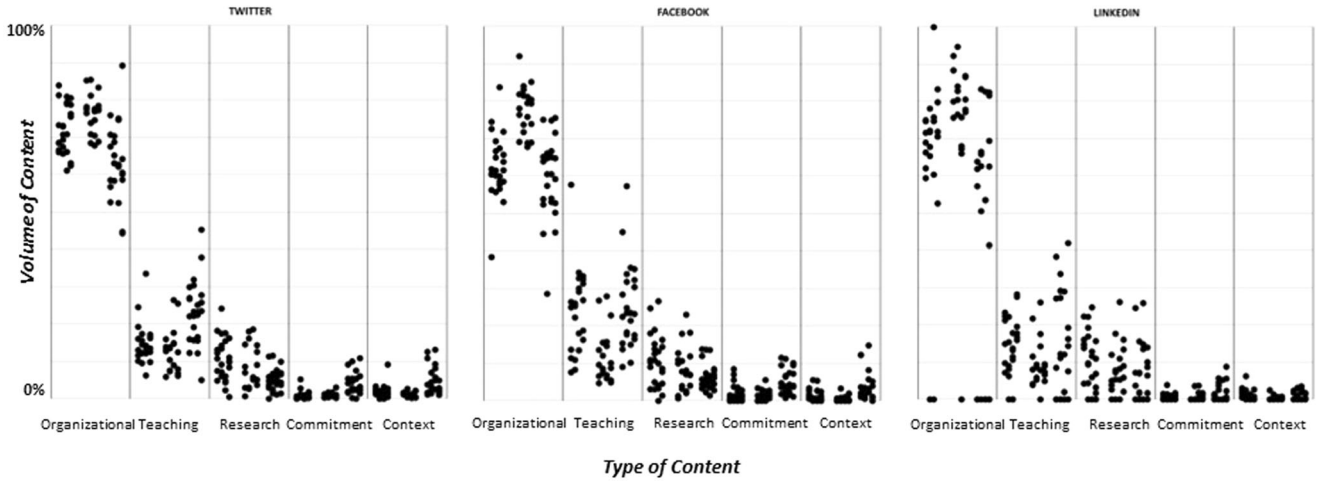

Fig. 3 Content combination. This figure shows the content combination by universities on social media.

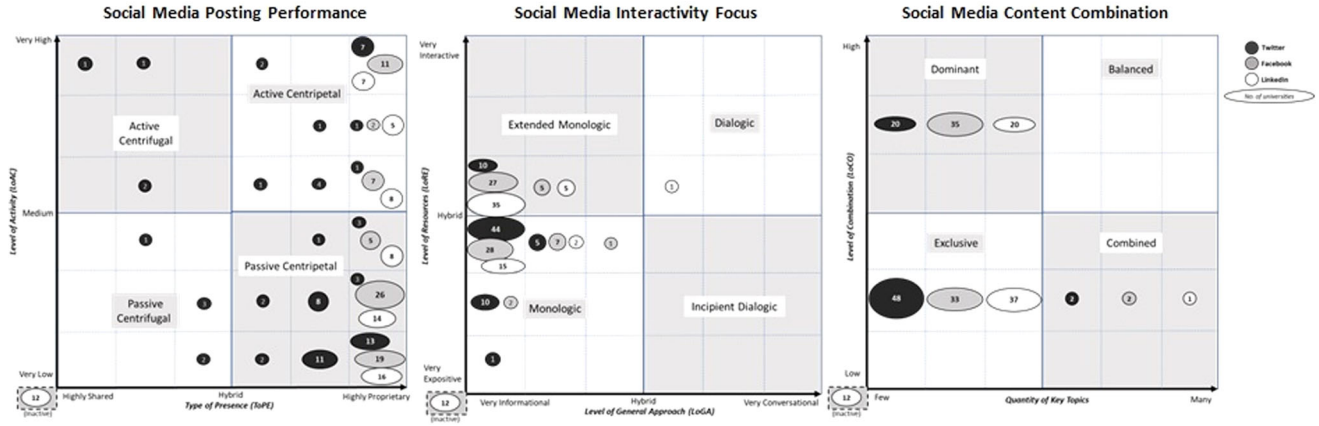

Fig. 4 Social media institutional communication. This figure shows the integration of the different specific dimensions by universities.

There are certain differences between social networks. On Twitter, the interactivity focus tends to be mainly "monologic" (85.5%, informational approach + expositive resources). On LinkedIn, in contrast, the entities are likely to apply more interactive resources, and the focus is slightly biased towards an "extended monologic" (68.9% = informational approach + interactive resources) framework. The universities' activity on Facebook falls somewhere between the other two social networks, with a similar number of universities with a "monological" (54.3%) and an "expanded monological" (45.7%) focus.

Considering social media content combination implemented by the universities (RQ3), it is observed that universities are developing two main combinations: "exclusive" and "dominant", in which the presence of organisational content is far more preponderant than teaching and research posts, while the themes of context and social commitment are used marginally (Fig. 4). Thus, it can be argued that universities use social networks mainly as a strategic instrument of institutional positioning, with support from the functional issues of day-to-day teaching and research activity. These results can be considered as logical, since the institutional profiles analysed will tend to disseminate mainly organizational and contextual information referred to the university, leaving functional information (teaching, research and commitment) for departments and schools.

The vast majority of universities implement an "exclusive" combination, both on Twitter (68% of the institutions) and on LinkedIn (63%), while on Facebook there is a balance between the universities with "dominant" (50%) and "exclusive" (47%) combinations. Very few universities (two on Twitter, two on Facebook and one on LinkedIn) carry out a "combined" combination (of organisational and teaching topics). No one university develop a "balanced" combination.

Concerning the key contents (Fig. 4), all the "exclusive" combination is with organizational-oriented topics (68.5% on Twitter, 47.1% on Facebook, and 63.8% on LinkedIn). Regarding the "dominant" combination, universities give prominence to organisational topics, while complementary topics are usually teaching (19.1% on Twitter, 42.8% on Facebook, and 24.1% on LinkedIn) and, to a lesser extent, research topics (1.5% on Twitter, 4.2% on Facebook, and 10.3% on LinkedIn). The "combined" combination (combining organisational and teaching topics), are scarcely present.

Therefore, based on the combination of the posting performance and the interactivity focus implemented by institutions, we can identify four major stages of social media institutional communication (with blurred boundaries between them) (Fig. 5), which can be complemented and enriched with the content combination implemented:

- Stage 1: "Passive Monologic" (a passive posting performance and monologic-oriented interactivity). Entities want to have a presence on social media, but with minimal activity and without interaction. The little content

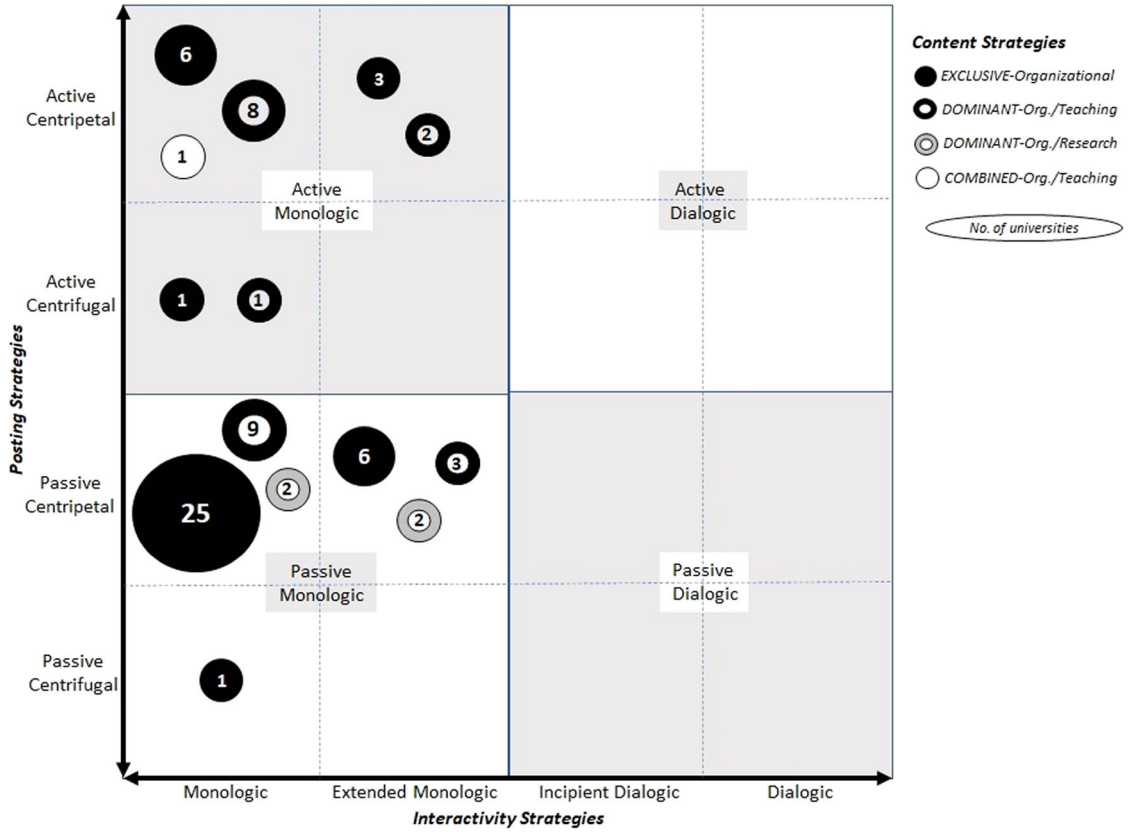

Fig. 5 Universities' social media stages. This figure shows the four major stages of universities' social media communication.

generated by the entity is oriented towards providing some key information about the organisation. It is a clearly top-down approach.

- Stage 2: "Active Monologic" (an active posting performance and monologic-oriented interactivity). Entities want to achieve an active presence on social media, but still with basic interaction. The organisation mainly creates content to disseminate information about the institution and its activities, developing its narrative on social media with information that interests them. It is also a top-down approach.
- Stage 3: "Passive Dialogic" (a passive posting performance and dialogic-oriented interactivity). Institutions want to start interacting with their stakeholders, but with a low level of activity. They create little content of shared interests, although they apply interactive tools and resources to promote dialogue. The interaction is greater than in the previous stages, but it is limited by the low activity of entities. This approach is bottom-up.
- Stage 4: "Active Dialogic" (an active posting performance and dialogic-oriented interactivity). Entities have a good level of activity on their social networks, trying to boost interaction with their stakeholders. Content is designed based on shared interests to promote a fluid and permanent exchange of information, and the tools and resources applied are dialogic and conversational. The approach is clearly bottom-up.

Thus, it can be seen (Fig. 5) that most universities (68.5%) are in the "Passive Monologic" stage, with a clear orientation on proprietary posts ("passive centripetal", 47 of 48 entities), and with a preponderance of "exclusive" content combination. Almost one-third of the universities (31.5%) are in the "Active Monologic" stage, also highly focused on proprietary posts ("active centripetal", 20 of 22 institutions), and with a balanced distribution of universities with "exclusive" and "dominant" content combination. There are no universities in the dialogic stage.

Conclusions

The results of this research allow us to extract some conclusions about the general management of institutional communication in social networks at universities.

On the one hand, higher education institutions are currently developing a social media institutional communication focused on the little active dissemination of proprietary content. Universities are developing a low intensity posting performance, seeking to attract and retain users in their institutional profiles by disseminating their own information. Although there are some significant differences between social networks and regions analysed (entities from Latin America are more active than those from Europe and United States), the results agree, to varying degrees, with several previous studies carried out on some of the specific dimensions (Brech et al. 2017; Cancelo Sanmartín and Almansa Martínez 2013; Kimmons et al. 2017; Kisiolek et al. 2020; Peruta and Shields 2016; Saraite-Sariene et al. 2019; Stuart et al. 2017).

On the other hand, the results also show a clear trend towards greater use by universities of dialogic resources, increasingly applying interactive strategies. However, universities continue to make a majority use of informational resources and strategies on their social networks. The continuous evolution of the social web is generating ever-changing technological innovations and resources that serve as tools for developing new digital

communication strategies to inform and listen to their stakeholders and promote conversation and interaction with them (Capriotti et al. 2021; Fähnrich et al. 2020; Theunissen and Wan Noordin 2012). This raises the question of whether universities are truly utilising these platforms for genuine dialogue with their students and other stakeholders or simply as channels for information distribution. The scarce use of a dialogic approach may limit community engagement and feedback with higher education institutions.

Besides this, there is a concern regarding whether they are effectively using social media to engage users in more crucial aspects of university life. Although some universities are evolving towards a more diverse content mix, they are using social networks mainly as institutional positioning instruments. Results suggest that universities tend to prioritise institutional content over content related to teaching and research. While recent studies have shown that the institutional themes disseminated by universities (organisational and contextual) generate a higher level of engagement than functional content (teaching, research and commitment) (Capriotti et al. 2023), the lingering question is whether they are on a path towards genuine engagement or merely diversifying content for the sake of diversity. Universities should conduct more comprehensive investigations of their online users to gain a deeper understanding of their interests. This enhanced understanding can serve as a foundation for more effectively tailoring and designing their content strategies. This effort can enable universities to create content that not only engages but also educates, informs, and inspires their online community.

This article identifies and analyses three main dimensions (posting, interactivity and content) of the social media institutional communication implemented by universities. Based on the dialogic communication framework for creating connections and relationships between entities and their stakeholders via the internet (Kent and Taylor 1998, 2002) and internet-based organisational communication strategies (Wirtz and Zimbres 2018), this research enhances studies into communication and public relations scholarship by expanding the understanding of social media management. The results enrich the communication and public relations research, allowing other researchers to use this methodology in other sectors, types of entities and social networks, to test the variables and dimensions.

In addition, the study may help communication and public relations professionals to optimise and improve their communication on social media. It can serve as a guide for professionals to carry out the management of communication on social networks. Social networks facilitate the creation of community, and professionals are aware of their value for the relationship between organisations and their stakeholders. Therefore, it will help to identify the aspects for improvement to achieve a more effective strategic communication.

Finally, it would be valuable for future research to not only expand the application of these dimensions to other major social networks with significant social penetration, such as Instagram or TikTok, but also to explore how the combination of these dimensions influences users' level of interaction (Brubaker and Wilson 2018; Fähnrich et al. 2020; Peruta and Shields 2016). Besides this, there is a need to delve deeper into the analysis of each individual social network, in order to obtain a more comprehensive understanding of how the unique characteristics of each platform can impact communicative activities. Additionally, investigating the impact of social media institutional communication on the stakeholders could shed light on the diverse purposes and communication strategies employed by different social media accounts within universities and organizations. By delving into these areas, researchers can further deepen our understanding of the dynamic relationship between social media strategies, stakeholder engagement, and organizational objectives.

Data availability

The datasets generated during and/or analysed during the current study are available in the supplementary files and in the Dataverse repository: https://doi.org/10.7910/DVN/WTRSBC.

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