DIGITAL MEDIA AND SOCIAL NETWORKS IN MEXICO

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Abstract. The objective of this article is to describe and present the main digital media and social networks used worldwide and in the specific case of Mexico, pointing out the transcendental importance they acquire to study social relations today. The work is structured according to the deductive method, with a hermeneutic paradigm, elaborated under a quantitative scheme and approach. Facebook is the world leader of social networks worldwide, with its almost three billion users, followed by YouTube, WhatsApp, Instagram, Facebook Messenger, WeChat and TikTok. Google is presented as the world leader of Internet search engines, which is why it is called the undisputed king, absorbing until October 2021 92% of users worldwide, followed by Bing and Yahoo; while the most used browser is Chrome with 77%, followed by Safari, Firefox and Microsoft Edge. In information related to Mexico for 2021, Facebook is the most popular social network with 96 million users, which ranks fifth internationally, behind India, United States of America, Indonesia and Brazil; while Mexico has 74 million users in the case of YouTube, making these two platforms become the most used social networks by Mexicans. Despite the privatization suffered in the nineties, internet speed in Mexico is very low compared to the world average, reaching only 60% and 50% in mobile and fixed internet respectively. The most visited sites in Mexico correspond to Google (more than four times its close follower), YouTube, Facebook, Wikipedia, Xvideos (adult entertainment) and MercadoLibre -Free Market-.

Keywords: mass media, social networks, social media, information and communication

INTRODUCTION

The objective of this article is to present the main digital media and social networks that are most used worldwide and in the case of Mexico. With the development of new information and communication technologies, digital means of communication are becoming more and more important, and within them, social networks are fundamental for modern communication, and for more than a decade, social relations cannot be understood or explained without studying these phenomena.

To approach this article I will use the deductive method, understanding that knowledge is acquired by reasoning and starting from abstract systems, which present a high degree
of universality, a hermeneutic paradigm will be followed, which is given by experience and continuous learning, addressing a quantitative approach, where descriptions of defined situations are made in search of analyzing a segment of the reality of digital media, presenting recent statistical information.

The traditional or conventional media (radio, television and print) were present in our lives with undeniable strength until the last century, from this century and especially in the last decade the digital media by allowing interactivity are taking new spaces in everyday life and social relations that occur between members of society. Digital communication is part of everyday activities nowadays and it has been stated that “The world revolves around digital communication!” (Braumann, 2021), giving us to understand that the types of digital communication are the following: 1) video; 2) social networks; 3) blog; 4) audio; and 5) email marketing.

I analyze the main search engines and browsers, showing the almost absolute dominance of the Google search engine, which is used by more than 90% of the population worldwide, as well as in our country, noting that the most used browser worldwide is also a product of Google: Chrome, where it is used by two thirds of Internet users worldwide. In this section I also analyze the main social networks, as well as the most used ones worldwide and in our country, opening five subsections, for each of them: Facebook; YouTube; WhatsApp; Instagram; Facebook Messenger and Twitter; Others (WeChat, TikTok, Telegram, Snapchat and Pinterest).

QUANTITATIVE INFORMATION ON DIGITAL MEDIA

To appreciate the magnitude and importance of digital communications worldwide, I will take up some of the valuable data provided by Simon Kemp (2021: 8-13) in the Global Digital Report as of October 2021:

- World population: It reached 7,890 million people, which means that it increased 1% in one year. Where 56.6% of the population is considered urbanized
- Cell phones: There are 5.29 billion users (thousands millions for Mexico), representing 67.1% of the world’s population (two thirds), and an increase of 1.9% over the previous year.
- Internet: There are 4.88 billion users worldwide, equivalent to 61.8% of the population, with an increase of 4.8% this year.
- Social networks: Users reach 4.55 billion people, representing 57.6% of the world’s population. Achieving an increase of 9% in the last year.
- Hours connected to the Internet: The average daily number of hours connected to social networks is 2 hours and 27 minutes. The average number of platforms used each month per Internet user is 6.7.
- Internet with cell phone: Of the 4.88 billion Internet users, 90.9% connect from a cell phone.
- Web traffic by device: Mobile phones 54.56%, an increase of 8.7% over the previous year. Laptops and Desktops 42.83%, observing a drop of 9.1% against 2020. Tablet 2.52%, with a drop of 3.8% compared to the previous year.
- Internet users in China: One billion people use the Internet in this country, which represents one out of every five Internet users worldwide.
As a note of clarification, four different companies that measure the number of internet users report from 4.06 billion to 5.07 billion users worldwide, with an average of 4.58 billion users. The Global Digital Report as of October 2021 reports 4.88 billion.

Of the world’s population, two-thirds have cell phones (counting those under 6 years of age who cannot read or write); 61.8% have an internet connection; and 57.6% access social networks, spending 2 hours and 27 minutes per day. 90.9% of internet users connect with a mobile device.

According to the same Global Digital Report as of October 2021 (Kemp, 2021: 14-20), these indicators are reported as a percentage of users in relation to the total population of each country, as well as the speed measured in Megabits per second (Mbps), which essentially shows the quality of the internet offered in each country.

Table 1.

<table>
<thead>
<tr>
<th>Country</th>
<th>Internet (% de users)</th>
<th>Mobile Internet (speed Mbps)</th>
<th>Fixed Internet (speed Mbps)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Denmark</td>
<td>99.0</td>
<td>103.35</td>
<td>216.13</td>
</tr>
<tr>
<td>United Arab Emi.</td>
<td>99.0</td>
<td>195.52</td>
<td>195.11</td>
</tr>
<tr>
<td>South Korea</td>
<td>98.0</td>
<td>192.16</td>
<td>216.67</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>98.0</td>
<td>80.82</td>
<td>95.79</td>
</tr>
<tr>
<td>Canada</td>
<td>96.5</td>
<td>87.65</td>
<td>176.65</td>
</tr>
<tr>
<td>Spain</td>
<td>93.2</td>
<td>48.14</td>
<td>187.36</td>
</tr>
<tr>
<td>Hong Kong</td>
<td>93.0</td>
<td>78.75</td>
<td>254.40</td>
</tr>
<tr>
<td>United States of A.</td>
<td>92.0</td>
<td>96.31</td>
<td>190.00</td>
</tr>
<tr>
<td>Singapore</td>
<td>91.0</td>
<td>91.75</td>
<td>262.20</td>
</tr>
<tr>
<td>Taiwan</td>
<td>91.0</td>
<td>81.32</td>
<td>152.00</td>
</tr>
<tr>
<td>Argentina</td>
<td>83.0</td>
<td>29.60</td>
<td>57.49</td>
</tr>
<tr>
<td>Brazil</td>
<td>77.0</td>
<td>33.47</td>
<td>108.83</td>
</tr>
<tr>
<td>Mexico</td>
<td>74.0</td>
<td>34.49</td>
<td>53.04</td>
</tr>
<tr>
<td>China</td>
<td>69.9</td>
<td>165.45</td>
<td>193.15</td>
</tr>
<tr>
<td>Colombia</td>
<td>69.0</td>
<td>18.67</td>
<td>69.64</td>
</tr>
<tr>
<td>World average</td>
<td>61.8</td>
<td>56.75</td>
<td>110.24</td>
</tr>
</tbody>
</table>

From the table presented, Denmark and the United Arab Emirates (to my surprise) have 99% of their population with internet access. Our T-MEC partners, Canada has 96.5% and the United States has 92% of its population with internet. The Asian tigers (Taiwan, Singapore, Hong Kong and South Korea) are in a very good position with 91% of their population having Internet access. China will have 1,447 million inhabitants by mid-November 2021, the largest population in the world, although India is already close behind with 1,399 million inhabitants. In China, 7 out of every 10 inhabitants have Internet service. India has 47% of its population with Internet service.

Finally, of the Latin American countries, Argentina is the best positioned with 83% of its population having internet; Brazil is above Mexico (74%), which in turn is better positioned than Colombia. In our country, 12 more people than the world average have Internet service. The table does not show it, but three African nations have the lowest percentage of people
with Internet service in the world: Ghana (53%), Nigeria (51%) and Kenya (42%).

In mobile and fixed Internet, Denmark and the United Arab Emirates once again stand out. Canada and the United States are well above our country. The so-called new Asian tigers (South Korea, Hong Kong, Singapore and Taiwan) stand out for the quality of their mobile and fixed Internet services, placing them in the top positions worldwide, with China also standing out in this area.

Of the Latin American countries, Brazil has the fastest Internet services, followed by Argentina and Mexico with a similar position, with Colombia slightly below. In terms of world averages, Mexico is well below this indicator; in the case of mobile Internet with only 60.7% speed in relation to the world average; in the case of fixed Internet, our country is at the bottom, with only 48.1% of the world average speed.

Looking at this indicator, I remember when in the early nineties Teléfonos de México (TELMEX) –Telephones in Mexico– was privatized with the argument that the company needed more resources to invest and that we would become one of the nations with the best telecommunications infrastructure. On the contrary, a private telephone monopoly increased the prices of its products as many times as it wanted and the level of technological development that such privatization would bring to the country is not appreciated at all.

Among the main reasons mentioned by people who use the Internet worldwide, as well as the types of sites visited or applications used (Kemp, 2021: 23) are the following:

- Reasons for using the internet: Finding or searching for information 60.5%; Keeping in touch with friends and family 54.7%; Keeping up with news and events 52.8%; Enjoying videos, television, shows and movies 50.8%; Researching how to do things 50.3%; Finding new ideas or inspiration 46.6%; Researching products and brands 45.7%; Accessing and listening to music 45.2%; Filling leisure time and general browsing 42.5%; Educational purposes and study 41.6%.

- Sites visited and applications used: Social networking 95.8%; Chatting or messaging in social-forms 95.5%; Search engines or web portals 83.4%; Shopping and classifieds 58.2%; Location services and maps 56.2%; Email 50.6%; Music 46.3%; News 41.8%; Weather 40.6%; Entertainment 40%; Games 34.7%; Food, recipes and takeaways 32.5%; and Taxis, ridesharing and bicycles 32.5%.

Derived from the Global Digital Report as of October 2021 (Kemp, 2021: 62), I highlight this information on the most used and important social platforms worldwide (where I note the progressive order they occupy and the number of users). In the information I present, I locate the first seven platforms that have the largest number of users worldwide, then I list the platforms that exist in our country only:

1. Facebook: 2,895 million users.
2. YouTube: 2,291 million.
3. WhatsApp: 2,000 million.
4. Instagram: 1.393 million.
5. Facebook Messenger: 1.3 billion.
6. WeChat: 1,251 million.
7. TikTok: 1,000 million.
Facebook has reported that in October 2021 it surpassed 3 billion users, when in 2012 it reached 1 billion users, so the platform in nine years grew threefold, thus Simon Kemp (2021) notes, “These figures suggest that marketers can now reach more than 60 percent of all adults aged 13 and older outside of China using ads across Facebook’s portfolio of platforms”. Global social media users (Kemp, 2021: 60) stood at 3.66 billion people in October 2019; rising to 4.55 billion users in October 2021, showing 24% growth in 24 months.

**GENERATIONS X, Y, Z AND DIGITAL COMMUNICATION CONCEPTS**

Over the last few years, five groups of generations have been recognized since the end of the Second World War, according to the year of their birth:

- **Baby boomers**: 1945 to 1964. People who were born after the Second World War and whose name comes from the shot of the birth rate in developed countries (mainly the United States), this generation had to live the reconstruction of Europe. It was the time of the Beatles, Pelé and the moon landing.
- **Generation 'X':** 1965 to 1981, so they are between 41 and 57 years old. They are familiar with desktop computers, the change from cassettes to compact discs, were the first to use cell phones and are less dependent on smartphones, and are responsible for observing the fall of the Berlin Wall and D. Maradona.
- **Generation 'Y':** 1982 to 1994. They are known as millenials, who are between 28 and 40 years old, technology is part of their daily life in almost all its facets and where it was their turn to move from the analog to the digital era. It has been marked by a greater use and familiarity with digital technologies and media.
- **Generation 'Z':** 1995 to 2009. They are known as centenial or post-millenial or digital natives, who are between 13 and 27 years old, since they were children, used to use Smartphone and internet. In this generation the mastery of ICT is frequent and their lifestyle is marked by the digital world and their leaders are the youtubers.
- **Generation Alpha:** 2010 onwards. They still do not know how their world will be where they subsist.

Regarding the names of the generations, Hawer Barrantes (2021: 24-26) makes the following commentaries: 1.- Photographer Robert Capa coined the term “baby boomers” for the baby boomers in the mid-1950s. Journalist Douglas Coupland wrote the novel Generation X in 1991, which tells the story of life during the 1980s in the United States, from which it takes its name; 2.- The term millenials was coined by William Strauss and Neil Howe in 1987, in reference to the fact that this generation would be between 6 and 18 years old at the beginning of the new millennium; 3.- The name ‘Z’ generation was born after B. Horovitz in 2012 launched a contest in USA Today magazine to choose the name, winning the referenced one.

Hawer Barrantes (2021: 27) shows that digital natives communicate mainly by text or voice, while their predecessors (millenials and generation X) mostly use more videos and movies, which allows to evidence the change from personal computer (PC) to mobile and from video to text, adding that digital natives are self-taught, finding a lot of information
available on the network, learning without leaving home and in the time that suits them, so they forge more self-discipline than their predecessors (millenials).

To understand the digital world, we will have to locate the terms and concepts that help us to explain it. In this sense, there are several topics that I will try to describe as briefly as possible. The so-called ‘Internet of things’ connects objects of common life for the convenience of people, through multiple sensors that capture and retrieve information or behaviors to transmit them later and that can be managed from a device (cell phone, laptop, tablet), as is the case of instructions given for washing machines, automobiles, heaters, air conditioning, watches, electricity and virtually anything routine.

The companies that own some platform, as is the case of Google, YouTube and many more, charge their advertisers different rates according to one or more of these modalities (Zuccherino, 2016: 44-46):

1. Cost per Thousand Impressions (CPM): consists of charging an amount of money for every thousand times an ad or banner appears on a site.
2. Cost per Click (CPC): the advertiser is charged every time someone clicks on a banner or text ad, a system used by Google in sponsored links.
3. Cost per conversion or cost per acquisition (CPA): the advertiser pays each time the proposed objective is achieved: a completed form (called LEAD: contacts who leave us their data); a download; a video viewed; or a purchase made.
4. Cost per Time: sites that charge for their advertising space per hour, day and month. An important medium such as YouTube uses this system.

In the cost-per-click optics, this shows behavior or purchase intention and it is said that “the click speaks”. In the opinion of Santiago Zuccherino (2016: 45): ‘A click shows, unless there is an involuntary error, that someone for some reason was interested in what they saw and led them to take action’.

In the digital space and in particular in social networks, there are some terms to keep in mind, such as these:

- Reach is the number of people who see a piece of content. There are two types of reach: organic (natural) and paid. According to Facebook, organic reach is the number of users who have seen the publication for free, while paid reach refers to users who pay for access. A detachment of the organic link is the viral reach, which refers to the people who have seen our post by someone who has shared it.
- Impressions is a term used in social networks, it is the number of times a content is shown, regardless of the users who see it.
- Engagement is considered the number of people who have interaction with a content or the number of interactions generated by the content viewed (likes, comments, retweets). Engagement is the reaction to a communication proposal, such as the degree to which a consumer interacts with a brand.
- The Engagement Rate (ER) measures the level of our actions and helps to evaluate the impact of our content in publications, which is why it is considered an excellent way to measure the evolution of our publications. There are three known ways to measure it: 1) Interactions/Reach; 2) Interactions/Fans; 3) Weighted Interactions/Impressions.
- An influencer is a person who has the power to influence and affect other people’s
decisions. Formerly referred to as ‘opinion leaders’ in marketing books, they have grown up with social media and have hundreds of followers on YouTube, Instagram, Twitter and TikTok.

- Two terms can create confusion: celebrity and influencer. A celebrity is a famous person, who acquires this quality through recognition, popularity, applause or praise. The influencer is a person who has credibility in social networks or blogs, which can ‘influence’ the opinion of groups of people, usually are experts on a topic or develop a line of content consistently.

As a means of communication it is discussed whether the celebrity or the influencer is a better channel, the former is ideal for building brand awareness, but not necessarily for sales, while the influencer has built his communication without advertising and this generates that his community is more likely to react positively (engagement) to his ideas or published content (Zuccherino, 2016:237).

Globally, of the type of content seen in digital media, a large majority corresponds to enjoy different kinds of video in 2021 (Kemp, 2021: 34), the main ones being: 92.1% any type of video; 51.5% music videos; 36.7% viral videos, comedies or memes; 31.6% tutorial videos or videos to do something; 30.1% live video streaming; 30% product review video; 27.5% video games; 26.6% sports videos; and 26% video blog.

Visual content can be used to present phrases or quotes, images, statistics, tutorials, lifestyle, photos, comics, ephemera, jokes. In addition, visual content can be presented as:

- Meme: it is an idea or thought that is usually funny and related to humor, embodied in different formats (photographs, videos, comics, texts), which is transmitted through the Internet. The word comes from the Greek mimema (imitates).

- Infographics: a collection of images, data, graphics or text that summarizes a topic so that it can be easily understood. It is also considered a visual piece through which we explain a phenomenon, describe events or provide data.

- GIF (Graphics Interchange Format): it is an animated image made from the union of several of them into one, playing as a video loop. GIFs last between 5 and 10 seconds.

In the commercial aspect of social networks, what has been called online moderation consists of communicating with customers on these networks. In the view of Pablo Kolyvakis (quoted by Zuccherino, 2016: 190) the types of commercial users of social networks are:

- Fan: can be a customer or not, feels appreciation for the brand and likes the products and is attentive to news.

- Satisfied: a customer of the brand who is satisfied with its product.

- Incident: is a customer who has communicated a request for help or a complaint.

- Uninformed: it can be a customer or not, it is a user who does not have true information or has it partially.

- Dissatisfied: a customer who has had an inconvenience and must be reassured by demonstrating that his complaint was heard and an attempt must be made to solve his problem.

- Troll: user that is characterized by negative comments, criticisms and has a very high insatisfaction. Sometimes their opinions can be hidden by ignoring them, but in case they have been contacted and continue with their criticisms and complaints, their opinion should be hidden. An internet maxim says: Don’t feed the troll.

The way of communicating changed with the 2.0 version of the web a few years ago, making
social networks more active and dynamic, becoming the new communication showcases for users, consumers and brands. The new marketing created a figure called Community Management, which S. Dobal (Zuccherino, 2016: 170) defines: “It is a professional specialized in 2.0 tools, in charge of managing Social Networks (Facebook, Twitter, Instagram, YouTube, Pinterest, etc.) and the communication of a brand, famous person, NGO etc... It is the voice of the company to its consumers and their voice to the company”.

In this regard, O'Reilly (2005; Rodríguez et al, 2020: 47) indicates that the involvement of the Internet in the social sphere resulted in Web 2.0, conceived as a new generation of online tools and sites that encourage collaboration and information exchange between users, obtaining with these applications the transformation of traditional communication, giving way to active and participatory users.

According to Internetlivestats.com (quoted by Rodríguez et al, 2020: 45) every second more than 8 thousand tweets are published, almost 77 thousand videos are watched on YouTube, 71 thousand searches are performed on Google and 886 photographs are posted on Instagram, information generated by the users themselves for their peers or peers in interests and needs. This changes the focus of conventional media, which twenty years ago produced and disseminated what they thought was appropriate for the audiences that tuned in. Rodríguez H. et al (2020: 46) notes in this regard: “People spend a considerable number of hours searching for content on these sites instead of sitting down to read the newspaper, watch TV or listen to the radio”.

With the significant advance of ICTs in recent times, a new term called *prosumer* has appeared, which comes from the acronym of the words producer and consumer (Carmona, 2008; citeb by Jáuregui & Ortega, 2020: 367). The term prosumer for Sánchez & Contreras (2012: 64; cited by Rodríguez et al, 2020: 48) “is used to indicate those users of the Net who assume the role of communication channel”, recalling that previously the term prosumer had been used in studies of an economic nature and analysis.

The first to refer to the term prosumer is Alvin Toffler back in the eighties, and later he uses the term again in his book *The Power Shift: Powershift*, in the early nineties, where he refers to the fact that perhaps someday customers will press buttons to activate remote production processes, whereby the consumer and the producer merge into a prosumer. In this sense, Marcelino Bisbal (2020: 12-13) notes:

So now we speak of digital communication to refer to new media that bring with them new ways of producing information and new ways of consuming it by the perceivers-consumers-public-prosumers... Reason why today we speak of a media and digital village recreating the approach that at the time made by the Canadian Marshall McLuhan with his expression of the global village.

Authors such as Caro, Luque and Zayas (2014; cited by Castillo & Garzón, 2020: 22) argue that the change goes further; turning these audiences now into *ad prosumers*, since they also announce, advertise and evaluate their own prosumer roles.

Another of the most used terms or concepts in the digital world of these times are those known as fake news, which are not a new phenomenon, however the digital media facilitate their proliferation and expansion, appearing especially in times of crisis.

Although for Losada Maestre (2020: 48) the combination of digital society and crisis is
not entirely correct, since the digitalization of communications and even of social relations does not necessarily mean a substantial change in fake news, which have existed for many centuries, proof of this is the mention made by the author that on January 21, 1530 at ten o’clock at night a dragon flew over Paris with its respective storm that was accompanied by the infallible thunder. D. Lazer et al (2018; cited by Losada, 2020: 48) states on the subject: “Fake news is a distortion of reality that is intended to be passed off as an authentic piece of information”.

An unsatisfactory explanation or the absence of one in times of crisis, make it the ideal time for fake news to appear and proliferate. This is why most people continue to prefer the usual information media that are already consolidated and enjoy prestige, in the face of the accumulation of false news that spreads in the networks.

For fake news to exist, three components must be present: 1) Present inaccurate information that when verified turns out to be false; 2) The information is mimicked with true content; and 3) Seeks to hide its true motive: to cause malicious influence (Nylasy, 2019; cited by González, 2020: 103). Two types of aspects are contemplated in fake news: a) Factual, fake news is based on facts; and b) Intentionality, fake news is sent to deceive and manipulate (Lim & Ting, 2018; cited by Tapia, 2020: 43). The same author Tapia Figueroa (2020: 73) makes us see that the types of fake news detected are: satire; parody; news fabrication; photographic manipulation; propaganda; and advertising.

We must understand that when talking about fake news there will always be a moral or ethical element involved in the dissemination of information, the purpose of which is to deceive or falsify events in order to induce people to make bad decisions. In recent times, fake news has dominated the political arena and has especially proliferated in campaign times, seeking to obtain more votes in the elections to be held for mayors, governors, congressmen or presidents.

In the 2018 presidential elections in Mexico, fake news was spread accusing mainly the center-left candidate López Obrador, where multiple citizens identified with political, economic and media power groups spread false information, where in the opinion of González Pérez (2020: 97) the fake news aimed at bringing down the candidate of the political party Movimiento de Regeneración Nacional (MORENA) -National Regeneration Movement-, which was a proponent of positive news, while his main right-wing opponent Ricardo Anaya of the Partido Acción Nacional (PAN) – National Action Party-, used negative fake news against his rival, were unsuccessful.

But fake news are not new in Mexican elections, in May 2006 the Coalición por el Bien de Todos -Coalition for the Good of All-, led by López Obrador, denounced before the Special Prosecutor’s Office for Electoral Crimes: “the sending of at least 7 million e-mails that came from servers of State agencies, including the Federal Electoral Institute and offices of the Presidency of the Republic. Felipe Calderón’s campaign was accused of a dirty war”. (González, 2020: 104-105).

Before the end of the last century, a news program that generated accurate and reliable information was Monitor de Radio Red, conducted by José Gutiérrez Vivó, that is why it was the most listened program in Mexican radio and enjoyed excellent credibility and addressed issues of interest to its listeners. By the way, Gutiérrez Vivó was the victim of an
advertising boycott by the highest authorities that governed the country from 2000 to 2012 (Vicente Fox and Vicente Calderón), who influenced so that a lawsuit already won in the International Court of Paris, was ‘snatched’ from him with compromises made by members of the judiciary, causing the bankruptcy and economic ruin of Monitor and Gutiérrez.

I close these remarks on fake news by saying that we should not fall into the cognitive laziness that Pennycook & Rand (2019; cited by González, 2020: 107-108) argue is what can determine the acceptance of fake news. Above all, to prevent the dissemination of fake news, more than a legal regulation by the government, it is necessary to educate citizens to identify this type of information and, above all, to verify the sources of the information, for which it is necessary to strengthen media literacy and critical thinking.

Another way to induce a consumer to buy or acquire a product or service with false or dubious information is to transmit or generate what is known as misleading advertising, which is characterized by showing consumers a false, incomplete or only part of the product or service offered. Felipe Sánchez (2009; quoted by Vizueta et al, 2020: 2) notes on the subject:

Mis leading or abusive advertising is understood as that which induces error or confusion to the consumer by the way it is presented, i.e., which exaggerates the characteristics or benefits of a product, which provides false, incomplete, inaccurate or biased information.

Generally, misleading advertising is used in digital media to generate more traffic to commercial sites, thus obtaining more followers or views, which are to be reflected in monetary terms with the massification of users. Alberto Vizueta et al (2020: 5) reach this conclusion about misleading advertising: “At the end of it all, misleading advertising will always be frowned upon and over time consumers will disappear and therefore the credibility of the company will be lost”.

SEARCH ENGINES, BROWSERS AND MAJOR SOCIAL NETWORKS

A search engine or search engine is a computer system that crawls files stored on servers thanks to its web crawler (web spider). Searches are performed with keywords or phrases of a particular topic. Of the Internet search engines, Google has almost all the world’s search engine pie, leaving the other search engines far behind. According to information from Simon Kemp (2021: 28) as of October 2021, this is the way in which the worldwide public makes use of search engines:

- Google: 92.04%.
- Bing 2.66%.
- Yahoo 1.48%.
- Yandex 0.90%.
- DuckDuckGo 0.61%.
- Others 0.15%.

Google is positioned as the undisputed king of Internet search engines and as such, it is imposing conditions on its competitors in this segment. Personally, I have tried four of the five search engines mentioned in this list and I find them all useful. I have also used the Chinese search engine Baidu on occasion. In 1996 the first Google search engine “web crawler” was launched, by 2004 the search index reached a new record: 6 million items,
in that year Google Maps was introduced and in October 2004 Google Desktop Search was introduced. In February 2007 Gmail (its popular email) was launched and in December 2008 Google Translate was launched. Today Google has a wide variety of products and tools.

The Google Chrome search engine is released to the public on December 11, 2008 and in a few years became the favorite worldwide. By December 2009 it is already the complete dominator of web search engines with 85.34% of the world market; while Bing had 3.27% and Yahoo 6.29% of the world market in that year.

Google has become the most used search engine by Internet users, due to its great search power and its multiple and useful integrated tools that can help us to perform these searches in a more efficient way. If we use the words, phrases or names between co-miles it will offer us more accuracy in our searches. Among the most popular Google applications are: Google Search, Google Maps, Google Translate and of course its stars: YouTube and Gmail, the latter being Google’s main communication application. Gmail is the email service that offers the ability to send and receive messages, documents and various files (photos, videos, PDF). In order to use an Android device you must have a Gmail email address, so it is also widely used on cell phones.

Its search engine is so important worldwide that many professionals have specialized in Search Engine Optimization (SEO) to position specific content on the web, mainly in the Google search engine. For academic or scholarly activity, Google offers four main applications:

– Google Scholar: it is one of the largest scholarly or academic search engines in the world and it is free, so researchers and scientists want to position their work on this platform to be known by as many potential visitors as possible. Among the main services offered by Google Scholar is the review of citations that an author or an article or book has had, as well as the possibility of finding academic articles, journals or university repositories.

– Google Classroom: virtual classroom that allows distance learning and maintains communication and interaction between students and teachers.

– Google Books: in its catalog we can search for a book and download it if it is available, although almost always only a part of the book is loaded.

– Google Translate: which is a language translator.

Continuing with Google applications, these are some of the most outstanding ones: Google Authenticator: secure passwords with an assigned key; Google Drive: cloud storage of photos, videos and other documents; Google Docs, Google Sheets and Google Slides: editing of all types of documents; Google Ads: promote products and services through public advertisements; Google My Business: your business on the network, with various business line options; Google Analytics: study of platform or business audience metrics. The big problem that many users see in Google Chrome is its privacy criteria, since it keeps details of who uses the browser and uses forced tracking mechanisms of those who use its platform.

In the case of Mexico, according to information from Kemp (2021a: 35), these are the most important queries that were made in 2020 by topic, where in parentheses I place the index provided: 1) Translator (index 100); 2) Climate (index 82); 3) Facebook (index 73); 4) Weather (index 57); and 5) YouTube (index 51). After that fifth position, from sixth to twentieth place are: 6) Google; 7) Videos; 8) WhatsApp; 9) Hotmail; 10) Web WhatsApp; 11 Coronavirus; 12) Images; 13) Gmail; 14) Mercado Libre –Free Market--; 15) Weather
tomorrow; 16) Amazon; 17) Spanish-English translator; 18) SAT; 19) Classroom; and 20) Netflix. The two main social networks are in third and fifth place (Facebook and YouTube), with WhatsApp also appearing twice afterwards.

It is also noteworthy that the Tax Administration System (SAT) is placed among the first twenty search positions in Google, which implies that Mexicans are already making their tax returns and transactions online and are attentive to their tax situation. Also, the Google class service (classroom) is among the first places of searches in that portal, surely due to the COVID-19 contingency that made many decisions to be taken online.

Yahoo, on the other hand, became known in 1996 and veteran people (such as this writer) began to use it from that time on. In 1998 this platform was the preferred and most popular among web users, Yahoo had difficulties in 2008, which lowered its share of the world market in a very significant way.

The Microsoft Bing search engine (formerly Live Search and MSN Search) was launched on May 9, 2009. MSN Search was first unveiled in February 2005, then became Windows Live Search on September 11, 2006. Like Google, Bing mainly offers the following services: Translator; Images; News; Shopping; Travel; Videos; Local; Maps; and Twitter.

The DuckDuckGo browser was created in 2008 as an alternative to Google, among the advantages of using it is that it does not store users’ personal information and can be navigated privately, i.e., it does not store data through the famous cookies. Its slogan is “the search engine that does not track you”. It also describes itself as “just a search engine”. Of the information search engines, DuckDuckGo is the one that displays the least advertising when searching for a topic of interest.

As for browsers, these are platforms that allow users to find Internet addresses or sites when searching the Web. The first browser was developed by Tim Berners under the name World Wide Web (www). There are two factors that influence the favorite or most used browser by people: 1) The speed of downloading searches; and 2) The privacy and security policy; where the first factor is fundamental for the choice of the browser to use.

In turn, what makes a browser faster are two basic characteristics: 1) The browser engine: this component is responsible for tasks performed by the Hyper Text Markup Language (HTML) or Hypertext Markup Language code, which is the software or ‘language’ that connects web pages with the network; 2) The JavaScript engine: the programming language behind the third-dimensional (3D) experience: interactive objects and animations.

Simon Kemp (2021: 22) shows us the main browsers used in web traffic today worldwide:

- Chrome 65.15%.
- Safari 18.40%.
- Firefox 3.67%.
- Microsoft Edge 3.97%.
- Samsung Internet 2.89
- Opera 2.32% UC Browser 1.05%-
- UC Browser 1.05%.
- Others 2.56% Others 2.56% Others 2.56% Others 2.56% Others 2.56% Others

In August 1995, one of the first Internet browsers appeared: Windows Internet Explorer, developed by Microsoft, which became the leader of Internet browsers from 1999 to 2003.
In August 2020, it was announced that Internet Explorer 11 would no longer be updated and maintenance would no longer be performed.

Until the beginning of the last decade the market of internet browsers worldwide was disputed, but from November 12, 2012 Google Chrome becomes the most used web browser on the planet with 32.7% of users, leaving its then rival Internet Explorer (now Microsoft Edge) with 32.5%, since that date its growth and market dominance has been impressive. On December 11, 2008 the first version of Chrome developed by Google was launched, and in June 2012 it updated the browser and made it a stable version for Android. The Chromium project, which is its predecessor, is based on managing windows with tabs.

I usually use two browsers to access the internet indistinctly, with their respective email accounts: Microsoft Edge and Google Chrome, to a lesser extent Firefox. In general I don't notice big differences between these browsers, but Google has more tools that can be incorporated into the browser.

Safari is the browser that can integrate the MAC operating system, as well as versions of Microsoft Windows. Having a tab organizer, a spell checker, pop-up blocker and a player for multimedia files, reasons why it is positioned in the second place of use worldwide, far behind other browsers. Microsoft Edge is the successor of Internet Explorer, it is determined by Windows 10 and its objective is its speed. According to the information presented worldwide it occupies the third place by number of users. Microsoft Edge also has tools to analyze the positioning of different web pages, so that creators and developers of HTML language can better position their products.

Mozilla Firefox is the fourth most used browser worldwide, being compatible with Windows and Android. Among the main features of Firefox is the ability to browse privately and avoid being tracked, with the option of an antivirus that blocks pop-ups, as well as working without being connected to the Internet. Opera is another of the most used browsers, occupying the sixth position worldwide, its main feature is speed, where it can also allow blocking intrusive advertising and has a very powerful security protocol.

In the case of our country, the most used browsers as of January 2021 (Kemp, 2021a: 29), are the following:

- Chrome 77.6%, growth -1% with respect to 2020.
- Safari 12.1%, growth -4.2% vs. previous year.
- Firefox 3.1%, growth -11% over 2020.
- Microsoft Edge 3.0%, growth 89% over 2020.

There is a difference of 12.4 percentage points that use the Chrome browser more in Mexico than worldwide, which further strengthens its leadership position in our country. This confirms that Google is the born leader in Mexico, both in search engines and Chrome browsers.

The Safari browser is in second place worldwide and in Mexico, but with 6.35 percent less in Mexico. The Firefox and Microsoft Edge browsers maintain their same position worldwide and in our nation: third and fourth place respectively. One thing that is striking is that Microsoft Edge grew a little less than double compared to the previous year (89%), which speaks that it was the only browser that grew during 2020.

The top most visited websites in Mexico by monthly traffic in December 2020 (Kemp, 2021a: 30) are the following, with their corresponding time (minutes and seconds):
Table 2

<table>
<thead>
<tr>
<th>No.</th>
<th>Website</th>
<th>Total visits (millions)</th>
<th>Time per visita (minutes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Google.com</td>
<td>2,029</td>
<td>19:43</td>
</tr>
<tr>
<td>2</td>
<td>YouTube.com</td>
<td>546</td>
<td>31:09</td>
</tr>
<tr>
<td>3</td>
<td>Facebook.com</td>
<td>512</td>
<td>23:09</td>
</tr>
<tr>
<td>4</td>
<td>Wikipedia.org</td>
<td>247</td>
<td>09:01</td>
</tr>
<tr>
<td>5</td>
<td>Google.com.mx</td>
<td>235</td>
<td>16:44</td>
</tr>
<tr>
<td>6</td>
<td>Xvideos.com</td>
<td>234</td>
<td>17:39</td>
</tr>
<tr>
<td>7</td>
<td>Mercadolibre.com.mx</td>
<td>205</td>
<td>10:38</td>
</tr>
<tr>
<td>8</td>
<td>Xnxx.com</td>
<td>170</td>
<td>16:22</td>
</tr>
<tr>
<td>9</td>
<td>Live.com</td>
<td>115</td>
<td>06:28</td>
</tr>
<tr>
<td>10</td>
<td>Pornhub.com</td>
<td>113</td>
<td>12:44</td>
</tr>
<tr>
<td>11</td>
<td>WhatsApp.com</td>
<td>110</td>
<td>21:26</td>
</tr>
<tr>
<td>12</td>
<td>Instagram.com</td>
<td>102</td>
<td>14:46</td>
</tr>
<tr>
<td>16</td>
<td>Twitter.com</td>
<td>78.6</td>
<td>12:29</td>
</tr>
<tr>
<td>20</td>
<td>Yahoo.com</td>
<td>44.3</td>
<td>13:52</td>
</tr>
</tbody>
</table>

This information shows that in our country the most visited site by far is Google.com with more than 2 billion monthly visits, followed by the two major social networks (YouTube and Facebook) with almost a quarter of the visits that Google.com has, in this study they separate Google.com.mx, if they were joined together they would give 2,264 million monthly visits. In fourth place appears Wikipedia.org; and in seventh place Mercadolibre.com.mx; while WhatsApp and Instagram appear in eleventh and twelfth place. Yahoo.com, which came to dominate the Mexican market years ago, appears in 20th place. Some adult XXX recreation sites appear in the list (Xvideos.com, Xnxx.com and Pornhub.com).

The longest dwell time is dominated by YouTube.com with just over half an hour per visit, with Facebook in second place with 23 minutes, followed by WhatsApp with 21 minutes and Google.com with almost 20 minutes per visit.

As for social networks, they are one of the technological resources most used by Internet users. Because of this Facebook, YouTube, Twitter and Instagram are platforms mainly dedicated to leisure and entertainment, although also within the educational field social networks have been incorporated as a tool in the teaching-learning process, with the application of Information and Communication Technologies (ICT) that have been developed so intensively during the last decade (Barón et al, 2021: 125). This is what Torres Toukoumidis & Marín Gutiérrez tell us about the role of Facebook in education: “YouTube alone has also stood out in each of the aforementioned fields, verbi-gracefully, in education it is presented as an emerging tool for anatomical education (Jaffar, 2012; Burke & Snyder, 2008); to encourage reading habits (Rovira-Collado, 2017)”.

The early nineties saw a marked emergence of the computer era and the Internet appeared, thanks to the impact caused by the nascent Information and Communication Technologies (ICT). In 1995 classmates.com was created by R. Conrads, which is said to be the first social network with the objective of locating former college classmates.
In 1997 with the creation of the first social site, Web 1.0 began to evolve, the site SixDegrees.com was created in that year and is considered by many as the first modern social network, since it allowed users to have a profile and add other participants, this site reached 3.5 million members and was closed in 2001 (RD Station, 2021). As the social networking project proved to be successful, other social networks emerged with the aim of gathering friends. By 2003, MySpace and LinkedIn were popular for more specific purposes, where Friendster, Orkut and hi5 were also created.

In 2004, Web 2.0 appeared, a low-cost technical infrastructure that enables interaction and user-generated content. Based on the popularity of these sites, large companies such as Google and Yahoo began to consolidate, and in the same year Facebook was created. Today, social networks allow millions of people to communicate and have professional relationships. Social networks are formed with communities of people who establish relationships of kinship, friendship or work, where the participants do not need to meet in person and manage to do so through virtual communities (Raffino, 2020; cited by Fuentes & García, 2021: 175). One of the most common classifications of types of social networks is pointed out by RD Station (2021):

- Relationship social network: the goal of most social networks is this, the most co-noted case is Facebook, in addition to Instagram, Twitter, Google +.
- Entertainment social network: the main objective is to consume content, the classic example is YouTube, the largest video platform in the world, finding Pinterest.
- Professional social network: their purpose is to create professional relationships with other users, disclose projects, present resumes and personal skills, LinkedIn is the clearest example, and others are Bebee, Bayt, Xig and Viadeo.
- Niche social networks: aimed at a specific public (professional category or common interests), the emblematic case is TripAdvisor, as well as Deviant Art or Behance.

A decade ago in both private and public organizations, the use of most social networks was restricted or prohibited during working hours, since they were used for leisure instead of productive activities. Nowadays, it can be said that there are no companies or public institutions that do not have at least one profile on a social network. With the approach of business administration, social networks can be classified according to De Hugo C. et al (2020: 179):

- Functional networks: where personnel with similar functions in different parts of the organization share knowledge and experiences related to work.
- Cross-functional networks: people from different areas or functions relate to each other to discuss a topic of their interest, for example, the launching of a new product.
- Interpersonal networks: facilitate informal sharing and communication, dealing with personal issues and social activities not directly related to work.
- Innovation networks: oriented to stimulate the discussion of ideas on topics to generate innovations within the organization.
- Networks between business units: aimed at facilitating improvement and problem solving between different business units.
- Customer networks: dedicated to capture ideas, advice or proposals for improvement from customers on products or services offered by the company.
- Community of practice networks: aimed at promoting networks in organizations, bringing together people who share a common interest.

In Mexico, 77.2% of the national population is active in social networks and 98.9% of these users use cell phones or cell phones. In the year 2021 the percentage of people using social networks in Mexico by sex and age (Kemp, 2021a: 45) would be:

- From 18 to 24 years old: Women represent 13.1% and men 12.1%.
- From 25 to 34 years old: Women 15.1% and men 16.1%.
- From 35 to 44 years old: Women represent 9% and men 8.4%.

It can be seen that 56.4% of the users of social networks in Mexico are women and men between 18 and 34 years of age, which shows that the young population is the one who uses them most frequently. Considering 18 to 44 year-olds, 73.8% of the Mexican population uses social networks.

With information from Simon Kemp (2021a: 47), I will list the social network platforms most used by Mexicans in January 2021, measured by the percentage of Internet users between 16 and 64 years old who have used them:

1. YouTube: 96.3%.
2. Facebook: 95.3%.
3. WhatsApp: 91.3%.
4. Facebook Messenger: 79.4%.
5. Instagram: 76.9%
6. Twitter: 61.1%.
7. Pinterest: 48.4%.
8. TikTok: 46.8%.
9. LinkedIn: 35.2%.
10. Snapchat: 34.3%.
11. Skype: 33.3%.
12. Twitch: 25.9%.
13. Red Dit: 20.1%.
14. Tumblr: 20.0%.
15. WeChat: 19.4%.
16. Telegram: 17%.

In the case of Mexico, it can be seen that the role is reversed in the first two places of social networks worldwide and in our country, with only one percentage point YouTube is positioned in first place and Facebook in second place. WhatsApp ranks number three worldwide, the same as in Mexico. The positions are reversed between fourth and fifth place, Facebook is in fourth place worldwide in our country, while Instagram is in fourth place worldwide and fifth in Mexico, where there is a 2.5 percentage point difference between the two.

For our country Twitter occupies the number six position, while worldwide it occupies the fifteenth place, which shows a higher penetration of this social network in our nation. WeChat occupies the sixth position worldwide and in our country it is in the fifteenth place. It is observed that Twitter and WeChat in our country are in exact inverse relation with the
world and Mexican positions (6 and 15). TikTok occupies the seventh position worldwide and in our country it is located in the eighth place, which is very similar. Pinterest occupies the fourteenth position worldwide and in our country it occupies the seventh place.

3.1 Facebook (1)

Is characterized as the media with the highest rating consumed, taking hold in the daily life of users. Those who are subscribed to Facebook are not there to buy or perform any full commercial activity, but seek to relate, express themselves and socialize with other people, however companies invest in this social network through advertising guidelines to increase the sale of their products. In the opinion of RD Station (2021) Facebook is by far the most popular social network on the planet, adding: “This is the most versatile and complete social network. A place to generate business, meet people, interact with friends, get information, and have fun, debate, among other things”.

According to W. Gonçalves (2020; Fuentes & García, 2021: 174) the beginnings of Facebook were in 2003 at Harvard University, designed by M. Zuckerberg, C. Hughes, D. Moskovitz and E. Saverin, second year students, where the objective was to see which were the most attractive girls on campus. Facebook was officially launched on February 4, 2004, and it was not until 2011 that the company reached 350 million users.

Facebook’s active users (Kemp, 2021: 78) were 2,449 million people in October 2019; by October 2020 there were 2,740 million users; and by July 2021 there were 2,895 million users, representing an annual growth of 11.9% in 2020 and 5.7% in nine months of 2021. In 21 months, Facebook grew by 18.2% in user numbers.

It is considered that 2.28 billion users observe commercial ads on the Facebook portal worldwide, of which Kemp (2021: 77) considers that 37% of these users can become a potential audience for brands that advertise on the portal. In the last quarter of 2021, Facebook’s advertising reach increased by 25 million people worldwide, representing 1.1% compared to the previous quarter. Of the potential advertising audience mentioned for Facebook 43.5% of people are female. Shira Ovide (2020) makes us see that Facebook’s business worked in three steps or stages:

1. Start by building a large and pleasant space for people to spend time with-living and so was the original social network.

2. When there are already a lot of people interacting and they feel comfortable in the social network, the platform allows access to companies to try in the first instance to sell sport shoes or bed sheets to users.

3. Facebook finds ways to make companies and businesses that advertise on its portal pay you to reach people.

From 2015 to 2020 investments in digital marketing in the world grew from 200.8 million dollars to 306 million dollars, which represented a 33% growth in five years, allowing it to reach a total of approximately 60 million pages on the social network (González, 2018; cited by Fuentes & García, 2021: 174).

By age group the Facebook advertising audience profile (Kemp, 2021: 79) reaches its highest percentages between the ages of 25 to 34 years, where 31.5% of those profiles are located (12.5% women and 19% men); from 18 to 24 years are located 22.7% (9.3% women and 13.4% men); from 35 to 44 years are 17.3% (7.7% women and 10% men). Fuentes Frías & García Rodríguez
(2021: 186) in their conclusions on the use of social network marketing note:

After having carried out a qualitative analysis regarding Facebook advertising and the impact it generates in its users, it can be satisfactorily affirmed that nowadays if one wants to make a purchase/sale of products and/or services, this social network is the most appropriate due to the reach it has worldwide....

In Facebook we find different types of tools for communication: 1) Profiles; 2) Groups; and 3) Pages. The profile is the letter of introduction, it is the place where we say who we are to the public. Groups are spaces to gather people with common and similar interests, where ideas are built collectively and where it is possible to interact with the affiliated community directly. Pages are created on Facebook as a tool for businesses and brands, to have a page you need to have at least 25 fans and then enter its communication protocol (HTTP).

A video uploaded to YouTube cannot be uploaded to Facebook, since they would reject it, according to a study of the latter, videos uploaded directly receive: twice more likes; three times more shares; seven times more comments; and twice more reach. For these reasons Santiago Zuccherino (2016: 135) concludes: “Facebook is the King of Social Networks. Every social media strategy must have Facebook as the central axis of the content”.

Politicians or public personalities have also taken advantage of Facebook as their favorite platform to get closer to the citizens of their country or region, where Enrique Peña Nieto reached more than 4.5 million followers in 2015, while Barack Obama reached more than 46 million followers, which represents more than 10 times, with the United States having 2.5 times more population than Mexico.

Globally in 2021, the countries with the largest Facebook audiences (Kemp, 2021: 80), listed in position by number of users and the increase in the last quarter are the following:

- 1. India: 349.2 million and growth of 2.7%.
- 2. United States of America: 193.9 million and growth of -3.1%.
- 3. Indonesia: 142.5 million and growth of +1.8%.
- 4. Brazil: 127 million and growth -2.3%.
- 5. Mexico: 95.6 million and growth -2.4%.
- 6. Philippines: 90.5 million and growth +2.8%.
- 7. Vietnam: 74.1 million and growth +4.4%.
- 8. Thailand: 54.7 million and growth of +1.3%.
- 9. Bangladesh: 48 million and growth +4.3%.
- 10. Egypt: 47.8 million people and growth +1.7%.
- 13. Colombia: 37.8 million people and growth of -0.5%.
- 17. Argentina: 31 million people and growth 0%.
- 20. Peru: 26.6 million people and growth -1.5%.

Currently India, with just under 1.4 billion people, it is not surprising that it will have more than 349 million with an active Facebook account by October 2021, remembering that China has blocked and banned access to this portal since 2009. After these two countries, the United States is the third most populated country in the world, with almost 334 million people, it is not surprising that it is the second country with the most active Facebook users, but what is striking is that it presents a growth of -3.1% (decrease) compared to 2020.

All the countries with the highest number of active Facebook users are growing, with
the exception of the countries in the Americas. The five Latin American countries with the highest number of Facebook users as of October 2021 show zero growth or rather negative growth rates, of which the highest is Mexico with -2.4%, Brazil with -2.3% and Peru with -1.5%, while Colombia only shows -.0.5% and Argentina shows zero growth.

### 3.2 YouTube (2)

The worldwide audience on YouTube is expected to reach 2,291 million users in 2021. In the case of Mexico, 74.1 million people over 13 years of age are estimated to be a potential audience for YouTube, which means 63.4% of the population (over 13 years of age). The basic functions of YouTube are very simple: uploading videos to the platform, watching videos produced by other users, as well as interacting with them by posting comments and responses to the video. In February 2005, YouTube was launched by C. Hurley, S. Chen and J. Karimy, and is currently the second most active platform in terms of users, behind Facebook. In October 2006 YouTube was acquired by Google Inc. for 165 billion dollars, operating now as one of its subsidiaries.

According to the Terms of Service that apply as of January 5, 2022, in its Terms of Service YouTube states: “The service allows you to discover, watch, share videos and other content, provides a forum for people to connect, inform and inspire each other around the world. It also functions as a distribution platform for original content creators and advertisers large and small”.

It is worth mentioning that the YouTube platform is banned in China and North Korea. Ade more than generating very good revenues for this platform, it also promotes participatory and social culture, in that aspect Burgess & Green (2018; cited by Castillo & Garzón, 2020: 28) state: “YouTube is, and has always been a commercial enterprise. But it has also been a platform designed to enable cultural participation by ordinary people.”

The YouTube platform is increasingly being used by academics as an opportunity to publicize their research or to provide themselves with data for articles, li-bros and conferences. Therefore, Toukoumidis & Marín (2020: 102) point out: “Therefore, it can be used by students for their undergraduate, masters and doctoral theses”. Reviewing the statistics, it can be seen that despite the high potential of this platform, science and technology are not among the most searched topics on YouTube, which in my point of view is a missed opportunity to publicize the progress of science to a large number of audience.

One of the most important aspects of the YouTube platform is what they call its monetization system, where the channels that capture the largest number of followers and subscribers get rewards or prizes expressed in monetary amounts. Derived from this service are well known YouTubers, which are embodied as one of the most important social phenomena of the last decade, saying that it is a user (usually young) who achieves fame and popularity by uploading videos to the YouTube platform, for Galán Montesdeoca & Hinojosa Becerra (2020: 38): “These new creators have become influencers with millions of followers and role models for the latest generations around the world. Their success has been amplified by traditional media and many young people have taken them as role models”.

It has been said that YouTubers are currently the identity builders of adolescents, Perez Torres et al (2108:62; cited by Rodriguez et al, 2020: 50) notes: “...they are perceived by young people as their equals, although they also have qualities (creativity or talent) that
they tend to admire. In addition, they are people close to their followers, in the sense that they share similar traits (age, language, culture, social context, etc.) to the adolescents who follow them”.

Galán & Hinojosa (2020: 39) elaborated a table of the most famous YouTubers in the world, where they list the number they occupy, the subscribers they have, the type of content and the country where they are from, I mention some of them:

<table>
<thead>
<tr>
<th>Position</th>
<th>Name</th>
<th>Subscribers</th>
<th>Type</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>PewDiePie</td>
<td>103 million</td>
<td>Gamer</td>
<td>United King</td>
</tr>
<tr>
<td>2</td>
<td>Dude Perfect</td>
<td>49.5 million</td>
<td>Humorist</td>
<td>United States A.</td>
</tr>
<tr>
<td>3</td>
<td>Like Nastya</td>
<td>48.7 million</td>
<td>Vlogger</td>
<td>Russia</td>
</tr>
<tr>
<td>6</td>
<td>Babadun</td>
<td>42.5 million</td>
<td>Humor/Variety</td>
<td>Mexico</td>
</tr>
<tr>
<td>14</td>
<td>Luisito Communicate</td>
<td>29.7 million</td>
<td>Vlogger</td>
<td>Mexico</td>
</tr>
</tbody>
</table>

These characters became famous on YouTube and then moved on to multiple platforms, such as Twitter, Instagram, Snapchat, even traditional audiovisual media. It is striking that there are two channels from our country among the most popular on Yotube: Babadun and Luisito Communicate. The first one is a producer of audiovisual content that published the first video on December 5, 2014, being the videos this channel about curiosities, tricks, experiments and viral content. Luisito communicate is a character created by Luis A. Villar Sudek, who was born in Puebla, Mexico in 1991 and mostly about his travels to different countries around the world. In my personal case I have not seen videos of Babadun, but I have seen several (about half a dozen) of Luisito communicate.

In spite of being very public characters, YouTubers generally do not appear in magazines or magazines of the heart or pink programs, they do not give interviews to newspapers or traditional radio and television media, so some part of their biography is unknown. Galán & Hinojosa (2020: 45) tell us about the main contents presented by Youtubers:

• Reviews: observations and comments on shows, movies, music, books or electronic devices, where they issue recommendations to users.
• Fashion and beauty: they give advice on wardrobe, hairstyles, shoes and accessories.
• Tutorials: steps to follow to assemble, repair or build a specific task or activity at home or at work, also on educational topics.
• Cooking: specialized in recipes and food preparation (step by step.
• Home: tips for decorating, arranging and organizing the interior of the home.
• Vlogger: video blogs on a variety of topics where they pose challenges or other activities.
• Humorists: they make jokes, tell jokes or humorous content.
• Musicians: perform musical pieces to make themselves known publicly.
• Gamer: sensations, experiences and tricks about certain video games.
• Sketches: they produce comic short stories that are attractive to user.
• Animation: those who know this area present their products to the public.
• Direct: live broadcasts when a program or special event takes place.

The issue of age is important for the YouTube platform and for the outstanding characters
that emanate from there, reviewing the age of the main Latin American YouTubers fluctuates between 27 and 32 years: AuronPlay 32 years; Vegetta777 31 years; HolaSoyGermán 30 years; elrubius OMG 30 years; Luisito Communicate 29 years; Yuya 27 years and Fernanfloo 27 years (Galán & Hinojosa, 2020: 51).

3.3 WhatsApp (3)

This social network has the third largest number of users worldwide, with 2 billion people in 2020. WhatsApp Messenger is an instant messaging application for smartphones owned by Meta, which allows sending and receiving messages, as well as images, videos, audios, recordings, documents and also making video calls. Facebook has owned WhatsApp since 2014, but does not earn as much as other social networks.

Mobile devices have undergone an impressive evolution in the last decade, they are no longer only used to call other users, now they are also used to establish conversations asynchronously and for this purpose WhatsApp is the most used resource today (Gómez & Gómez, 2017; Veytia & Bastidas, 2020: 75). Practically anyone who has a smartphone or cell phone has the WhatsApp application installed.

Unlike a Short Message Service (SMS) or Short Message System, a WhatsApp uses our data plan (Wi-Fi connection), so we do not have to pay for a message. In order to use this platform we need to know the phone number of our contacts. It is also considered that its great advantage is to be able to create chat groups with relative ease.

For some authors this is not considered a social network, but a communication channel that can be useful as a means of social communication between people or as a commercial channel for companies. Since WhatsApp is a very personal means of communication, it should only be used for business operations and not to execute commercial and marketing strategies (Mejía, 2021).

For Veytia Bucheli & Bastidas Terán (2020) the importance of this social network is explained:

The use of WhatsApp has become one of the daily activities for most people...adaptations to Spanish have emerged according to the spelling criteria of the Spanish language, among which are the noun wasap and the verb wasapear (Suárez, 2018; Funden 2014)...The WhatsApp application has great communicative, technological and economic advantages.

Since 2020 WhatsApp allows group voice and video calls, with up to eight people, whose communication will be end-to-end encrypted so that no one else can listen to the private conversations. Although more than two billion people use WhatsApp worldwide and it is so popular; it has generated little profit for its owner Facebook, because it is mainly an application for personal and family communication. Since a few years ago, it has become possible for companies to make use of this social network to increase their sales strategies, in this regard Shira Ovide of the New York Times (2020) expresses: “If Facebook finds a way to pull it off, WhatsApp could forever change how we shop online and use the Internet, just as the company’s main social network and Instagram did. If not, Facebook will own a spectacularly popular flop. The outcome will set trends for our digital lives and determine which businesses thrive and which do not”.

The WhatsApp app has not been widely used in the United States, but has been in many countries that were late entrants into the digital space (such as India), against this backdrop
Shira Ovide (2020) notes that Meta intends to market this important social network to improve the financial benefit of the platform, noting in this regard:

WhatsApp in India could change the retail industry completely in ways we can't imagine. It could influence the way governments plan their coins...you can see that Facebook wants WhatsApp to be a version of tele-phone centers for customer care. It is also trying to turn WhatsApp into a 21st century Sears catalog or perhaps a digital currency.

3.4 Instagram (4), Facebook Messenger (5) and Twitter (15)

Instagram is one of the first social networks exclusively for mobile (cell phone) access, even though it can now be viewed on personal computers (PCs). Instagram has been called the queen of visual social networking. In 2020 it had 1,393 million users worldwide, ranking fourth among social networks. Instagram is an application and social network of American origin, owned by Meta, which was launched in October 2010, under the impetus of K. Systrom and M. Krieger; by April 2012 it already had more than one hundred million active users. It was acquired by Facebook on April 9, 2012 for one billion dollars, after a year and a half of operation.

In 2011 Instagram incorporated hashtags, adding the App Store sometime later and on April 3, 2012 the version open to the public for Android was released, with this action it achieved more than one million downloads in less than 24 hours. As they belong to the same owner, Facebook and Instagram (Mark Zuckerberg) share the same user database and advertising platform, as well as marketing channels, which have become two financially successful platforms for their owners.

Instagram is a social platform where videos and photos can be uploaded among the community, with the ability to apply filters. It is considered one of the five fastest growing networks. It has a private means of communication to talk called Instagram Direct and a basic function stories (stories), where you can post photos and videos on your profile, adding filters and effects, you can even make video calls. It allows uploading photos or videos with a maximum duration of 20 seconds and has a large number of filters to apply to photos or videos, also allowing the use of hashtags. Unlike Facebook, Instagram does not allow generating traffic to the website with online time publications.

On Instagram, live videos can now be viewed and commented on from the desktop platform, and after a live broadcast, videos can be saved so that they are available for the next 24 hours. It will also feature video calls. Portuguese footballer Cristiano Ronaldo is the most-followed person on Instagram with more than 300 million fans, while American singer Ariana Grande is the woman with the most followers (266 million). Well-known influencers such as these two personalities are rapidly increasing the number of Instagram users.

The phenomenon is being observed that Facebook advertisers are abandoning the platform to move to Instagram in order to implement their digital marketing plan, thus ‘cannibalizing’ among Meta corporate-owned businesses.

The social network Facebook Messenger ranks fifth in the world, counting 1.3 billion users by 2021. This is an instant messaging application developed by Meta in 2008, which was called Facebook Chat and in August 2012 launched the new application. It is a cross-platform service for Android, Windows, iOS and Mac, where it can also be used on Linux. Its basic function is sending and receiving messages, but you can also share our location,
stickers, animations and voice notes, where you cannot share Office or PDF files.

The Facebook and Facebook Messenger platforms are interrelated and can communicate with each other; make free voice calls and video calls individually and in groups. In 2015 it had 600 million users, by June 2016 it had 900 million and reached 1.2 billion users in April 2017. With the separation from Facebook in 2016, downloading the Messenger app has become mandatory for users of the social network who connect with smartphones, as it is no longer possible to reply messages with the Facebook app. In addition to the messaging app, Facebook Messenger also has an exclusive ‘stories’ function, with bots and intelligent replies for companies.

Three features of Facebook Messenger are less known: 1) Within the application it is possible to engage in conversation with companies that have a page on the social network and it is even possible to buy products directly; 2) It is integrated with Facebook games and a library of 70 effects; and 3) In some markets it allows money to be sent directly between users. Messenger Rooms, which has a video chat function, allowing users to chat with up to 50 members, was launched in 2020, but will initially be limited to 17 participants, thus competing with Google Meet and Zoom, both of which increased their participants in the wake of the COVID-19 pandemic. Twitter was launched on March 21, 2006. The 140-character social network, which now has 280 characters, reached its peak in mid-2009 and since then has been decreasing in the number of users worldwide. The arrival of competitors of the same cut in the world of social networks (Instagram, Snapchat and WhatsApp) has taken away public prominence from this social network. It is currently ranked 15th among networks worldwide, with 436 million registered users.

Twitter is mainly used as a second screen, where users comment and debate what they are watching on TV, posting comments on news, reality shows, soccer games and other programs (RD Station, 2021). According to PewResearch.org (Zuccherino, 2016: 138) Twitter topics or conversations can be divided into six groups:

- Polarized crowds: two or more groups discuss a controversial topic, generally do not communicate with each other and cover conflicting topics, such as political debates.
- Clustered crowds / grouped conversations: these do discuss among themselves, communicating and sharing interests, proposing a certain hashtag to their participants.
- Fragmented conversations: these tend to be very large groups, but are made up of multiple, small conversations that are distinct from each other on the same topic.
- Clustered conversations: they usually revolve around major events and news of global relevance and generate a greater number of interactions.
- Centralized conversations / Broadcast networks: a source broadcasts messages that are retweeted by several people without them communicating with each other, usually promoted by the media and celebrities, in which one participant acts as a ‘star’.
- Shared Conversations / Support Networks: a company or organization responds to complaints and queries from users, who do not communicate with each other.

In Mejía Llano’s point of view (2021) Twitter is a social network that has had a slow growth, however it becomes an indispensable means of communication for a social marketing strategy, due to: 1) Its strength in real time information; 2) It can become the official media of brands; 3) It is a social network that is essentially public, which allows brands to perform social listening through it.
A widely used term on Twitter is hashtag, which is preceded with # (hashtag) and is said to be the keywords or tags that allow conversations to be joined and that other users can use to facilitate the search for a topic. Trending Topics (TT) is a topic that many people are talking about the same thing, so it will end up being a trend. For radio and television programs it is easy to cause trends: by publishing the hashtag and with a small percentage of the audience tweeting they become the first places in trend. In 2016 it was possible to pay for a sponsored trend, it is dedicated for companies and politicians who could pay $8,000 dollars per day (Zuccherino, 2016: 147).

Periscope was a streaming application, which allowed broadcasting live content about any event and users could give feedback in real time, while the transmission was being made, it officially closed in March 2021 and was owned by Twitter.

3.5 Others: WeChat (6), TikTok (7), Telegram (11), Snapchat (12) and Pinterest (14)

It should be remembered that the three main social networks in the world are banned in China (Facebook, YouTube and WhatsApp), which is why WeChat is positioned as the number one in that eastern country and was developed by Tencent. In terms of world ranking, it ranks sixth in terms of participation in social networks, with 1,251 million users, where in China alone there are more than one thousand million active users.

WeChat is a mobile instant messaging application, like WhatsApp but in Chinese version, but only for communication between people. Where they can communicate with friends and family, follow celebrities, blogs, play video games and even pay the household light. It has been considered that WeChat is a mix between WhatsApp, Facebook and Instagram, which allows to perform functionalities of these three platforms in one, so it has been called “an all-terrain app”.

The functionalities of this platform are: 1) Messages, text, voice, video calls, images, videos and video games; 2) Verified accounts, something similar to Facebook; 3) Geolocation, you can see people close to your region or community; 4) WeChat Moments, something similar to stories from Instagram, Facebook or WhatsApp; 5) Miniprograms, encode programs of less than ten megabytes; 6) Enterprise WeChat, application for professional use; 7) File transmission, from personal computer to cell phone and vice versa; and 8) WeChat Pay, allows payments and bank transfers (Gil, 2020).

Of its main functionalities, WeChat Pay has more than 200 million registered cards and more than 300 thousand stores worldwide that accept it as a means of payment, and can be applied in physical establishments or ecommerce. According to a study by Citizen Lab (a company dedicated to research and development of ICT, human rights and global security), WeChat would spy on the conversation of all its users, filtering those that could be objectionable, especially on political issues.

In this regard Donald Trump during his presidency even threatened to ban the use of Chinese applications such as WeChat and TikTok, presupposing a threat to the national security of the United States of America, where finally a judge banned this order that violated the amendment of the Constitution of that country that guarantees freedom of expression (Gil, 2020). Tencent Holding, which owns WeChat, QQ and Qzone, in July 2020 surpassed Facebook financially and became the world’s most valuable operator, as it increased its capitalization to 670 billion dollars, making it one of the world’s largest corporations.
TikTok is the social network that includes high quality content with humor and spontaneity, announcing that in September 2021 it surpassed one billion active users, occupying the seventh position among social networks. It managed to reach this position in only five years, even though it is blocked in India (with 15% of the world's Internet population).

TikTok is aimed at teenagers and young people, born as Douyin first launched in 2016 by Byte dance. Although it was on August 2, 2018 with the momentum of Musical.ly when it grew remarkably. This application is only played on cell phones with which young people identify themselves in a better way, since they know from a young age those devices. Among the most common contents are music videos or montages with playback, but also funny videos with filters and countless other combinations.

TikTok allows recording, editing and sharing short videos, focused on the new generations and reminiscent of Vine (the Twitter application that closed a few years ago), but with the particularity of sharing instant videos, adding animated backgrounds, sound effects and a wide range of visual filters. The videos allowed on TikTok started with a maximum duration of one minute, but by 2021 it already accepts videos up to three minutes and very soon the duration will increase to five minutes.

Since 2018 it has been one of the most downloaded mobile applications in the United States, shortly after it already had more registered users than Twitter or Snapchat. TikTok announced a new step that will bring it closer to becoming a platform for ecommerce.

Young people from 16 to 24 years old are the ones who most position TikTok as one of their favorite networks, in this segment it is only below Instagram, WhatsApp, and Facebook, nipping at the heels of this social network among teenagers and young people under 25 years old, which is why it is said to be the favorite of generation Z or centennials. Zambrano Grada (2021: 21) in his conclusions expresses about this social network:

> Young people with its main target, are profiled as a growing audience and have turned this application into the one with the greatest acceptance...Although the TikTok network is aimed at capturing the attention of Generation Z users, it does not exclude the rest of people who find the content generated novel, interesting and fun.

Telegram is an instant messaging application created in 2013 by the brothers Nilolai and Pavel Durov, as an alternative to WhatsApp. It has 550 million users worldwide, standing out for its security system and speed of messages. Among the advantages of Telegram is the creation of bots (automatic messages) and the implementation of user secrecy with encryption between the sender and receiver. In addition to chatting, it is possible to exchange image files, audio, video, location, contacts, among others. It is also possible to talk on the phone, send voice messages and edit images, as well as chat from a personal computer.

Telegram’s features are: 1) Ad-free; 2) Sending messages, photos and videos regardless of their format or capacity; 3) Lower mobile data consumption; 4) Groups of up to 200 people can be created; 5) No need to share a phone number; and 6) Bot function.

Snapchat was launched in September 2011 and was wrongly predicted to be rejected and considered a fad, the users who use it the most are people between 13 and 25 years old and its great attraction is creativity. Snapchat has 538 million users as of September 2021 in the world, of which India has 116 million (21% of the total), surpassing the United States with 106 million users.
Snapchat is considered an ephemeral and theoretically private messaging service, since the messages, images and videos sent are self-destructive, both on the device that sends them and on the device that receives them. This ‘disposable’ nature of the messages creates an atmosphere of intimacy and exclusivity that is unique among users. This social network allows the possibility of drawing on photos and videos, adding filters, masks, special effects, editing the format and typeface, which is why Snapchat is considered a model of creative mass communication, allowing users to play and have fun.

Pinterest has 454 million users worldwide. This is a photo social network that brings the concept of reference wall, where it is possible to create folders to save images, as well as to place links directed to external URLs. It was founded in 2010. Pinterest’s most popular topics are fashion, makeup, weddings, food, architecture and do-it-yourself, gadgets, travel and design. Its audience is mostly female.

To conclude this article, undoubtedly that the use of new Information and Communication Technologies (ICT) is increasingly oriented by political situations and aspects, given that high competitiveness can grant hegemony and concentration of power, which is why it has been said that these ICT are defining the pace of not only regional, but global geopolitics (Villari et al, 2018; cited by González, 2021: 147).

World leaders such as D. Trump (USA), V. Putin (Russia), E. Macron (France) and Xi Jinping (China) feel special predilection for some of the most important social networks or digital media worldwide, we have appreciated that in China and India have banned some products and services of social networks and Trump wanted to do the same, but was prevented by the North American courts.

González Arencibia (2021: 169) lets us see that the new ICTs are being misused, which are being used to transform positions and changing the distribution of productive forces in world geopolitics, stating:

For this reason, developed countries have chosen to lead in this field, as a factor for climbing hierarchical positions, surpassing those nations that do not have it. The technological transformation analyzed above has generated processes of change in the political sphere and in security at international level, producing tensions and feeding political processes that disturb regions and countries

In my particular opinion, this situation should be avoided and new ICTs should be sought to reach the less developed nations and regions of the world, in order to try to ‘compensate’ the backwardness in economic development and now in the technological field, which is so important for the coexistence of new generations.

CONCLUSIONS

By October 2021, the world population will reach 7.89 billion people, of which 67.1% have cell phones, 61.8% have internet and 57.6% use social networks. In China alone there are one billion internet users, one out of every five internet users worldwide is in that country. Mexico is far behind in terms of quality and speed of internet service offered worldwide, proof of this is that fixed internet is offered at 48% of the world average and mobile internet at 61%. Three decades after the privatization of the state-owned telephone company (TELMEX), the internet service offered today is of very low quality and speed, which means
that the neoliberal precepts of improvement have never been reflected in benefits for the country’s population.

The social networks with the most users worldwide by October 2021 are: Facebook with 2.9 million; YouTube with 2.3 million; WhatsApp with 2 million; 4) Instagram with 1.4 million; Face-book Messenger with 1.3 million; WeChat with 1.2 million; and TikTok with 1 million users. As for the most used internet search engines worldwide, Google is positioned as the undisputed king (92.04% of the total), followed by Bing (2.66%), Yahoo (1.48%), Yandex (0.9%) and DuckDuckGo (0.61%).

Google’s top applications include: Maps, Desktop Search, Gmail and Translate, it also has multiple analysis tools. Google Scholar is considered the most extensive academic search engine in the world and is free of charge, so researchers and scientists want to position their work on this platform to be known by the maximum number of potential visitors, and also have the citation review service presented by an author or work (article or book). Globally, by October 2021 the most used browser is Google’s Chrome, where two out of three people use it. For the case of Mexico in January 2021, the most used browsers are Chrome with 77.6%, Safari 12.1%, Firefox 3.1% and Microsoft Edge 3%. Noting that 12.4 percentage points use the Chrome browser in Mexico more than worldwide (65.15%), with which Chrome strengthens its position of national leadership.

Regarding the number of visits registered by websites in December 2020 in Mexico, the following are: Google.com with 2,029 million; YouTube with 546 million; Facebook.com with 512 million; Wikipedia.org with 247 million; Google.com.mx with 235 million; Xvideos.com (adult entertainment) with 234 million; and Mercadolibre.com.mx with 205 million visits. As can also be seen with this information, Google.com becomes the country’s natural leader in website visits.

The countries that use Facebook the most worldwide as of October 2021 are: India with 349.2 million; United States 193.9 million; Indonesia 142.5 million; Brazil 127 million and Mexico 95.6 million users, ranking fifth worldwide. It should be remembered that China has blocked and prohibited access to this portal since 2009. In the case of YouTube, Mexico has 74.1 million users over 13 years of age as potential audience, which means 63.4% of the population of that age.

REFERENCES


