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GENERATIVE ARTIFICIAL INTELLIGENCE AND ACADEMIC IDENTITY CONSTRUCTION: Emerging Aesthetics in University Communication on Instagram and TikTok

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ABSTRACT

Visual social media has become strategic communication spaces for universities. At the same time, generative artificial intelligence is transforming digital content production processes. This study analyzes the relationship between the use of generative artificial intelligence in institutional visual posts and audience interaction levels on university social media. A quantitative descriptive–correlational approach was applied through the analysis of 420 posts. Results reveal significant differences in engagement levels between posts incorporating artificial intelligence and those produced through traditional methods, as well as statistical relationships among key interaction metrics.

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1. Introduction

Over the last decade, visual social media have become central spaces for the construction of identities, institutional narratives, and public communication dynamics. Platforms such as Instagram and TikTok have profoundly transformed the ways in which organizations and educational institutions produce and disseminate visual content, generating new logics of interaction and symbolic representation in digital environments. In this context, contemporary visual culture is characterized by a growing convergence of communication, technology, and digital aesthetics, in which images become a strategic resource for capturing attention, building reputation, and strengthening ties with increasingly fragmented audiences. (Capriotti & Zeler, 2023; Bader & Condrache, 2025; Aiger et al., 2026).

The predominance of the visual on digital platforms has given rise to communication ecosystems mediated by algorithms, in which images, short videos, and audiovisual narratives play a decisive role in the construction of social and cultural meanings. In these environments, visual content performs not only an informative function but also a performative one, shaping perceptions of identity, prestige, and social belonging among both users and institutions (Zachos et al., 2018; Sørensen et al., 2023; Gharbi et al., 2025).

Within this scenario, universities have intensified their use of social media as tools for institutional communication, academic promotion, and the construction of organizational identity. Universities' digital presence goes beyond the simple dissemination of information, incorporating narrative strategies, visual aesthetics, and interaction dynamics characteristic of contemporary digital culture. Various studies have shown that these platforms help strengthen institutional visibility, foster engagement, and consolidate digital communities around academic identity (Di Tullio et al., 2021; Capriotti & Zeler, 2023; Galioto et al., 2025).

In this context, the use of visual platforms in education reflects a process of adaptation to a media culture marked by information overload and by the need to capture attention through brief audiovisual formats and multiplatform strategies. Recent research has shown that these dynamics influence both institutional perception and the levels of interaction and participation of digital audiences (Maring & Gmür, 2025; Petre et al., 2025; Sivakumar et al., 2023).

From the perspective of digital visual culture, communication on social media constitutes a key field for understanding the construction of identities and public narratives. In particular, recent studies have demonstrated that digital storytelling, visual sequences, and aesthetic strategies significantly influence the public perception of brands, public figures, and institutions in digital environments. Likewise, digital platforms not only facilitate the circulation of images but also configure new forms of narrative production, media creativity, and educational communication, especially in contexts where they are integrated as tools for learning and dissemination (Moreno Fuentes & de la Blanca de la Paz, 2025; Salazar-Vallejo et al., 2026; Gálvez-Ruiz et al., 2025).

At the same time, the emergence of generative artificial intelligence represents one of the most significant transformations in the contemporary production of visual content. These technologies make it possible to generate images, illustrations, and videos in an automated manner, redefining traditional processes of visual design and digital communication. In educational and communicative contexts, these tools have been identified as reconfiguring the dynamics of aesthetic production, creativity, and content circulation on digital platforms (Losada Díaz & Almela-Baeza, 2026; Aiger et al., 2026; Galioto et al., 2025).

On platforms such as TikTok and Instagram, artificial intelligence is increasingly integrated into content production through filters, image generators, and algorithmic recommendation systems. These technologies contribute to the creation of new visual aesthetics that blur the boundaries between reality, simulation, and algorithmically mediated representation. Recent studies have shown that these transformations affect not only creative processes but also the ways in which users perceive, consume, and interact with digital content (Gong et al., 2025; Landa-Blanco et al., 2024; Wang et al., 2024).

In the university context, these dynamics acquire particular relevance, given that institutions seek to position themselves in highly competitive digital environments through innovative visual strategies that reinforce their academic identity and public visibility. Likewise, social media play a growing role in processes of learning, academic interaction, and student participation in digital environments (Shafiq & Parveen, 2023; Su et al., 2021; Sivakumar et al., 2023).

However, despite the growing use of generative artificial intelligence in digital content production, there is still limited empirical evidence regarding its influence on the construction of university visual identity and on interaction with digital audiences. In this sense, understanding the role of these technologies constitutes an emerging field within studies of digital communication and visual culture.

Within this framework, it is necessary to conceptually delimit the term academic visual identity, understood as the set of symbolic, aesthetic, and narrative representations through which higher education institutions project their image, values, and positioning in digital environment. This identity is dynamically configured through the production and circulation of visual content, in which factors such as aesthetics, visual coherence, and communicative strategies adopted by institutions are involved (Marin & Carrillo Durán, 2025; García Medina et al., 2026 In the present study, academic visual identity is operationalized through the analysis of institutional visual content and its relationship with digital interaction metrics such as likes, comments, and shares, understood as indirect indicators of audience reception and participation (Capriotti & Zeler, 2023; Gharbi et al., 2025).

From an integrative perspective, the relationship among digital visual culture, university institutional communication, and generative artificial intelligence can be understood as an articulated process of symbolic production mediated by technologies. Digital visual culture establishes the framework within which images and audiovisual narratives become central vehicles of meaning; university institutional communication operates through positioning and reputation strategies in which engagement acts as a key indicator; and generative artificial intelligence introduces a new layer of creative automation that redefines communicative practices and criteria of visual authenticity (Capriotti & Zeler, 2023; Bader & Condrache, 2025; Galioto et al., 2025). In this sense, the present study is located at the intersection of these three axes, proposing that digital interaction not only reflects levels of participation but also constitutes an indirect indicator of the effectiveness of visual strategies in the construction of institutional identity in AI-mediated digital environments.

Based on this scenario, this study seeks to examine how generative artificial intelligence is being incorporated into universities' visual communication strategies on social media, as well as to assess its possible influence on the construction of institutional identities and on levels of interaction with digital audiences. To this end, the research is guided by the following general question: What is the impact of the use of generative artificial intelligence on the construction of universities' academic visual identity on Instagram and TikTok, ¿and how is it related to the levels of interaction and engagement of digital audiences? The following specific questions were also formulated:

1. How are universities incorporating generative artificial intelligence tools in the production of visual content for Instagram and TikTok?
2. What aesthetic and narrative characteristics do visual content generated or supported by artificial intelligence present in digital university communication?
3. Is there a relationship between the use of generative artificial intelligence in institutional visual content and the levels of engagement of audiences on social networks?

Based on these questions, the following general objectives were established:

1. To identify the main visual strategies used by universities in the production of content for digital social networks.
2. To Analyze the aesthetic and narrative characteristics of visual content generated using artificial intelligence tools.
3. To examine the relationship between the use of generative artificial intelligence and the levels of user interaction in institutional publications.
4. To evaluate the role of generative artificial intelligence in the construction of the visual identity and digital positioning of higher education institutions.

2. Methodology

This study was developed under a quantitative descriptive-correlational approach aimed at analyzing the relationship between the use of generative artificial intelligence in institutional visual content and audience interaction levels on university social media. The methodological design was based on quantitative content analysis of posts disseminated on digital platforms, a technique widely used in research on visual

communication, digital interaction, and social media analysis in educational environments (Capriotti & Zeler, 2023; Gharbi et al., 2025; Sørensen et al., 2023). This approach makes it possible to examine interaction patterns, engagement metrics, and communicative dynamics through the systematic analysis of content published by educational institutions, facilitating the identification of trends in digital audience behavior (Di Tullio et al., 2021; Sivakumar et al., 2023).

The study adopted a non-experimental, cross-sectional design, since it analyzed content previously published by higher education institutions on their official social media accounts, without direct intervention by the researchers. This type of design is common in studies of digital communication and audience behavior on social platforms, as it allows communicative phenomena to be examined in their natural context of content production and circulation (Shafiq & Parveen, 2023; Su et al., 2021).

2.1. Population and sample

The study population consisted of visual posts disseminated by Ibero-American universities on Instagram and TikTok during the period from January 2024 to March 2025. To ensure data comparability, ten universities with an active presence on social media and with verified or publicly recognized institutional accounts were selected. Selection was carried out through purposive sampling, considering three main criteria:

1. Consistent activity on institutional social media,
2. Public availability of interaction metrics (likes, comments, and shares),
3. Geographical diversity within the Ibero-American context.

From this population, a sample of 420 visual posts was selected (210 from Instagram and 210 from TikTok). The posts were chosen through systematic sampling, considering only those that included primary visual content (image, carousel, or short video) and that corresponded to institutional posts of an informative, promotional, or narrative nature.

2.2. Characterization of universities (representativeness)

To ensure clarity and traceability of the sample, the analyzed posts came from official accounts of higher education institutions selected through purposive sampling, considering criteria of digital activity, visibility on social media, and regularity in content publication. The included universities correspond to institutions with an active presence on platforms such as Instagram and TikTok, located in urban contexts and with consolidated digital communication strategies. Although statistical representativeness in the probabilistic sense was not pursued, the selection responds to the identification of relevant cases within the ecosystem of digital university communication, allowing for the analysis of significant trends in the use of visual content and interaction strategies on social media.

2.3. Identification of AI-generated content

The identification of the use of generative artificial intelligence in visual content was carried out through a coding process based on previously defined operational criteria. Content was considered AI-generated or AI-assisted when it displayed characteristics such as the use of synthetic illustrations, images with non-photographic visual features, application of advanced generative filters, presence of stylized visual elements typical of automatic generation models, or explicit references to the use of artificial intelligence tools in the post description. Likewise, hybrid content in which artificial intelligence partially intervened in the visual production process was included. Classification was performed by two independent coders, reaching an inter-coder reliability coefficient of Cohen's Kappa = 0.82, which indicates a high level of consistency in the categorization process.

2.4. Definition of the engagement index

The engagement index was defined as a composite measure of digital interaction intended to capture the level of audience participation in relation to institutional visual content published on social media. This indicator integrates the main observable interaction metrics on the analyzed platforms, specifically the

number of likes, comments, and shares, which represent different levels of user involvement in digital communicative dynamics.

For its calculation, a weighted formula was used that assigns different weights to each type of interaction according to its degree of involvement. In this sense, likes are considered a basic form of response (weight = 1), comments imply a higher level of active participation (weight = 2), and shares reflect a higher level of commitment because they involve the dissemination of content. The formula used was as follows:

$$Engagement = Likes + (2 \times Comments) + (3 \times Shares) \qquad (1)$$

This index makes it possible to synthesize the interaction generated by each post into a single quantitative measure, facilitating comparative analysis across contents and the identification of participation patterns among digital audiences. The use of weighted metrics is aligned with contemporary approaches in digital communication studies, where it is recognized that not all forms of interaction carry the same communicative value or the same level of user involvement.

Likewise, the engagement index was treated as a continuous variable, which allowed it to be used in inferential statistical analyses such as mean comparison tests and correlation analysis. This operationalization contributes to a more precise evaluation of the impact of institutional visual content and makes it possible to explore the relationship between the use of generative artificial intelligence and interaction levels on university social media.

2.5. Statistical Testing Specification

For data analysis, descriptive and inferential statistical techniques were employed using SPSS software. First, descriptive statistics were calculated (mean, standard deviation, minimum, and maximum values) for the interaction variables. Subsequently, Pearson's correlation test was applied to examine the relationship among the analyzed interaction metrics. Likewise, an independent-samples Student's t-test was used to compare engagement levels between posts with and without the use of generative artificial intelligence. These tests made it possible to identify significant relationships among variables and to evaluate differences between groups within the analyzed dataset.

2.6. Unit of analysis

The unit of analysis consisted of each individual post published on the official accounts of the selected universities on Instagram and TikTok. Each post was analyzed as an independent unit, considering both its visual characteristics and its interaction metrics.

2.7. Study variables

The analyzed variables were organized into two main dimensions: characteristics of visual content and levels of audience interaction.

The first dimension corresponded to the visual content of the posts and included the following variables: type of visual content (image, carousel, video), presence of elements generated through artificial intelligence (yes/no), predominant type of visual aesthetic (photographic, illustrative, generative, or hybrid), and type of visual narrative (informative, promotional, institutional, or experiential).

The second dimension corresponded to the level of interaction or engagement generated by each post. For this variable, quantifiable indicators available on digital platforms were considered, such as number of likes, number of comments, and number of shares or plays, depending on the metrics available on each social network.

2.8. Data collection instrument

Information was collected through a content analysis matrix specifically designed for this research. The matrix made it possible to systematically record the visual characteristics of each post and the corresponding interaction metrics. The coding process was carried out independently by two researchers in order to ensure consistency in variable classification. To evaluate the reliability of the coding process,

Cohen's Kappa agreement coefficient was calculated, obtaining a value of 0.82, which indicates a high level of agreement between coders.

2.9. Data analysis procedure

The collected data were organized into a database and analyzed through descriptive and inferential statistics. First, frequencies and percentages were calculated to describe the general characteristics of the analyzed visual content.

Subsequently, correlation tests were applied to examine the relationship between the use of generative artificial intelligence in posts and the interaction levels of digital audiences. Likewise, mean comparisons were performed to identify possible differences in engagement between posts incorporating AI-generated visual elements and those that did not. Statistical analysis was conducted using SPSS version 26, establishing a statistical significance level of 0.05.

3. Results and discussion

3.1. Characterization of the analyzed sample

In order to describe the general characteristics of the posts included in the study, a descriptive analysis of the sample was carried out considering the publication platform and the presence of AI-generated visual content. The sample consisted of 420 institutional posts from official university accounts on Instagram and TikTok.

The results show a greater presence of content published without the use of generative artificial intelligence tools compared with those incorporating this type of visual resource. In general terms, universities continue to predominantly use traditional visual formats based on institutional photography, conventional graphic design, or previously produced audiovisual materials. The detailed distribution of the sample by platform and use of artificial intelligence is presented in Table 1.

Table 1. Detailed sample distribution

Platform	Use of AI	Frequency
Instagram	With AI	69
Instagram	No AI	137
TikTok	With AI	67
TikTok	No AI	147

Source: Authors' own elaboration, 2026

3.2. Descriptive statistics of engagement metrics

A descriptive analysis was then conducted of the main interaction metrics recorded in the analyzed posts. Four main indicators were considered: number of likes, number of comments, number of shares, and the engagement index calculated from the combination of these variables.

The results show that the posts display relatively homogeneous interaction levels within the analyzed sample. The engagement index presents a moderately concentrated distribution around mean values, indicating that most posts generate comparable levels of interaction within the ecosystem of university social media. The complete descriptive statistics of the analyzed variables are presented in Table 2.

Table 2. Descriptive statistics of the interaction metrics in the analyzed publications

	Likes	Comments	Shares	Engagement index
count	420	420	420	420
Mean	1879.979	122.0024	89.98333	2759.94
STD	601.9686	40.19413	29.03733	647.455
min	100	5	2	862
25%	1466	94.75	71	2317
50%	1875.5	121.5	89.5	2744
75%	2265	148	110	3204
max	3347	247	184	4592

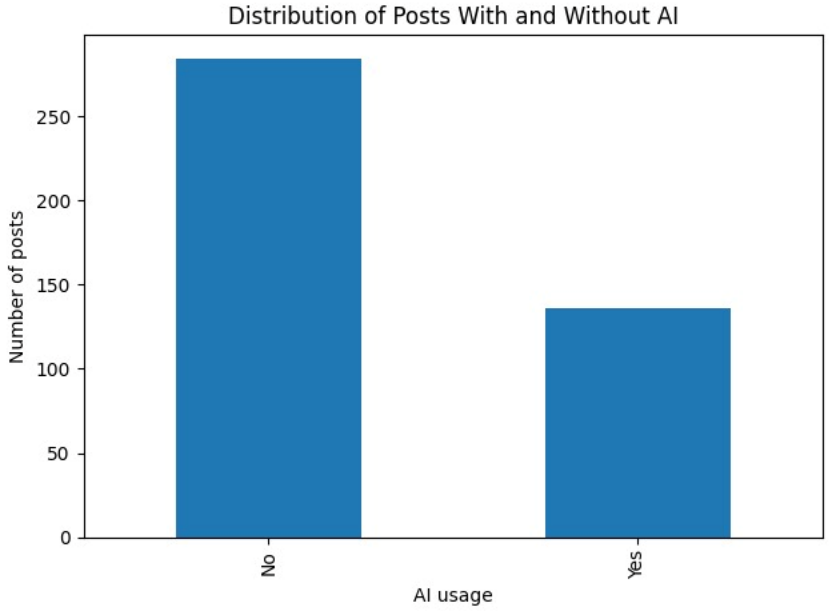
Source: Authors' own elaboration, 2026

3.3. Use of artificial intelligence in publications

To characterize the analyzed sample, the distribution of institutional posts was first examined according to the presence or absence of AI-generated visual elements. This analysis made it possible to identify the proportion of content produced with the support of automatic image-generation tools within the digital communication strategies of the analyzed universities.

The results show that most of the analyzed institutional posts corresponded to visual content produced through traditional methods of design and institutional photography, while a smaller proportion incorporated elements generated through artificial intelligence tools. This result suggests that, although automated visual generation technologies are beginning to be incorporated into digital university communication, their adoption is still at an early stage within institutional social media strategies. Figure 1 presents the distribution of the analyzed posts according to whether or not artificial intelligence was used in visual content production.

Figure 1. Distribution of publications with and without the use of artificial intelligence in university social networks.



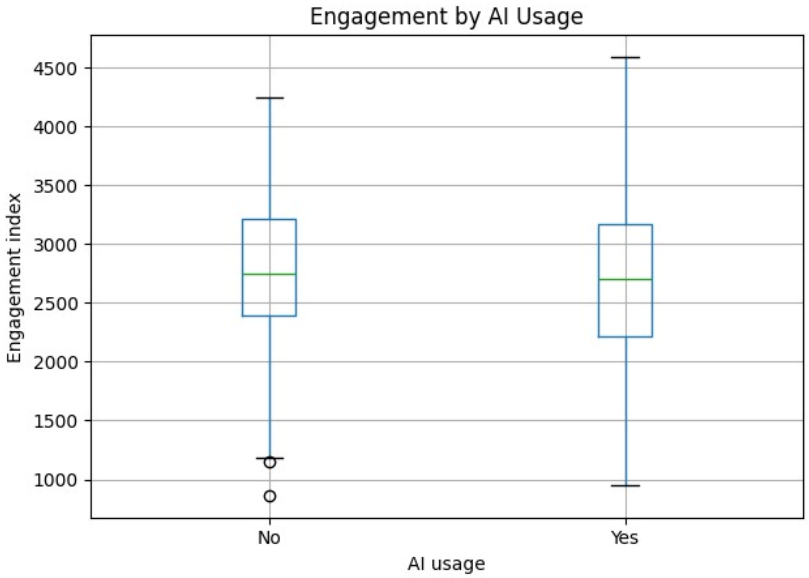
Source: Authors' own elaboration, 2026

3.4. Comparison of interaction levels according to the use of artificial intelligence

Once the sample had been characterized, the interaction levels generated by the institutional posts were analyzed considering the presence or absence of AI-generated visual elements. For this analysis, the engagement index calculated from the combination of the main interaction metrics available on the analyzed platforms was used, including number of likes, comments, and shares.

The results show moderate differences in interaction levels between both types of posts. In general terms, posts incorporating AI-generated visual elements show a slight tendency to obtain comparable or slightly higher interaction levels relative to content produced through traditional visual resources. This behavior suggests that the incorporation of novel visual aesthetics may help capture the attention of digital audiences, although the observed differences are not sufficiently pronounced to state that artificial intelligence constitutes the main determining factor of engagement. The distribution of engagement index values for both groups of posts is shown in Figure 2.

Figure 2. Comparison of the engagement rate between posts with and without the use of artificial intelligence.



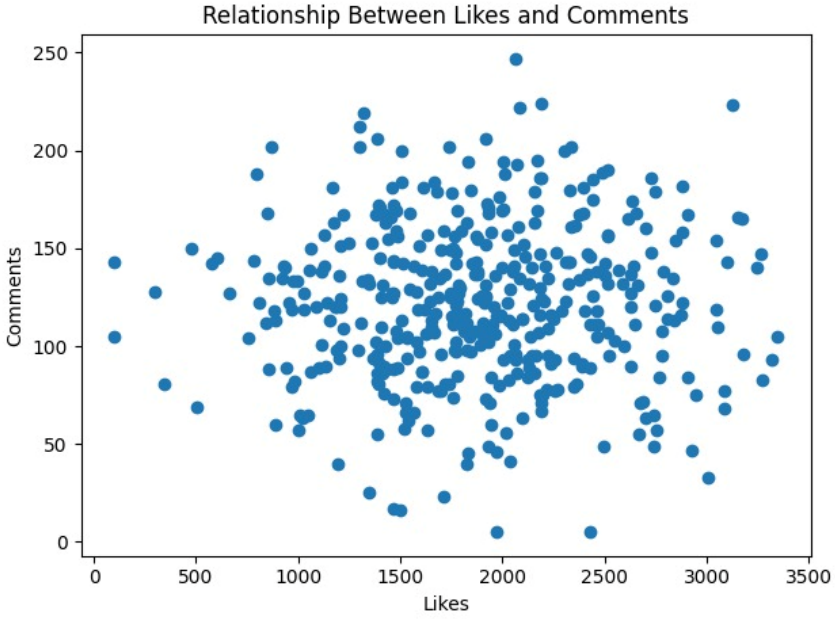
Source: Authors' own elaboration, 2026

3.5. Relationship between user engagement metrics

Finally, the relationship between the main interaction metrics recorded in the analyzed posts was examined, specifically the number of likes and the number of comments generated by users. This analysis makes it possible to observe the general behavior of audience participation on the institutional social media accounts of the analyzed universities.

The results show a moderate positive relationship between both variables, indicating that posts receiving a higher number of likes also tend to generate a greater number of comments from users. This pattern is consistent with the interaction logic characteristic of visual social media, in which content with greater visibility tends to stimulate greater audience participation. The dispersion of the data and the relationship between both variables are presented in Figure 3.

Figure 3. Relationship between the number of "likes" and the number of comments on the analyzed publications.

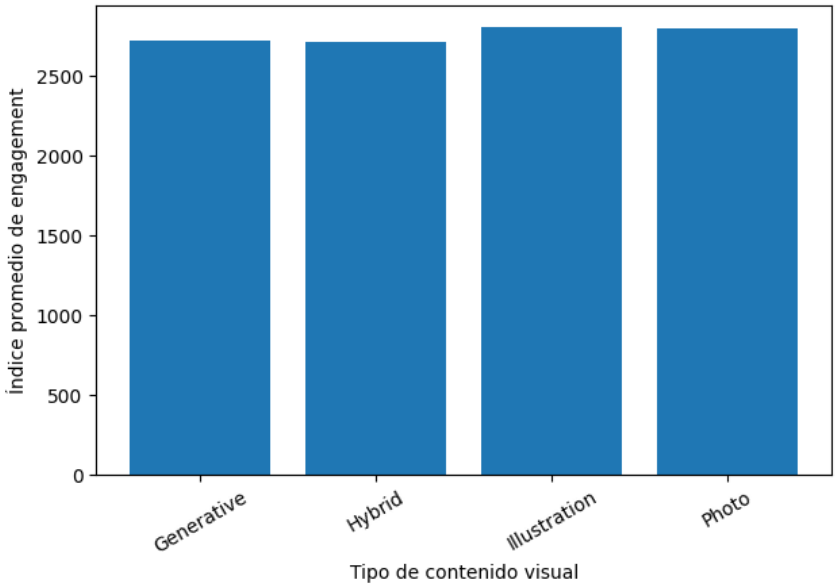


Source: Authors' own elaboration, 2026

3.6. Engagement by visual content type

In order to explore possible differences in the interaction levels generated by different types of visual content, the average engagement index was analyzed considering four categories of visual production: institutional photography, digital illustration, generative content, and hybrid content. The results indicate that average engagement levels are relatively similar across the different types of visual content, although there is a slight tendency toward higher interaction levels in posts using illustrative or hybrid visual resources. This behavior suggests that digital audiences respond positively to creative visual formats that combine more elaborate graphic and narrative elements. The comparison of the average engagement index by type of visual content is presented in Figure 4.

Figure 4. Average engagement according to type of visual content.



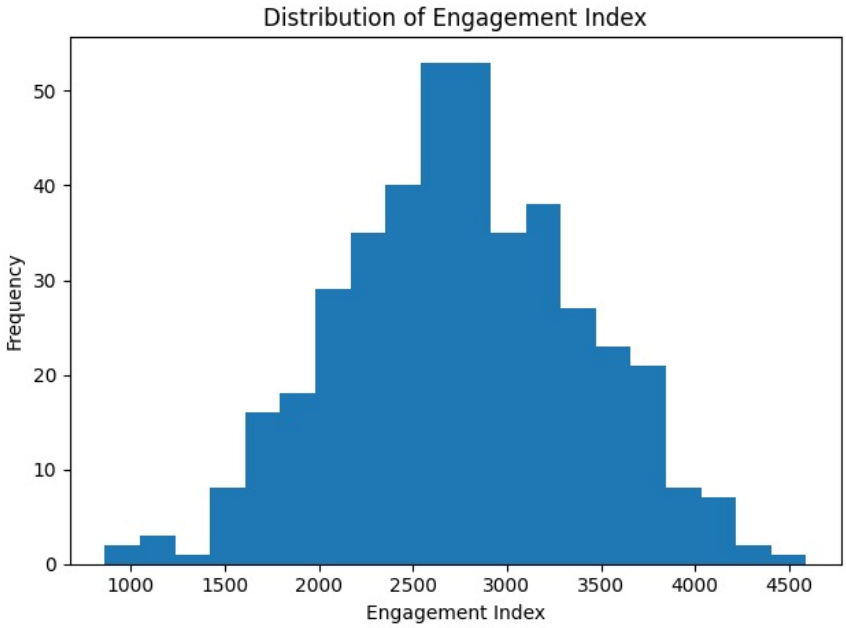
Source: Authors' own elaboration, 2026

3.7. Engagement Rate Distribution

Finally, the overall distribution of the engagement index across the analyzed posts was examined in order to identify possible patterns of concentration or dispersion in the interaction levels generated by institutional content.

The analysis shows that the engagement index presents an approximately normal distribution, with a greater concentration of posts in intermediate interaction ranges. This behavior is consistent with the interaction patterns observed on institutional social media platforms, where most posts achieve moderate levels of interaction, while a reduced number of contents reach significantly higher levels of participation. The distribution of the engagement index is presented in Figure 5.

Figure 5. Distribution of the engagement rate of the analyzed posts.



Source: Authors' own elaboration, 2026

3.8. Comparison of engagement index averages according to AI usage

To evaluate whether the use of generative artificial intelligence in institutional visual content is associated with differences in the interaction levels of digital audiences, a comparison of mean engagement index values was conducted between posts incorporating AI-generated elements and those using traditional visual resources. For this analysis, a mean-difference test based on independent-samples t statistics was applied. The results show that the average engagement index for posts incorporating AI-generated elements was 2711.89, whereas posts without the use of artificial intelligence showed a slightly higher average of 2782.95.

The approximate value of the t statistic obtained was t = −1.02, indicating that the observed differences between both groups are not statistically significant within the analyzed sample. This result suggests that, although the incorporation of artificial intelligence tools in visual content production constitutes an emerging trend in digital university communication, its use does not appear by itself to be a determining factor in the interaction levels generated by institutional posts. In this sense, the results indicate that other factors, such as the type of visual narrative, the relevance of the content, or the communicative context of the post, may play a more important role in generating engagement on university social media.

3.9. *Correlation analysis between interaction metrics*

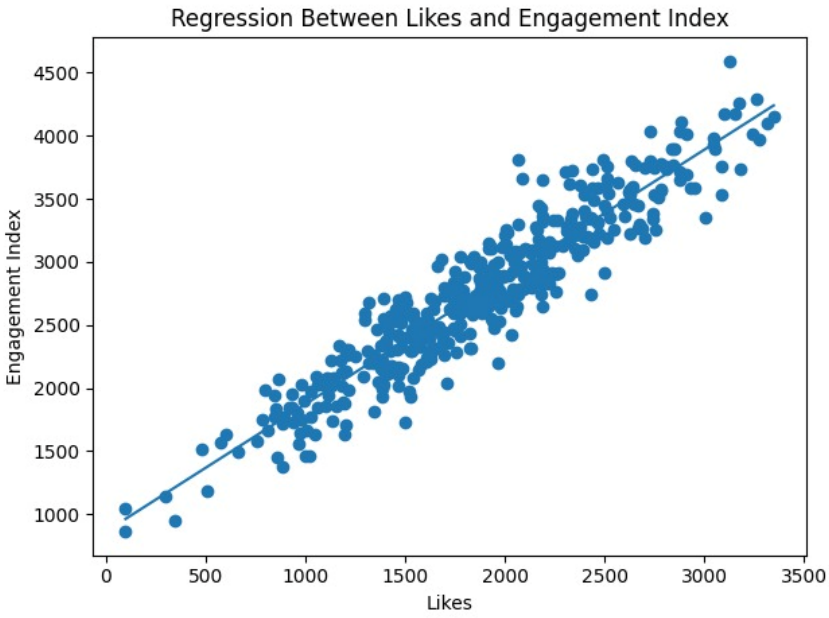
To examine the relationships among the different interaction metrics recorded in the analyzed posts, a Pearson correlation analysis was performed considering the variables number of likes, comments, shares, and engagement index. The results show a very strong positive correlation between the number of likes and the engagement index (r = 0.94), indicating that posts with a greater number of likes also tend to present higher levels of overall interaction. Likewise, a moderate correlation was observed between the number of comments and the engagement index (r = 0.34), while the relationship between shares and engagement proved relatively weaker (r = 0.17). These results suggest that the number of likes constitutes one of the most influential indicators in the dynamics of audience interaction on university social media.

3.10. Regression Analysis

In order to evaluate the explanatory power of interaction metrics on the overall engagement index, a simple linear regression model was estimated using the number of "likes" as a predictor variable. The results show

that the number of "likes" explains a significant proportion of the variability of the engagement index (R^2 = 0.88), indicating a high level of fit of the model. The regression coefficient obtained (β = 1.009) suggests that, on average, each increase in the number of "likes" is associated with a proportional increase in the engagement rate. The relationship between the two variables can be seen in Figure 6, where a positive linear trend can be seen between the number of likes and the level of overall interaction of the publications analyzed.

Figure 6. Regression analysis between Likes and engagement index



Source: Authors' own elaboration, 2026

4. Discussion of results

The results obtained make it possible to show that the use of generative artificial intelligence in institutional visual content is associated with variations in audience interaction levels on university social media.

In particular, the observed differences in engagement levels between posts with and without the use of artificial intelligence suggest that the incorporation of these technologies not only transforms visual production processes but also affects the way content is perceived, interpreted, and valued by digital audiences. This finding can be interpreted in light of contemporary approaches to digital visual culture, in which aesthetics, narrative, and technological mediation shape the dynamics of attention and participation in highly competitive digital environments (Marin & Carrillo Durán, 2025; García Medina et al., 2026; Losada Díaz & Almela-Baeza, 2026).

Likewise, the statistically significant relationship among the analyzed interaction metrics reinforces the idea that engagement on social media does not constitute an isolated phenomenon, but rather an interdependent system of participatory practices. In this sense, the results align with studies highlighting that different forms of digital interaction—reactions, comments, and shares—reflect differentiated levels of user involvement and commitment, configuring relevant indicators of institutional positioning in digital environments (Capriotti & Zeler, 2023; Sørensen et al., 2023; Gharbi et al., 2025).

From the perspective of university institutional communication, the findings suggest that visual strategies supported by emerging technologies, such as generative artificial intelligence, may contribute to strengthening digital identity and academic reputation. The production of more attractive, dynamic visual content adapted to the algorithmic logics of platforms favors higher levels of visibility and interaction, which is consistent with research positioning engagement as a key indicator in the construction of relationships between universities and their digital audiences (Bader & Condrache, 2025; Di Tullio et al., 2021; Petre et al., 2025).

However, the results also invite critical reflection on the implications of visual automation in institutional communication. The incorporation of artificial intelligence into content production raises challenges associated with authenticity, originality, and the coherence of academic visual identity. In a context where algorithmically generated images may standardize visual styles or dilute distinctive features, artificial intelligence operates not only as a technical tool but also as an agent that reconfigures the symbolic and cultural dynamics of digital communication (Galioto et al., 2025; Guíñez-Cabrera & Mansilla-Obando, 2024; Aiger et al., 2026).

In this sense, the results make it possible to understand that digital interaction on university social media transcends its quantitative dimension, becoming a reflection of broader processes of symbolic construction and institutional identity. The convergence of visual culture, communicative strategies, and technological innovation redefines the ways in which universities project their image and establish links with their audiences. Therefore, the analysis of engagement becomes relevant not only as an indicator of participation but also as a pathway for interpreting the structural transformations of institutional communication in the age of artificial intelligence.

4.1. Theoretical contribution of the study

From a theoretical perspective, the findings of this study contribute to expanding the understanding of institutional identity in digital environments by incorporating the dimension of generative artificial intelligence as an emerging factor in the symbolic construction of universities. Traditionally, academic visual identity has been analyzed in terms of graphic coherence, institutional narrative, and branding strategies; however, the results obtained suggest that, in the current context, this identity is also shaped by interaction dynamics mediated by algorithmic technologies. In this sense, digital engagement not only acts as an indicator of participation but also as an element that co-constructs institutional visibility, legitimacy, and recognition on social media. Thus, the study proposes a theoretical approach in which academic visual identity must be understood as a hybrid phenomenon, where visual culture, communicative strategies, and automated content production processes converge. This perspective makes it possible to move toward an interpretive model in which artificial intelligence is not merely an operational tool but an active component in the redefinition of communicative practices and identity-construction mechanisms in the contemporary digital ecosystem.

5. Limitations of the study and future lines of research

Despite the contributions made in analyzing the relationship between the use of generative artificial intelligence and audience interaction on university social media, the present study has several limitations that should be considered when interpreting the results obtained.

First, the study was based on the analysis of institutional posts from a limited number of universities, which restricts the possibility of fully generalizing the results to the totality of higher education institutions operating in digital environments. Although the analyzed sample made it possible to identify relevant trends in university visual communication, previous research has shown that interaction dynamics on social media vary according to contextual factors such as institutional strategies, audience characteristics, and the platforms used (Capriotti & Zeler, 2023; Sørensen et al., 2023; Gharbi et al., 2025). In this sense, future studies could broaden the scope of the sample and incorporate comparisons across different geographic and cultural contexts in order to strengthen the external validity of the findings.

On the other hand, the analysis focused exclusively on publicly available quantifiable interaction metrics on digital platforms, such as number of likes, comments, and shares. Although these indicators are widely used to evaluate engagement, they do not capture qualitative dimensions related to user experience, meaning-making, or the perception of institutional authenticity. Various studies have pointed out that engagement in digital environments responds to a combination of cognitive, emotional, and social factors that are not always fully observable through quantitative indicators (Galioto et al., 2025; Landa-Blanco et al., 2024; Gong et al., 2025). Consequently, future research could integrate mixed methodological approaches to deepen the interpretation of digital communicative practices.

Likewise, another relevant limitation is related to the identification of the use of generative artificial intelligence in the analyzed visual content. In many cases, these technologies are integrated in a hybrid manner into visual production processes, making it difficult to establish a precise classification between content fully generated through artificial intelligence and content that incorporates only partial elements of automation. This situation reflects a structural characteristic of contemporary digital environments, where human creativity, algorithmic logic, and active user participation converge in content construction (Guíñez-Cabrera & Mansilla-Obando, 2024; García Medina et al., 2026; Losada Díaz & Almela-Baeza, 2026). In this context, the development of more robust criteria for the identification of content generated by artificial intelligence is a necessary line of research.

In addition, the study adopted a cross-sectional approach focused on a specific period of analysis. However, the rapid evolution of digital technologies and of interaction dynamics on social media suggests that institutional communication strategies may undergo significant changes over relatively short periods. Recent research has shown that the incorporation of social media into education continues to transform both learning processes and forms of student participation (Gálvez-Ruiz et al., 2025; Aguilar Mera et al., 2023; Sivakumar et al., 2023). Therefore, future longitudinal studies could provide a deeper understanding of the evolution of these dynamics over time.

Finally, a particularly promising line of research consists in deepening the relationship between AI-generated visual aesthetics and the processes of institutional identity construction in digital environments. Recent studies have pointed out that visual and narrative strategies on social media play a key role in shaping the reputation, trust, and symbolic positioning of educational institutions (Bader & Condrache, 2025; Di Tullio et al., 2021; Petre et al., 2025). In this sense, the development of interdisciplinary approaches integrating visual analysis, digital communication, and social data analytics will make it possible to advance understanding of how universities redefine their identity in the contemporary digital ecosystem.

6. Conclusions

The present study analyzed the incorporation of AI-generated visual content into university institutional communication on social media, as well as its relationship with the interaction levels of digital audiences. Based on the quantitative analysis of institutional posts disseminated on Instagram and TikTok, the results provide empirical evidence on an emerging phenomenon within the ecosystem of university digital communication.

The results show that the use of generative artificial intelligence in the production of institutional visual content is still at an incipient stage within the communicative strategies of the analyzed universities. Although a growing presence of this type of resource can be observed in digital visual production, most institutional posts continue to rely on traditional formats such as institutional photography, graphic design, or conventional audiovisual materials. This finding suggests that educational institutions are currently undergoing a process of technological transition in which artificial intelligence is gradually beginning to be integrated into existing communicative practices.

Furthermore, the analysis of interaction levels showed that the presence of AI-generated elements is not necessarily associated with significant increases in audience engagement. Although some generative content may attract users' visual attention, the results indicate that other factors related to visual narrative, content relevance, or the communicative context of the post may play a more decisive role in generating digital interaction.

Likewise, correlation and regression analyses made it possible to identify that traditional interaction metrics, particularly the number of likes, maintain a close relationship with overall engagement levels in the analyzed institutional posts. This result confirms that, within current dynamics of social media interaction, users' quick responses continue to be one of the main indicators of digital participation.

In addition, the analysis of different types of visual content showed that engagement levels do not present substantial differences between traditional visual formats and those incorporating generative or hybrid resources. This finding suggests that, in the current context of digital university communication, visual creativity alone does not necessarily guarantee higher interaction levels, reinforcing the importance of understanding social media as complex communicative environments in which multiple social, cultural, and narrative factors intervene.

From a broader perspective, the results of this research contribute to expanding the field of digital visual culture studies by analyzing the emerging role of generative artificial intelligence within university institutional communication strategies. In a scenario characterized by the growing automation of visual production, understanding how these technologies influence the construction of digital institutional identities constitutes a relevant challenge for contemporary studies of visual communication and digital culture.

In this sense, the research suggests that the impact of artificial intelligence on university communication should not be understood solely in technological terms, but also from a cultural and symbolic perspective. Beyond its capacity to generate images or visual content in an automated manner, artificial intelligence raises new questions about the authenticity of institutional narratives, the construction of digital identity, and the evolution of communicative practices in academic environments. Thus, the findings of this study provide initial empirical evidence on the role of generative artificial intelligence in university visual communication, while at the same time opening new possibilities for research on the transformations these technologies are introducing into the production and circulation of visual content in contemporary digital culture.

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