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Characterization of the Main Digital Communication Ecosystems' Potential for the Education Sector: Systematic Literature Review.

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ABSTRACT: The rapid development of social platforms on the Internet is generating new opportunities and challenges in the communication processes for organizations, if used properly, they can be more competitive. On the other hand, multimedia tools multiply the possibilities of interaction among participants. Nowadays, educational institutions must adopt the use of these tools in order to improve their information and commercial management with a more universal and interactive language with society (Evans, et al. 2022). Objective. The aim of this study is to furnish an analysis of the utilization of social platforms as agents within digital communication ecosystems. Method. A literature search was conducted in the Scopus and Science Direct databases, where the main digital communication ecosystems and their audiences in the fields of professional education in the periods from 2019 to 2023 were applied as inclusion criteria. In addition, secondary data collected and published in the *Datareportal* platform were obtained with the support of the organizations *Metalwater* and *We Are Social*, specialized in digital social media. Analysis. To achieve this objective, the structuring of the terms, categories and concepts applied in the search algorithm is studied; the *PRISMA* research protocol is applied for the selection and synthesis of the articles found in the different databases used in the research. Results. Important possibilities offered by digital communication in organizations were evidenced, and how they can contribute to a better application in academic activities. Conclusion. Educational institutions should use digital communication ecosystems strategically to facilitate their training processes, based on the audiences and interoperability that the platforms offer.

Keywords: Digital ecosystem, audience, social platforms, online education, internet interoperability

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1. Introduction

The globalization on the internet is bringing about significant changes in marketing and communication (Xia et al., 2023), concurrently creating greater opportunities in the development of learning environments (Harbi & Maqsood, 2022). Traditional media are presently transitioning to digital ecosystems (Jackson, 2019), leading to new orientations in informational and commercial processes (Evans, 2023), to which educational institutions must adapt in order to enhance competitiveness (Mulla, 2022). In contrast to

traditional media, digital platforms enable increased audience interaction in communication processes, affording the possibility of immediate responses to participants' interests and establishing a robust relationship between social networks and consumer behavior (Shah et al., 2023).

Currently, many educational institutions limit the use of *social platforms* because they are generally considered informal or playful, without considering that they can be valuable tools for the management of academic processes given the possibility of interaction with multimedia resources, and the breaking of time and space barriers (Jie & Yongjun, 2021), (Richter et al, 2022). In fact, many organizations are already going a step further and have learned to use network influencers as an important communication and strategic marketing tool in their organizational processes (Zhou et al, 2021).

At a more specific level, educational influencers leveraging digital communication ecosystems are currently charting new paths and providing fresh possibilities to the educational sector. They bring to the forefront novel communication methods that facilitate reaching much broader and well-defined audiences in a quicker manner, concurrently exploring innovative avenues for the effectiveness of informational and commercial processes. This is evident in the observations of Gil & Vida E. (2021) who assert that:

"Educational influencers employ digital marketing codes on their social networks, employing a communicative style adapted to these spaces that aims to enhance interaction and engagement with new audiences, consequently leading to economic profitability."

From this point of view, this research aims to answer the following question: At present, which are the best structured Social Platforms to be used in the educational context, from the point of view of mediated communication?

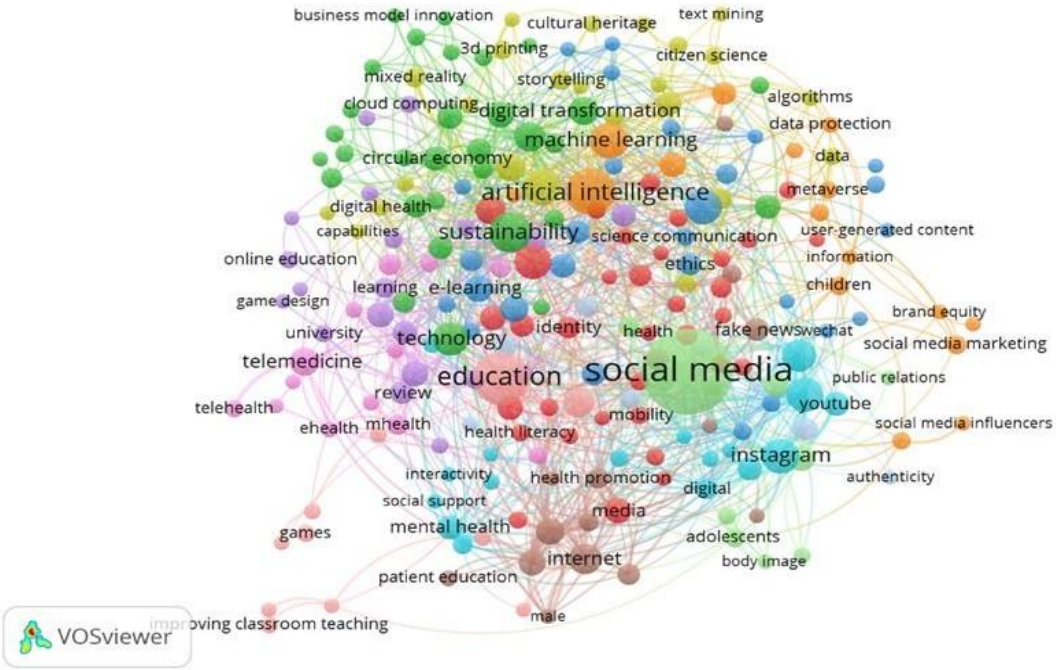


Figure 1

Keyword Co-occurrence (VOSviewer - Scopus, Science Direct).

Note: Own elaboration

To answer the question, a bibliometric review was conducted with the main objective of analyzing the publications indexed in the *Scopus* and *Science Direct database* on the structured search algorithm question, for the selection of information on the main digital communication ecosystems for the education sector during the period 2019-2023, all under a bibliographic approach.

2. Methodology

From a methodological perspective, the research is framed within the interpretive paradigm and is guided by a qualitative approach, which allows for the exploration and interpretation of meanings, practices, and socio-technical dynamics in educational contexts mediated by digital technologies. The methodological strategy employed is based on a systematic review of scientific literature, in accordance with the guidelines proposed by Martínez (2010), with the purpose of identifying, analyzing, and characterizing the potential of the main digital communication ecosystems applicable to the education sector. This rigorously structured review allows for the delimitation of analytical categories, the recognition of emerging trends, and the establishment of relevant connections between technological development and pedagogical processes, thus providing a solid conceptual basis for the critical analysis of digital tools and environments in teaching-learning contexts.

For the development of the research, a study is carried out with an adapted approach of Systematic Literature Review (SLR) concerning the theme related to the primary digital communication ecosystems and their audiences in the areas of professional education. To achieve this, structures and existing information on the most significant social platforms were analyzed. Additionally, secondary data collected and published on the *Datareportal* platform, with the support of specialized organizations *Metalwater* and *We Are Social* in the field of social digital media, were obtained. An exploratory-descriptive research type is employed to explore the links and structure of intellectual networks within the research field, considering that this type of study is valuable in increasing the level of knowledge regarding certain phenomena and obtaining comprehensive information to guide more specific investigations and direct future ones (Rousseau et al., 2008).

Criteria for inclusion in the search in databases

For the selection of information about digital communication ecosystems, its audiences and influences in the informative and commercial fields, the following criteria were used: the first criterion was to determine the types of communication to be investigated, differentiating the concepts; the second criterion was the selection and identification of variables, categories and codes on the topics of the area of knowledge; and finally, the selection of articles according to the search algorithms proposed in the study.

The *PRISMA* (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) research protocol was applied for the analysis and selection of the information sought in the different databases used in the research.

Exclusion Criteria in the Search in the Databases

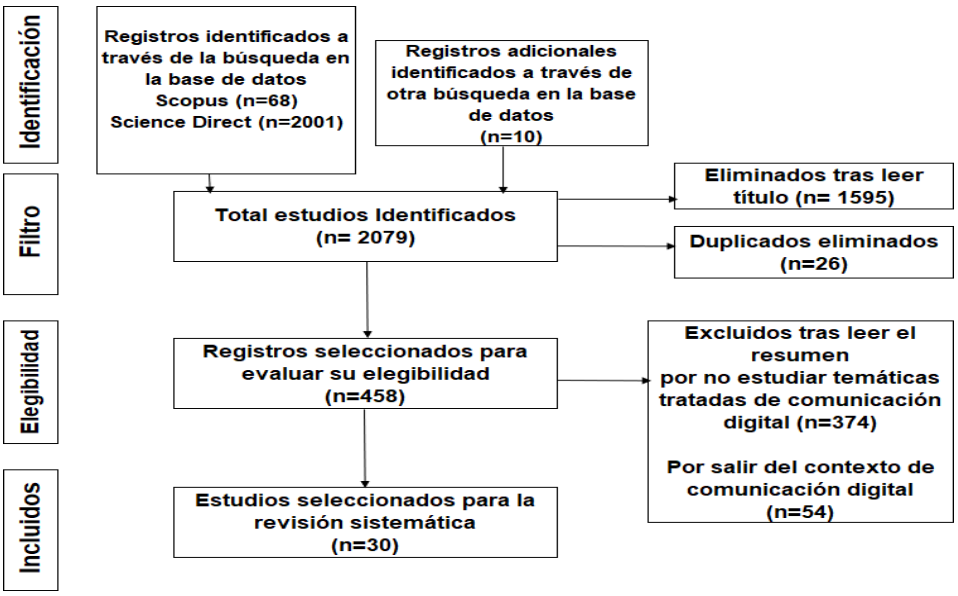
Articles with themes such as mathematical computing networks, mathematical simulation, and studies with interventions that were irrelevant or lacked a focus on digital communication ecosystems were excluded. Similarly, e-commerce platforms and search engines were excluded, as our objective is the specific characterization of audiences on social platforms.

Search strategies

The systematic search is performed with the exploration of articles indexed in the Scopus and Science Direct databases, limiting the results to publications from 2019 to the present. The combination of terms yielded the structured search algorithm for the selection of information "TITLE-ABS-KEY ((digital AND communication OR information OR Commercial AND platforms AND digital AND education AND digital AND audiences) AND (LIMIT-TO PUBYEAR, 2023) AND (LIMIT-TO PUBYEAR, 2022) OR LIMIT-TO (PUBYEAR, 2021) OR LIMIT-TO (PUBYEAR, 2020) OR LIMIT-TO (PUBYEAR, 2019))".

Depicted in Figure 2.

Figure 2 PRISMA flowchart in four levels



Note: Adapted from Prism 2020.

3. Analysis

The results obtained initially are a product of the literature analysis focused on determining, identifying, and clearly characterizing the most relevant platforms and tools of digital communication, and their impact on the field of informative and commercial communication in educational institutions. Furthermore, 2079 articles from various databases were reviewed, including Scopus (68), Science Direct (2001), and (10) articles from other research sources, which were then filtered through the PRISMA framework, leading to the selection of 30 highly relevant articles for the study.

Table 1 displays the publications according to inclusion criteria, years, and applied research methods.

Table 1

Publications according to research criteria

Number of Articles Database					**Research Methods**		
Year	Scopus	Science Direct	Total	Quantitative	Qualitative	Mixed	Total
2023		4	4		3	1	4
2022	3	8	11	2	6	3	11
2021	4	7	11	1	8	2	11
2020	1	2	3	2	1		3
2019		1	1			1	1
Total	8	22	30	5	18	7	30

Note: Own elaboration

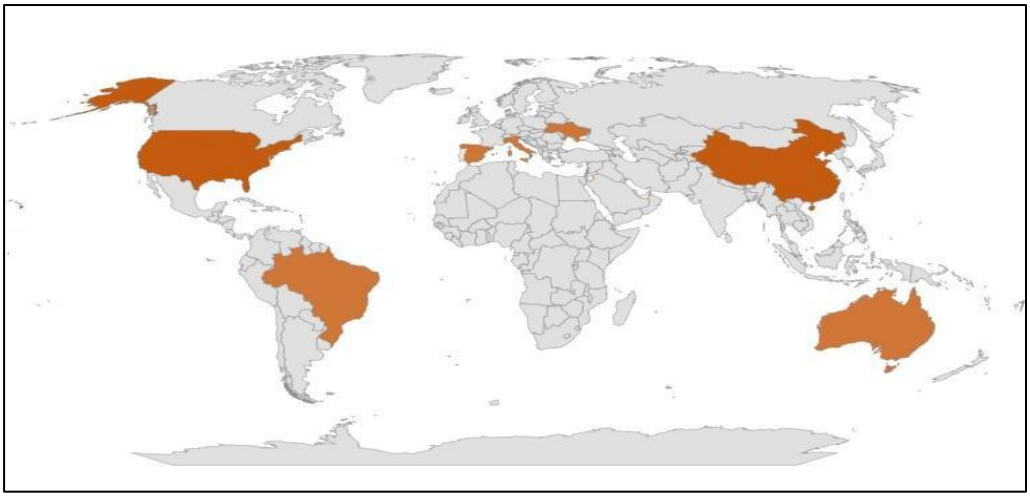
In the year 2023, 4 articles were published with the subject corresponding to the context of digital communication ecosystems in the educational sector, taking into account categories such as: digital communication, social networks and digital marketing, equivalent to 13.3%, and with qualitative research approaches of 75% and quantitative of 25%. In 2022, 11 articles equivalent to 36.7% were published, with

a qualitative methodological approach of 54%, followed by the mixed approach of 27.3% and qualitative of 18.2%. In the year 2021, 11 articles were produced, also corresponding to 36.7% with the thematic addressed on digital communication ecosystems in the education sector, with a qualitative approach of 72.7% a mixed approach of 18.2% and a quantitative approach of 9.1%. In 2020, 3 articles were published corresponding to 10% of the articles reviewed on the context of digital communication ecosystems in the education sector, 66.7% used the quantitative approach and 33.3% applied the qualitative approach in the research and for 2019 only one (1) article was considered with a mixed approach for research on digital communication in the education sector.

The above reveals that most of the articles produced in these periods (2019 and 2023) used the qualitative methodology, equivalent to 60%, followed by the mixed methodology with 23.3% and closes with the quantitative methodology with 16.7%.

Figure 3 Countries of publication

Note: Own elaboration



Note: Own elaboration

As shown in Figure 3, the countries with the highest number of publications in journals on the subject of digital communication ecosystems and their platforms are: USA with 42%, China with 21%, Australia with 11%, Spain with 7% and 8% for other nationalities.

The universal set of references cited within the 2079 documents of the study. Table 2 summarizes the information on the 30 references with the greatest scientific impact within this set, identified by categories according to the distribution resulting from the systematic review carried out.

Table 2.Main research categories/clusters in the digital ecosystem in the education sector.

Categories	Articles	Author
Digital Communication	12	Evans, et al (2023); Tian (2022); Evans, et al (2022); Huei (2022); Jie & Yongjun (2021); Dwivedi, et al (2021); Pinto, et al. (2021); Oliveira (2021); Bondi & Cacchiani (2021); Bondarenko et al (2021); Gil & Vida de Leon (2021); Philp, et al. (2020)
Social Network	12	Yi, et al (2023); Shah, et al (2023); Albanna, et al (2022); Cuevas- Molano, et al, (2022); Wong & Lee (2022); Richter et al (2022); Merga (2021); Pasquini & Eaton (2021). Zhou, et al (2021); Manca (2020); Hailu & Wu (2020); Boone (2022).
Digital Marketing	6	Xia, et al (2023); Mossberger et al (2022); Harbi & Maqsood (2022). Stocchi et al (2022); Chedia & Webster (2021) Jackson

		(2019).

Note: own elaboration

Table 2 shows that 40% of the study articles are in the *Digital Communication* and *Social Network* categories, where important advances have been made with these tools in the educational sector, and 20.7% are in the Digital marketing category, taking into account that this category is being strengthened within the educational context as an opportunity for innovation in this sector.

Table 3 presents the publications in terms of journals, books, and/or book chapters, showing the quantity of articles published related to the digital ecosystem and communication audiences on social networks in the educational sector.

Table 3. Publications by journals

Magazines/Books	No. Art.	Magazines/Books	No. Art.
Journal of Business Research	2	Mass Communication Research	1
International Journal of Information Management	2	International Business Review	1
Advanced Engineering Informatics	1	Journal of Pragmatics	1
New Media & Society	1	Business Horizons	1
Communication and Society	1	Publications	1
Journal of Retailing and Consumer Services	1	Text (Australia)	1
Library & Information Science Research	1	Ain Shams Engineering Journal	1
The Internet and Higher Education	1	Telecommunications Policy	1
Computers & Education	1	Heliyon	1
Data and Information Management	1	Springer Series in Design and Innovation	1
Int J Environ Res Public Health	1	SPIE Proceedings	1
International Journal of Computer Science and Network Security	1	Information Technologies and Teaching Materials	1
ACM International Conference Proceeding Series	1	International Journal of Research in Marketing	1
International Conference on Information System, Computing and Educational Technology	1	Journal of the Academy of Marketing Science	1

Note: Own elaboration

Table 3 displays the results of the systematic review, focusing on the journals where the articles were published, and shows that 6.7% of the articles were published in the Journal of Business Research and the International Journal of Information Management, being these journals the most in-depth in the subject addressed. And with 3.4% were found the other journals addressed in this research.

4. Results

From the perspective of mediated communication, digital ecosystems represent an important opportunity to achieve the objectives of organizations in terms of information and business. The fact of being able to articulate content directly, between various social platforms linked for sending and receiving mass messages in its various forms (text, audio and video among others) (Tian, 2022), (Pinto et al, 2020) increases the

possibilities of organizations in achieving their objectives (Pasquini & Eaton, 2021). Digital social platforms are a pervasive phenomenon that changes the way digital products and services are consumed and provided (Mossberger et al., 2021).

Social platforms in education

Social platforms are of great importance for the educational sector, as through them, students and educators can share information and educational resources (Alex, et al., 2020), collaborate on online projects, connect with other students and educators worldwide, participate in online discussions and debates, and even access experts and communities to broaden their knowledge (Wong & Lee, 2022). Today, social platforms such as Instagram, Pinterest, TikTok, and WhatsApp have become integral components of teaching and learning in higher education (Manca, 2020).

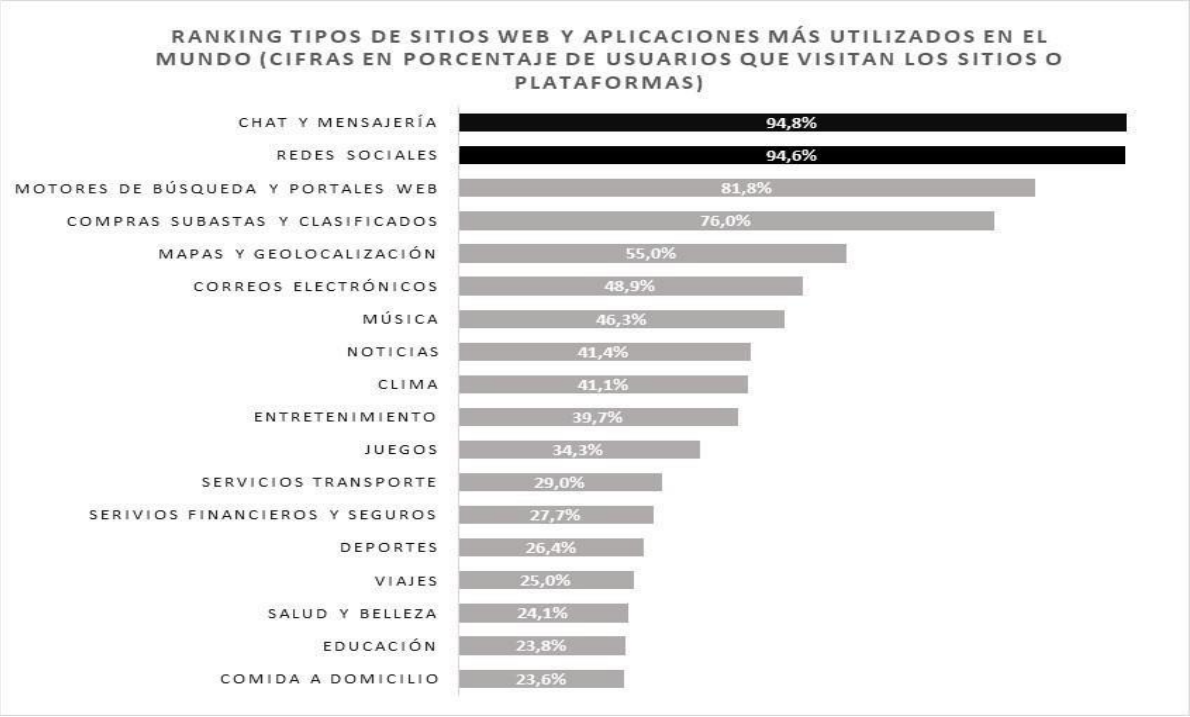
These new technological innovations allow teachers to broaden the spectrum of learning (Bondi & Cacchiani, 2021) beyond the boundaries of traditional institutions, through informal and enriched experiences, oriented to online communities, which today are consolidated as intelligent crowds around common goals and interests on these new platforms.

According to Albanna, et al, (2022) "The increasing use of social networks worldwide has encouraged researchers to investigate how and why they are adopted. However, most studies have focused on the individual rather than the organizational level". In many opportunities, due to lack of knowledge about the criteria involved in the use of digital communication ecosystems, educational entities do not usually take advantage of the benefits they offer, either to share information or to apply in the business processes they require (Huei, 2022). It is important to consider that social platforms offer the educational sector and other sectors, to different extents, the possibility of sharing content in various formats such as text messages, documents, audio files and short or long videos (Pinto, et al, 2021); on the other hand, some of them include payment gateways that facilitate sales processes.

Platform analysis criteria

Figure 4 presents the ranking of the type of websites and applications most used by Internet users globally, which serves as a starting point for understanding the value of digital communication ecosystems today.

Figure 4 Most used types of websites and applications in the world, year 2023



Note. Adapted from Kemp [Figure], by Datareportal, 2023. https://datareportal.com/reports/digital-2023-global- overview-report.

For the selection of ideal digital communication ecosystems in informational and commercial processes, it must be considered that search engines like *Google*, *Baidu*, and Yandex do not provide an infrastructure for content creation and publication, and therefore, they are excluded from this study. Now, the most relevant variables for analyzing the potential of social platforms as primary vehicles for such ecosystems are those related to a greater potential for mass communication, namely, their audiences and the level of interoperability among them to achieve a better flow of digital information.

In the digital communication universe, audience size is often very important for personalization and data analysis, since a large audience can allow a social platform or digital communication ecosystem to better analyze users' behavior patterns and preferences and thus facilitate their experience by improving content (Yi, et al 2023). On

the other hand, interoperability is important because it can improve the user experience by allowing users to share content and data with greater agility, between different social platforms, and it can also increase efficiency and productivity by allowing companies and users to share information and resources more easily and in a shorter period of time (Oliveira et al, 2021).

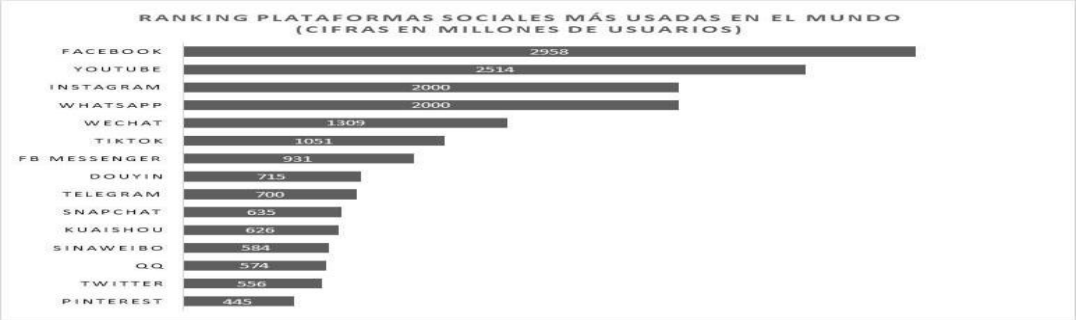
In the characterization of the most relevant platforms in terms of audiences, it is recommended to use as a starting point the study of social networks published in the *Global Overview Report* each year. This report provides current data on the ranking of social platforms worldwide, based on their number and type of audiences. Starting from this point, the audience of the platforms that are part of each digital ecosystem is analyzed based on its size and demographic variables. Meanwhile, the articulation capacity is assessed according to the level of interoperability among the platforms that make up each chosen digital communication ecosystem. This level, among existing digital media, defines the boundaries of digital communication ecosystems as a result of the standards and protocols with which they operate. To better understand this, the example of the Meta digital communication ecosystem is taken, within which users can interact, to some extent, directly among its platforms such as *Facebook*, *Instagram*, *WhatsApp*, and *Facebook Messenger*. However, they cannot interact directly with users of *ByteDance* or Tencent.

Regarding the articulation of social platforms, interoperability is an extremely important issue, since it represents the juncture of the structures that allow the flow of information within digital communication ecosystems (Miranda, 2022). Today, in some countries, there is agreement on the possibility of greater interoperability of messaging services between the various social platforms, i.e., messaging systems such as WhatsApp, Facebook Messenger and iMessage, allowing audiences to communicate directly from any of them, as happens with common email platforms (Chedia & Webster, 2022).

Characterization of audiences in digital communication ecosystems.

According to the size and profile of the audiences of their social platforms, the digital communication ecosystems are categorized in the following order: *Meta*, *Tencent*, *ByteDance* and *Google*, followed by the other social platforms mentioned below.

5. Figure 5



Ranking of the Most Used Social Platforms in the World

Note. Adapted from Kemp [Figure], by Datareportal, 2023. https://datareportal.com/reports/digital-2023-global- overview-report.

In Figure 5, it is evident how the four social platforms within the Meta ecosystem are ranked first, third, fourth, and seventh, respectively, consolidating themselves globally as the leader in terms of digital audiences. In second place is WeChat, which, along with QQ and QZone, is part of Tencent's digital communication ecosystem. In third place is TikTok, which, along with Douyin and Toutiao, is part of ByteDance's ecosystem. In fourth place is the YouTube platform, which, along with Gmail and Google Chat, is part of Google's digital ecosystem. The other social platforms presented are valued independently as they do not belong to a dedicated social digital ecosystem: Telegram, Snapchat, Kuai, Sina Weibo, Twitter, and Pinter.

It is important to keep in mind that these figures are approximate and change constantly, as social platforms are constantly evolving and growing; however, some even disappear, such as: Vine, Google+, Tuenti, among others.

The target digital communication ecosystem

The main social platforms that make up this ecosystem are Facebook, Instagram, WhatsApp, and Facebook Messenger. Today, their audiences are characterized as follows:

Table 2 The digital communication ecosystem Meta

Ecosystem	Platforms	Monthly active users	Interoperability
Goal	Facebook	2.9 billion	These four (4) platforms allow the interoperability of your stories, messages, profile information, contacts and logins for intercommunication processes among your users. Limitations: Each of these apps has unique features that are not present in Meta's other social platforms. For example, Instagram focuses on images and videos, while WhatsApp focuses on messaging and privacy. This can make it difficult to integrate features.
	WhatsApp	2 billion	
	Instagram	2 billion	
	Facebook Messenger	930 million	

Note: Own elaboration

Facebook. It is a social network with 2.9 billion monthly active users, the audience profile on this platform, for the most part (70.8%), is between 18 and 44 years of age, with 42% being female and 58% male (Kemp, 2023). In the field of higher education institutions, a continuous increase in marketing activities for Facebook presence can be observed (Bondarenko, et al 2021).

WhatsApp. It is a social messaging system with 2 billion monthly active users. The audience profile on this platform, mostly (70.8%), falls between the ages of 18 and 44, with 42% being women and 58% men (Kemp, 2023).

Instagram. It is a mobile social network with 2 billion monthly active users. The audience profile on this mobile platform, mostly (63.1%), falls between the ages of 18 and 34, with 43.3% being women and 56.7% men. Instagram is considered the global leader in engagement (Cuevas E, 2022).

Facebook Messenger. It is a private social messaging system with 930 million monthly active users, the profile of the audience on this platform, mostly (73.8%), is between 18 and 44 years of age, being 42.4%

women and 57.6% men (Kemp, 2023).

The Tencent digital communication ecosystem

The main social platforms that make up this ecosystem are WeChat, QQ and QZone. Although these three (3) platforms limit their direct interoperability, it is important to note that WeChat can be considered a comprehensive digital ecosystem. In addition to being a messaging system, it is a social network and an e-commerce platform (Yan & Chan, 2022). Today, the audiences of these three platforms are characterized as follows:

Table 3: **Tencent's digital communication ecosystem**

Ecosystem	**Platforms**	**Monthly active users**	**Interoperability**
Tencent	WeChat	1.3 billion	These three (3) platforms allow you to share your content, images, videos, games, contacts, logins and even make money transfers between users. On the other hand, WeChat is a very complete instant messaging and social networking application, which independently offers a wide range of features that allow interoperability between its applications, its users can send text and voice messages, share photos and videos, make mobile payments, and use online services such as cab reservations, online shopping, flight and hotel reservations among others, all within a single application. It can therefore be used as a standalone digital communication ecosystem. Limitations: Tencent's social applications have different purposes and focus on different functions and features. For example, QQ is an instant messaging application, while Qzone is a social networking platform. This means that not all features and functionalities of one application are available in another application.
	QQ	700 million	
	QZone	600 million	

Note: Own elaboration

WeChat. It is a mobile social messaging platform that currently has 1.3 billion monthly active users (Kemp, 2023). It is unique in that it integrates multiple applications as mini programs, which do not require installation and offer more functions than other messaging systems. Some of these functions include information search, messaging, socialization, geolocation, vehicle rental, video viewing, bill payment, and shopping, among others (Lamaoyangjin, 2018).

QQ. It is a computer-based messaging platform that currently has 700 million monthly active users (Kemp, 2023).

QZone. It is a computer-based social network that currently has 600 million monthly active users. This platform allows users to customize their blogs, keep diaries, send photos, and listen to music; although its premium features require a subscription payment (Kemp, 2023).

The digital communication ecosystem ByteDance

The main social platforms that make up this ecosystem are TikTok, Douyin and Toutiao. These three (3) platforms allow the direct articulation of their contents and payment gateways for intercommunication and e-commerce processes among their users. Today, their audiences are characterized as follows:

Table 4The Bytedance digital communication ecosystem

Ecosystem	Platforms	Monthly active users	Interoperability
ByteDance	TikTok	1.05 billion	Among these three (3) platforms there is not much interoperability due to their focus on different types of content and audiences. TikTok and Douyin are short video applications practically identical in their functionality, but they have interoperability limitations stemming from legal and technological restrictions. On the other hand, between Douyin and Toutiao users can share various content such as news and short videos.
	Douyin	715 million	
Toutiao		600 million	Limitations: Each platform has different objectives and audiences. For example, Douyin and TikTok focus on content creation and video entertainment, while Toutiao focuses on delivering news and general interest content, making interoperability between them difficult.

Note: Own elaboration

TikTok. It is a mobile social network with 1.05 billion monthly active users. The audience profile on this platform, mostly (71.3%), falls between the ages of 18 and 34, with 32.5% being women and 38.8% men. It can be used to share videos, including tutorials of up to three minutes, and it includes e-commerce tools (Boone, 2022). Additionally, TikTok has the Booktok tool, used for discussing writing, managing a personal library, and engaging in family reading (Merga, 2021).

Douyin. It is a mobile video social network that includes e-commerce tools, with 715 million monthly active users. The majority (90%) of its users are between the ages of 18 and 40 (Kemp, 2023). The main audience for this social platform is in China, which is why most of its content is in Mandarin. Like TikTok, it can be used to share videos or tutorials of up to three minutes. Its e-commerce is flourishing as purchasing products on Douyin is easy; users can buy products with just three clicks (Qin, 2022).

Toutiao. It is a mobile social platform with 600 million monthly active users, 90% of whom are under 30 years old, are university professionals, and belong to the wealthiest classes in China. This is an intelligent newspaper considered in the East as the number one platform for the dissemination of informative, news, and entertainment content. On this platform, user engagement with news is positively associated with engagement in entertainment (Huang & Yang, 2022).

Other important social platforms

Table 5 Other social platforms

Platform	Monthly active users	Interoperability
YouTube	2.5 billion	Although the interoperability of social platforms depends largely on the standards and communication protocols used to share data between them, operating systems can provide tools to facilitate their interaction indirectly. For example, Google's Android operating system is used by many mobile device manufacturers, allowing Android apps to run on many different devices and communicate with other online services.
LinkedIn	900 million	
Telegram	700 million	
Snapchat	634 million	
Kuaishou	626 million	
Twitter	556 million	
Sina Weibo	500 million	
Pinterest	445 million	

Note: Own elaboration

YouTube. This is a social video platform with 2.5 billion monthly active users. The audience profile on this platform, mostly (36.1%), falls between the ages of 18 and 54, with 40.7% being women and 59.3% men. Its advantage lies in the monetization system it offers to users or organizations (Kemp, 2023).

LinkedIn. It is an integrative platform for professional and educational networks (Herrera, 2012, p.5), with 900 million monthly active users. The audience profile on this platform, mostly (60%), is between the ages of 25 and 34, with 42.8% being women and 57.2% men. It offers advertising tools, can be used to share videos or tutorials of up to 10 minutes, and for sharing documents, spreadsheets, and slides (Kemp, 2023).

Telegram. It is a social messaging system with 700 million monthly active users, and its groups can accommodate up to 200,000 members (Kemp, 2023). This platform has a significant journalistic presence in countries like Spain, but it can be used to share videos or tutorials of up to 4GB, as well as to share documents, photos, and audio files.

Snapchat. It is a mobile image and video social network with 634 million monthly active users. The audience profile on this platform, mostly (81.6%), falls between the ages of 13 and 34, with 49% being women and 51% men. This platform is ideal for sharing photos and videos of up to 10 seconds, with the possibility of including augmented reality (Kemp, 2023).

Kuaishow. With 626 million monthly active users, this video social platform is considered popular as its content revolves around everyday life, unlike its main competitor TikTok. It allows sharing videos of up to 60 seconds (Kemp, 2023).

Sina Weibo. With 500 million monthly active users, this social network allows the sharing of texts, audio, videos, and images. It allows publishing up to 2,000 words in its messages and sharing articles, as well as information on the platform. The social network has seamless integration with Taobao for e-commerce (Kemp, 2023).

Twitter. It is a microblogging social network with 556 million monthly active users; essentially, it is for text, although it allows the posting of photos, videos, and links. Each post allows up to 280 characters, 4 photos, and one video or GIF. 70% of its users are male, with an age range between 25 and 59 years; 60% of the total users use it to stay informed, and 36% for entertainment (Kemp, 2023).

Pinterest. It is a visual social network with 445 million monthly active users; it is recommended to be used as a visual discovery tool, to find and collect graphic or visual ideas, as it is designed for users to gather

and/or share images of all kinds (Kemp, 2023).

Limitations and general directions for future research

The review approach involved an analysis of the literature, during which research themes were identified and filtered. Although there was considerable alignment between these two study techniques, the approach inevitably led to some arbitrary choices. For example, it did not focus on aspects related to the perception of digital audiences in the educational environment, the selection of marketing platforms, the development of social networks, and the supply of applications. Similarly, technological aspects of programming and application design were not considered.

Therefore, future research could explore alternative routes, such as providing an analysis of the selection of digital applications and the audience's perception within the educational framework and its implications for the curriculum. Future studies could offer more explicit analyses of the opinions of educational authorities in the implementation and use of applications that make up digital ecosystems and their deployment. In conclusion, the future development of the results from this integrative review demands a more detailed evaluation of interdisciplinary connections, detecting and exploring in greater detail the links between marketing knowledge in educational institutions and other relevant fields, such as the digital ecosystems that constitute them (Dwivedi et al., 2022).

6. Conclusions

In response to the research question "Which Social Platforms are better structured to be used in the educational context today?" three key conclusions were drawn:

In terms of audience size, the globally predominant Digital Communication Ecosystem is Meta, as its social platforms collectively have more than 3.6 billion monthly active users. Therefore, the use of this ecosystem is recommended if the intention of the user or educational institution is to reach a large community; although, it would be necessary to first analyze and strategically define the precise segment to determine which specific platform of this ecosystem should be used, even within the same social platform, multiple variables can be found that must be taken into account for each specific case for the sake of success in the communication process.

In terms of interoperability, the globally predominant Digital Communication Ecosystem is Tencent, as its social platform WeChat alone integrates a powerful ecosystem of messaging, social networking, and e-commerce, among other functions. These functionalities can be used more easily and quickly to achieve organizational objectives in the educational, informational, or commercial realms.

The use of this ecosystem is recommended if the intention of the educational institution is to have at the disposal of its community a powerful mechanism of multimedia tools for the transfer of information and knowledge, keeping in mind that this implies acquisitions in premium mode and training processes for the students. users. A negative aspect is that it could currently be weak for the marketing processes of many institutions, given its relatively low presence in the western community.

Strategically, the educational institutions can choose and use the necessary digital communication ecosystems to achieve their objectives, based on the audiences and interoperability that platforms and their tools offer. All platforms must be structured in a way that allows greater accessibility and interactivity for all stakeholder groups.

For educational institutions, from the perspective of audiences at the western community level, the use of the meta digital ecosystem is recommended; but from the perspective of the internal processes of communication and knowledge transfer, the interoperability between Tencent's powerful multimedia tools and Wechat specifically, makes the difference in current eastern and western times

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