

STREAMING: ADVANTAGES, CHALLENGES, AND OPPORTUNITIES OF THE RADIO TELEVISIONS TO ATTRACT AUDIENCES

STREAMING: VENTAJAS, DESAFÍOS Y OPORTUNIDADES DE LAS RADIOTELEVISIONES PARA CAPTAR AUDIENCIAS

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ABSTRACT

The research shows the growth of streaming consumption in recent years and reflects its exponential increase in the wake of the Covid 19 pandemic in 2020. The scientific basis mentions the most relevant authors on this subject and is supported by studies and reports from official and private organizations of international relevance. It also studies the origin of streaming, its evolution, and future with the help of new technological tools, such as apps that allow journalists and the public to enter a live newscast. This means new business opportunities for content-creating general broadcast television stations in Spain. The research shows how the consumption of streaming is focused on the mobile phone, which is the tool used by 9 out of 10 Internet users in Spain to connect to the Internet, with short videos and videos on demand being the most consumed formats. It is a challenge for television stations to broadcast in streaming through multichannel digital platforms that host content to capture audiences. That channels have differential features compared to Netflix or HBO-type platforms, such as their informative nature and the lower cost of streaming content production

KEYWORDS: streaming; broadcast radio and television companies; Internet consumption; cost reduction; digital communication; digital multiplatform; tv audiences.

RESUMEN

La investigación muestra el crecimiento del consumo de *streaming* en los últimos años y refleja su incremento exponencial a raíz de la pandemia por la Covid 19 en 2020. La base científica cita a los autores más relevantes en esta temática y está avalada por los estudios e informes de organismos oficiales y privados de relevancia internacional. Se estudia el origen del *streaming*, su evolución y futuro con la ayuda de las nuevas herramientas tecnológicas, como las *apps* que permiten a los periodistas y al público poder entrar en directo en un informativo. Ello supone nuevas oportunidades de negocio para las radiotelevisiónes generalistas creadoras de contenido en España. La investigación muestra cómo el consumo de *streaming* se dirige hacia el móvil, que es la herramienta para conectarse a internet que utilizan 9 de cada 10 internautas en España, siendo los vídeos cortos y los videos bajo demanda los formatos más consumidos. Es un reto para las radiotelevisiónes la emisión en *streaming* a través de plataformas digitales multicanal que alojen contenidos para captar audiencias. Unas



cadena que tienen rasgos diferenciales respecto a las plataformas tipo Netflix o HBO, como son su carácter informativo y el menor coste de producción de contenidos por *streaming*.

PALABRAS CLAVE: *streaming*; radiotelevisión; consumo internet; reducción costes; comunicación digital; multiplataforma digital: audiencias tv

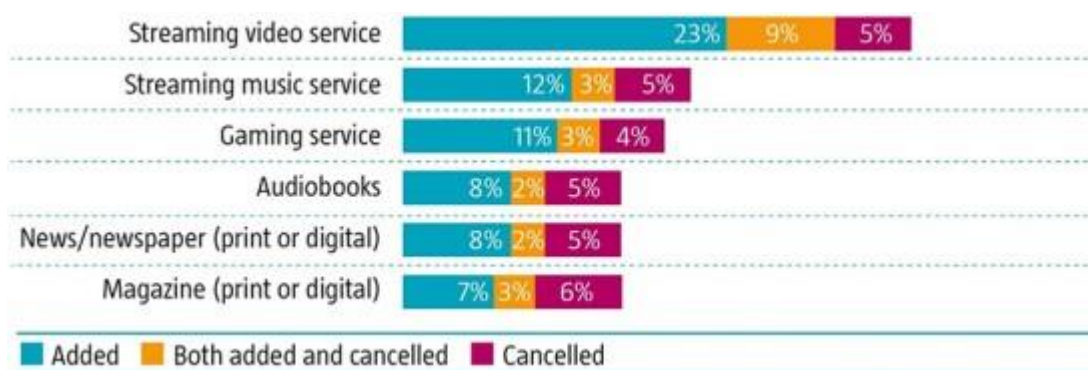
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1. INTRODUCTION

The Covid-19 crisis has led to a worldwide increase in the consumption of online videos through streaming and the proliferation of these services, as confined viewers have intensified their transition to these platforms. In Spain, streaming consumption produced by both generalist televisions and entertainment paid platforms soared by 108% as a result of the first state of alarm due to COVID 19 in March 2020, with Madrid and Catalonia being the communities where the percentage is higher (Roams, 2020). In 2020 there was an increase in the user base and an increase in the offer of streaming platforms with exclusive content thanks to the generation of the highest monthly income from subscriptions.



Graph 1: Variation of paid subscriptions since the start of the Covid-19 pandemic
Source: Deloitte Insights, June 2020

Despite its great growth in recent years, the streaming boom is expected to continue mainly due to the increased global demand for video content. According to Digital TV Research (2020), global revenues from online television series and movies could double in 2025 from \$83 billion in 2019 to \$167 billion. In 2020, the increase was around \$16 billion.

The impact of the coronavirus crisis has led to a revision of the Digital TV Research (2020) forecasts in 138 countries. According to its lead analyst, Simon Murray, Video on Demand (VOD) services skyrocketed in 2020, and while ad confidence took a hit, it is expected to rebound in 2021. The Digital TV Research study on the consequences of the pandemic in those 138 countries predicts that five countries will control two-thirds of world income by 2025. The affordable price, the wide catalog of content, the flexibility of schedules, the absence of advertising stops, and the comfort of being in your own home are some of the advantages of streaming compared to lifelong television (González, 2020).

Streaming is the English term for continuous transmission or broadcast, through the Internet Protocol (IP), through which the user receives the product on their terminal through the stream without having to download it completely. This is accomplished by connecting pieces of data sent sequentially across the network (NPLA, 2010). "Real" streaming requires a special service that broadcasts audio/video information in real-time. A television station broadcasts in streaming, live, through its website, an open event where any user can connect. For this, the broadcaster requires powerful servers so that the streaming works perfectly and there are no cuts in the broadcast.

Now, the television channels themselves have streaming called Hypertext Transfer Protocol (HTTP), which is a "pseudo streaming", which does not require powerful servers for its use. It is used through a TCP protocol (used for all computers connected to the Internet) to view videos, shows, news, series, or even download them. This streaming system provides the user with the possibility of listening to music or watching movies immediately without having to wait for their download. A key characteristic for the consumption of audiovisual products, since Internet users are not willing to wait beyond a few seconds to see the content.

The comfort factor is key in changing consumer habits. According to the film producer, Axel Kuschevatzky:

The consumption of video on demand at home has increased because people prefer to touch a button without having to leave their seats to go to the movies... which has increased the number of streaming platforms. (La Nación, 2017, November 5th)

For González (2020), these amenities are tilting the balance towards new (and not so new) entertainment formats. Users can record the shows on the television screen itself or can view them through the website of each channel through streaming when they consider it. This enables a greater consumption of products, either because it is open or under the Pay Per View (PPV) format. As for live-viewing, the massive use of mobile terminals (tablets and smartphones) allows viewing any broadcast as long as the television channels have a website integrated into digital platforms that have this possibility.

The continuous technological advances in the field of streaming and the popularization of Internet services are factors that have changed the form of interrelation between generalist broadcast radio and television companies and users. Guerrero Pérez (2018) links it to the disruptive qualities of technological innovations. In fact, the new digital channels and social networks have contributed to the change in consumption habits of

viewers, especially among the youngest (Gallardo-Camacho, Lavín, Fernández-García, 2016).

Although these changes affect the entire population, they affect mainly the child and youth audience because they configure a group of consumers within a market defined by a totally new set of characteristics, needs, and demands (Gallardo-Camacho, Lavín, Fernández-García, 2016). This relationship between multimedia communication groups and these users causes heterogeneous impacts and changes in companies' strategies.

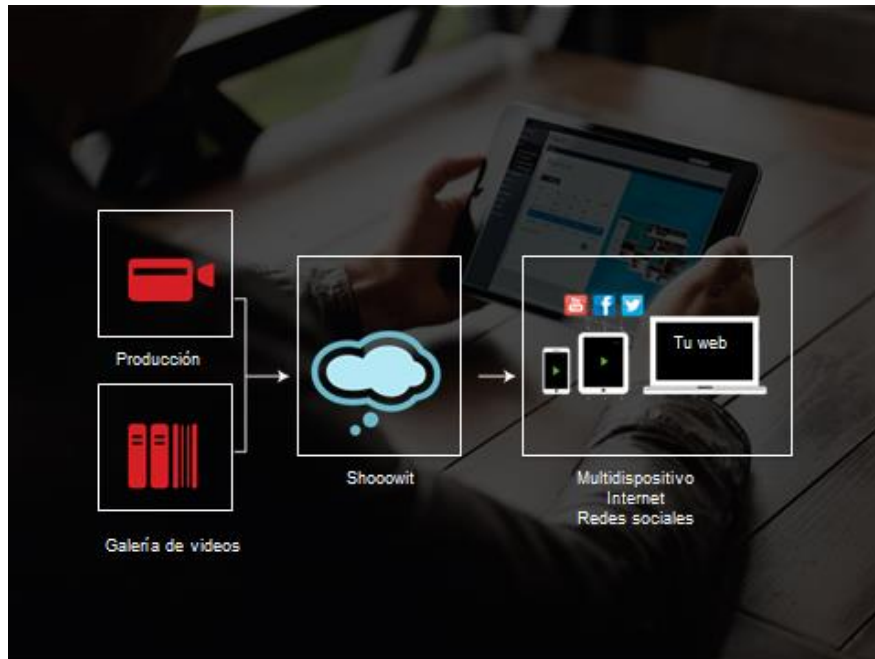


Figure 1. Streaming creation process

Source: self-made

It is an audience that was born with technology, the internet, mobile devices, and social networks. Those of legal age make transactions, share products and services (they are an integral part of e-commerce). Specifically, the target between 20 and 35 years of age includes millennials, an audience that has become a priority target for companies, who implement individualized mobile content development strategies to attract them and satisfy their needs and preferences.

In this sense, high-quality mobile content is a key point coupled with a presentation based on visual stimuli, interactivity, location, and incoming calls (Medina Salgado, 2016). Guerrero Pérez (2018) speaks directly of the “flight” of the millennials from linear television and Jessica Izquierdo (2017) of “progressive abandonment”. Being able to retain them is one of the challenges that so-called generalist broadcasters face, that is, those that target the general public and broadcast linearly in the open.

The study "Dimension 2020: Media & Me" by Kantar, carried out in the countries with the highest advertising investment in the world, including Spain, indicates that 68% of viewers value the possibility of seeing what they want and when they want,

74% use them to watch new series or movies, and 45% use them to watch their favorite series or shows again.

2. OBJECTIVES

The main objective of the research is to analyze the new role of generalist televisions in Spain as creators of content for streaming with the use of new technological advances: the differential advantages compared to Netflix-like platforms and the challenges they face.

The secondary objectives are several:

- Show the growth of Internet video consumption at an international level and its prospects.
- Analyze the potential of tools such as the unlimited channel platform and apps that allow any journalist or viewer to go live on television.
- Analyze the new role of the public that becomes the protagonist of information, not just a consumer of content.
- Show the origin of streaming and its evolution to date

3. METHODOLOGY

The research uses the documentary bibliographic review of authors specializing in this subject such as Carlson, Marín Amatller, Caldwell, Creeber, Hills, Meikle, Young, Bergillos, Campos, or Quintas-González, who offer us an adequate theoretical framework to address it. The work starts from the origin of streaming, how it works, how it develops internationally, and what is the reality of its consumption in Spain, offering keys to its evolution, future in the generalist televisions of our country, and the new active role of consumers.

As data collection techniques, besides the bibliographic review, it is chosen to use the most representative sources both in Spain and internationally in this matter. These are official studies such as the Annual Report of the Audiovisual Content Sector in Spain (2019), carried out by the National Telecommunications Observatory (ONTSI by its acronym in Spanish) of the Ministry of Economic Affairs and Digital Transformation. It also includes the 2019 Household Panel (last four months) of the National Markets and Competition Commission (CNMC by its acronym in Spanish). The studies of these official organizations are joined by others that are a reference in this field, such as the reports carried out by the Association for Media Research (AIMC, 2020) or those of international prestige carried out by Digital TV Research (2020), the British Kantar (Dimension 2020 study: Media & Me), or the Canadian Hootsuite in conjunction with the British We Are Social (Report 2020).

Due to its not exclusively theoretical nature, it has been deemed convenient to include semi-structured interviews with two CEOs who are specialists in this area. One belonging to a technology company specialized in streaming and the other related to a production company that provides these services to generalist televisions.

3.1. Origin

The first patent that used the word streaming was in the 1920s when the Muzak company developed a continuous music platform for businesses (conceptoweb-studio.com). Reading in transit is not something that could happen overnight. Before this type of broadcasting existed, the appearance of some technological elements was necessary. First, a computer capable of reproducing the content.

In the 80s there were computers already, but they were not powerful enough, although the quality of the bandwidth barely allowed a minimum connection to the Internet. Internet radio stations were the first streaming boom since it did not take as much speed to tune the audio smoothly. On video, the first broadcasts in real-time were only seen by 2 or 3 people, since there was no ability to make it scalable (timetoast.com). Later, a virtual network was created on the Internet capable of transmitting the content in multicast (sending the information on multiple networks to multiple destinations simultaneously) and the portals that surfers could access to enjoy the broadcasted material (ionos.es).

The first accesses to the internet were made through conventional telephone lines and it was impossible to make transmissions in real-time. In 1993, the music group Severe Tire Damage was broadcasted live, thanks to the virtual network Mbone. A year later, it was the Rolling Stones. In 1995, Real Networks broadcasted a playoff baseball game for the first time. That same year in Seattle, a symphony concert at the Paramount Theater was broadcasted. In 1997, RealPlayer, the first streaming video system, was launched by Real Networks, and also in that period, the band Severe Tire Damage made history by broadcasting their concert live around the world (timetoast.com).

Continuous reading was there, but it couldn't be done until the Internet connection improved, something that happened with the arrival of the new century. The use of the Internet multiplied and everything changed. Hand in hand with technological advances and the exponential growth of the use of the internet and the capabilities of computer hardware, streaming took on a new dimension. 2005 was very important for the proliferation of videos thanks to the launch of the free YouTube portal, in addition to the creation of flash-based video players (Antolín-Prieto, 2012).

Thanks to streaming, today there are platforms such as Netflix, Spotify, HBO, YouTube, and CWS, among others. The content that is consumed via streaming is practically all music and video, although we can also find text documents, PDFs, slides, and a long etcetera. Everything we can create can be distributed in this way, already including football matches, rallies, meetings, events with celebrities...

4. HOW IT WORKS TODAY

On a technical level, streaming requires a video and audio recording source, an encoder, an editor, and a distribution network to deliver the broadcast to viewers. When the retransmission is for thousands of people, the broadcast by a modern generalist radio and television company requires a state-of-the-art multimedia platform. Today technology allows supports to have two, ten, one hundred, or an unlimited number of broadcast channels (Óscar Ferrando, personal interview, October 29th, 2019).

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The *cloud* platform, without physical installation of software, for managing video by streaming in the cloud allows, in a simple and agile way, a complete direction from anywhere of digital and audiovisual content both live and on-demand. From the platform, you have access to the configuration, management, and monitoring of both live broadcasts and those made on-demand. A high technology that allows its content to be disseminated worldwide without limit of views thanks to the use of the content delivery network (CDN), which is a content distribution network made up of servers located in various parts of the world.

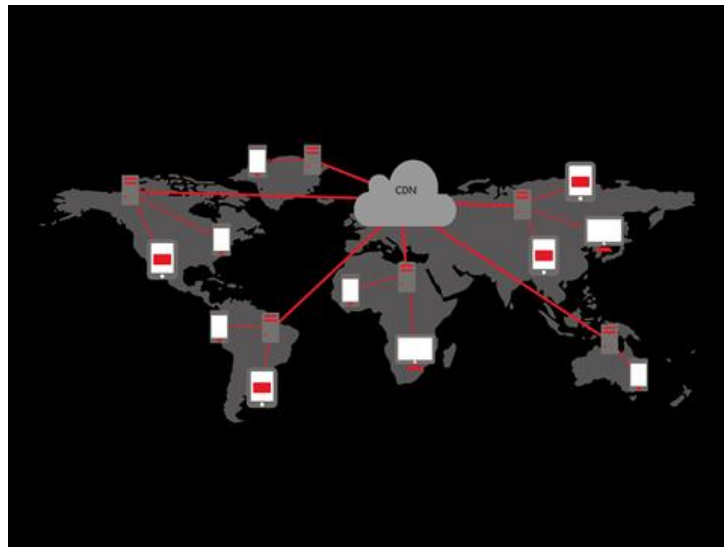


Figure 2. CDN worldwide distribution network by servers
Source: self-made

The platform allows production, signal coding, distribution, publication, and broadcast of content instantly without interruptions or delays. To do this, you just need a player that is capable of playing content in 4k and 360° (shooowit.com).

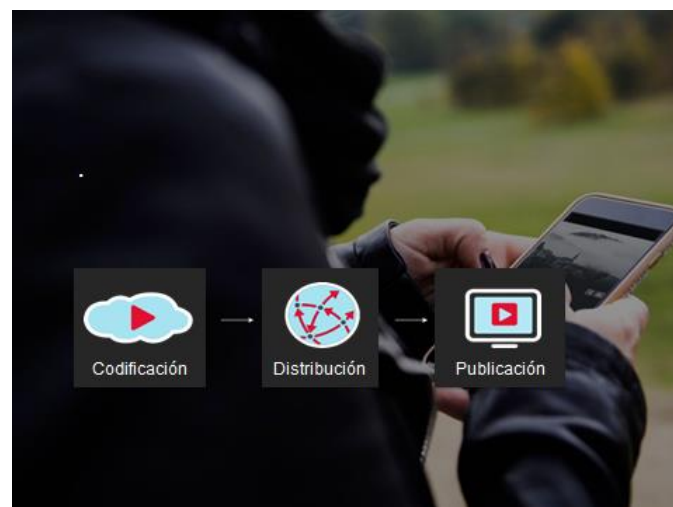


Figure 3. The 3 phases of streaming creation
Source: self-made

5. EVOLUTION AND FUTURE

In the 2000s, users took control of internet content. The exponential growth of bandwidth due to the arrival of ADSL at low speed to the domestic user led to a popularization of the Internet and with it, multimedia content and those that were broadcasted in streaming. Starting in 2005, videos were positioned better on the web and their quality increased. Until then, "video and the Internet were practically two worlds apart, two universes with almost no intersection" (Marín Amatller, 2005).

The arrival of the 2.0 era, where the Internet user begins to interact with the broadcaster and becomes a protagonist who wants to choose their content, was a key turning point for the future of streaming since it is the beginning of a stage of technological development to meet the needs that the market already needed at that time. Technologist Curtis R. Carlson anticipated in 2008 that the Internet would break the boundaries in high-definition television and that the real breakthrough would occur when the video was fully passed over the Internet.

And this has been the case because the greatest growth in the present and future Internet traffic goes through video, and this is mostly consumed through streaming platforms. Consumption grew as the internet became popular. Spain went from 29 million users in 2009 to 42.4 million in 2020, according to the annual study by Hootsuite & We Are Social (2020). In 2009, movies and series became the most consumed digital content by users with 53.6% of Spaniards, 49.4% of whom had the most frequent use the viewing through the DTT and online media in real-time (streaming). These data show how online video began to progressively establish itself as the star digital product under the parameters of streaming.

Miguel López claimed in 2010 that Google wanted to enter our televisions to offer online services through the monitor. In 2020, these monitors already receive sources of all kinds, including those from the Internet with channels from different platforms, such as YouTube itself, which broadcasts in streaming and belongs to Google. With this comes the new role that general television networks must assume in collusion with online content platforms. Jessica Izquierdo (2017) points out that the changes derived from linear television make it necessary to relocate it as a medium of distribution in relation to other platforms, especially the internet (Caldwell, 2006; Creeber and Hills, 2007; Meikle and Young, 2008).

A strategy that the Annual Report of the Audiovisual Content Sector in Spain (2019) endorses, according to which the transformation process that the television market is experiencing includes a set of shared interests for telecommunications companies and the media, given the growing influence of the use of IP technologies. Technologies that increase the role of streaming and customer orientation. According to this 2019 report, 1,655 million households worldwide had digital TV in the world in 2018, representing 88.9% of all households that have a television, while the forecast is that in 2022 there will be 1,731 million.

VOD emerges within these services, which drives growth, as it grows at rates much higher than linear television. Although, it is expected that competition from over the top

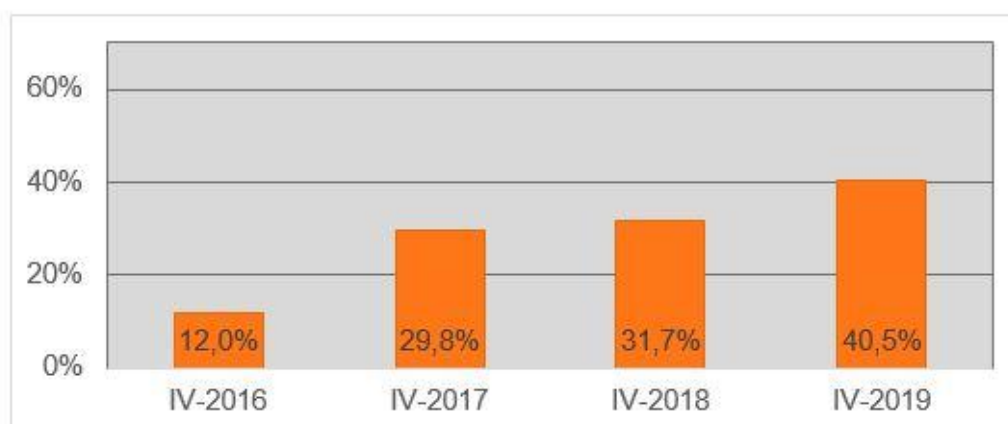
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(OTT), which refers to services and content that are transmitted in broadband without the operators being able to control their distribution, will considerably hamper the momentum of the general television market due to the growing popularity of these types of services. From the fusion of television and the Internet, new online and interactive television models emerge that allow personalized consumption through a wide variety of screens (Diego, Guerrero, and Etayo, 2014).

Mobile video (films, documentaries, advertisements, videoclips...) comes through streaming platforms or broadcast radio and television companies as content creators. Platforms that grow and force the chains themselves to devise strategies to promote new services. According to the data of the study "Dimension 2020: Media & Me" (Kantar), the generalist TV channels in Spain continue to dominate the audiovisual panorama of TV and video, the offers that adapt to individual tastes do not stop growing. There is no lack of TV and video content; in fact, they increase every day. In response to this challenge, TV networks are gaining momentum.

In 2020, four of the world's largest TV networks have launched new subscription streaming services (SVOD) with exclusive content. VOD is no longer a small segment in the great ecosystem of TV and video content. Streaming and subscription services are fully standardized and competition is increasing, whether in the form of entertainment for all audiences (with Netflix being the leader) or more specific services for all tastes.

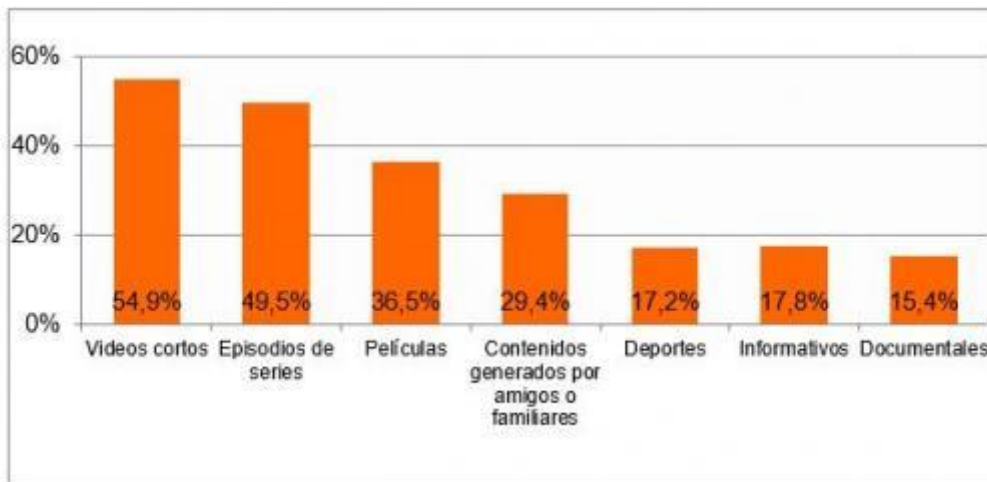
The Household Panel prepared by the National Commission of Markets and Competition (CNMC), with data from the fourth quarter of 2019, has analyzed the audiovisual consumption of Spaniards through online paid platforms, such as Netflix, HBO, Movistar, or Amazon Prime Video. At the end of 2019, these types of paid platforms were present in 40% of households with Internet access. Year-on-year growth was almost 28%. In fact, if we compare these data with those of 2016, that increase has been 237%.



Graph 2. Use of paid platforms to view audiovisual content online (% of households).
Universe: Households with Internet Access.

Source: CNMV

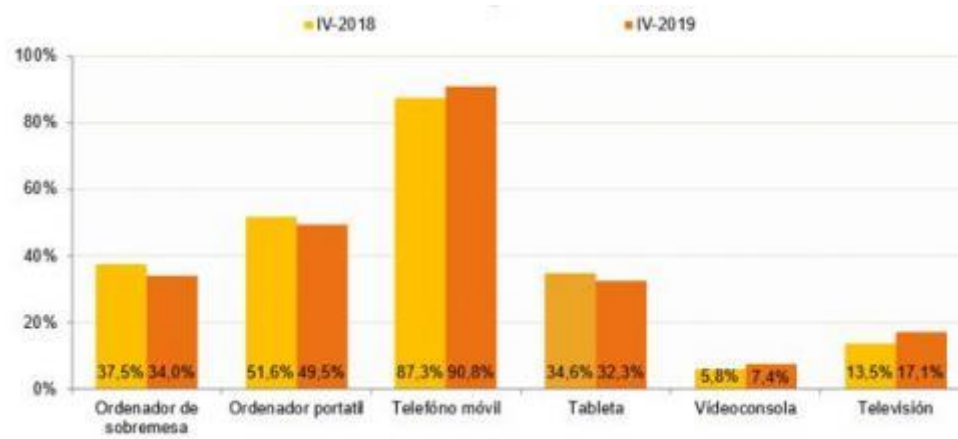
This survey published by the CNMV on May 20th, 2020 reflects the market situation before the state of alarm caused by the COVID-19 pandemic. The obligation to quarantine at home led to greater use of streaming platforms and skyrocketed television consumption. More and more individuals are consuming audiovisual content through the Internet (in general, either openly or paid). Almost half of Spaniards (48.3%) consumed online content at least once a week. In this sense, short videos are the most common content (55%).



Graph 3. Most consumed online audiovisual content (% of individuals, IV-2019). Possible multiple answers.

Source: CNMV

The Panel's results also confirm that Spaniards are hooked on mobile phones: 9 out of 10 Internet users usually connect to the Internet through their mobile phones regularly.



Graph 4. Devices with which the user usually connects to the Internet (% of individuals). Universe: Individuals who use the Internet at least weekly. Possible multiple answers.

Source: CNMV

Given these data, broadcasters as content producers have differential elements compared to strictly streaming content platforms and they have this same technology at their disposal to attract new audiences or retain those they already have. TV networks use digital portals to accommodate the entire offer through the web (video, audio, post, photos) linked to social networks to achieve interaction with their external audiences. "The participation of the audience is no longer anecdotal in the production of television content but is increasingly taken into account" (Bergillos, 2015, p.97). In the digital and online ecosystem, the media, and in particular television, are looking for a model that has not yet been defined where interaction with their audiences is very relevant.

Television networks have powerful social media departments, where video is increasingly prevalent, who help them in their content dissemination strategy. These multimedia broadcasting groups have technologically advanced digital platforms. Some of them allow live or VOD transmission, although no television in Spain contains unlimited broadcast channels to reach all its targets, a circumstance that would further increase digital traffic to its website, although there is such technology to be able to have them (Óscar Ferrando, personal interview, October 29th, 2019).

6. ADVANTAGES AND OPPORTUNITIES

As has been seen, some authors suggest that generalist linear television has to assume its new role as a distribution medium in relation to other platforms, but it should not be ignored that TV also has growth margins to attract audiences along with two factors: its potential for the creation of its own content with the use of streaming technology and its informative nature as mass media that differentiates it from platforms basically dedicated to offering entertainment products.

Television continues to be a mass-consumption medium and remains the first leisure option with a penetration of 85.4% among Spaniards (AIMC, 2020), which gives it a leading role in society and constitutes a central medium for information and entertainment (Jessica Izquierdo, 2017). Linear open television "continues to be a vertebral system of the audiovisual industry and communication and information of general interest in the area of the European Union" (Campos, 2017, p.148).

6.1. Unlimited channels

Televisions have state-of-the-art platforms to host all the content generated both live and delayed and posted on the web. They serve as an offer for citizens, offering a wide variety of topics, whether of all kinds of shows or information about what happens anywhere in the world (parties, events, presentations, celebrations, broadcasts). For live broadcasts, today, technology platforms allow generalist televisions the creation of different live channels in an unlimited way and instantly, as well as in different qualities to adapt to the type of internet connection of each user.

As for VOD, the user has the option to record, edit, and share live broadcasts from the cloud on social networks, while the workflow can be managed from a single central panel. This option of the user gives them a leading role in interaction with the media they consume. The subject of the information is not a passive being who is limited to

watching television, but active because they participate and also generate information (Quintas, González, 2014, p.84). The 360° communication of a channel with this type of technology makes it a powerful tool for disseminating and promoting content. The programming of the live channels can, in turn, be broadcasted through social networks when they deem it so due to the importance of the event with the engagement that it produces with their consumers.

The segmentation of content at a technological level offers so many possibilities that a television channel can have on its website, for example, a Sports section with 5 channels, a Politics section where 4 different signals are broadcasted live at the same time, a Special Events section, and another of Culture. To delve into the example, this last section mentioned may, in turn, have 15 different channels, each one of them destined to the following topics: action films, classical music, opera, Spanish films, youth series, classical theater, contemporary theater, children theater, plastic arts, mime, cartoons, puppets, circus, children's hip hop, and youth classical dance. Technologically, it is feasible, another issue is that it is capable or able to offer such a quantity of products.

This is another of the great challenges that generalist broadcasters have, to compete as streaming content producers faced with the advancement of Internet platforms, such as Netflix or HBO. The content of each of those streaming channels that we comment on can arrive through the production of each TV, free of charge through collaboration agreements, for example, with the *Teatro del Liceo de Barcelona*, the *Palau de les Arts de València*, or the Royal Theater of Madrid through which their signal is tapped, or for the purchase of broadcasting rights for live or recorded shows originating from the Paris Opera or the Vienna Musikverein for their New Year's concert, for example.

Such an offer of channels and specific products, together with an adequate ad hoc digital marketing strategy, would contribute to generating traffic to the website, and thereby provide feedback to the radio, digital media, and television, generating new audiences and income, whether from Spain or from anywhere on the planet because the internet has no borders and the broadcast of their products can be in any language. Furthermore, through the web you can access the shows, news, retransmitted broadcasts, and all the digitized historical material that each television considers must be there to be consumed for free or on a pay-per-view basis. The offer is enormous: viewing of all channels live and through social networks with the possibility of online content, à la carte, or individualized purchase of PPV services, as well as exclusive products from each channel within its e-commerce policy.

6.2. The democratization of streaming

The new streaming technologies allow televisions greater proximity of information to the citizen, greater immediacy, an international character, and a greater role for citizens.

- Proximity: high technology allows citizens to be informed with their smartphones and tablets in real-time through the web, enhancing a close relationship with users through multi-channel online broadcasting that includes all social networks.

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- Immediate information: Unlimited channels allow live streaming of news, events, and information through digital media, social networks, radio, and television.
- Citizens' leading role: citizens can be the protagonists on TV since an app downloadable by any user can turn them into journalists: "Tell us with your mobile what is happening." From anywhere in the world, through a simple mobile phone, viewers can go live through this tool to tell what is happening.



Figure 4. The process of sending the signal from the app to the central TV control where the signal is distributed to different channels

Source: self-made

This prominence stems from the new role of the viewer, with the help of the tools that come from Web 2.0, which is changing the traditional way of making television (Mancebo, 2016, p. 330). "This increase in participation shows that citizens have stopped being a mere consumer of content to participate in their construction and elaboration" (Alonso, 2014). The public becomes the protagonist of information also through new technologies. It goes from being a passive subject to an active one, as long as, in this case, the television editors consider it appropriate to use this app with these functions.

This option is especially relevant in extreme situations, such as terrorist attacks, natural disasters, special events, etc... but also for inclusion in a broadcast of a party such as Sanfermines, for example, the signal of this user would reach the central and from there, an editor has the option of including it in the news or programs, either live or to edit it later.

- International character: streaming is over the internet and the internet is global. The democratization of the internet and the current and future advancement of mobile networks make any person a potential spectator and international audiences far exceed the limits of traditional media, limited to a geographical area. Streaming unites a country or a community and can generate engagement with the TV network through a strategic plan.

6.3. Cost reduction

In addition to the commitment to attracting new audiences, the streaming broadcast joins another characteristic that makes it unique: its lower cost. In the specific case of radio and television, their digital transformation and optimization are crucial for their development in a very competitive market. In this context, you have to produce cheaper and better to compete. The new scenario forces managers to devise cost-saving strategies in all areas of the company and an attractive offer of services for different audiences that generate audiences and digital traffic, which will determine a higher percentage of advertising revenue through all their channels.

Added to this is the technological evolution of streaming, which enables a very considerable reduction in costs for audiovisual media groups. The very idiosyncrasy of the radio medium, where journalists can go live with a simple mobile phone, does not offer *a priori* a substantial change in the costs of signal production. Radio is still cheap to produce and, also, the arrival of the latest digital platforms for live streaming or content-on-demand allows unlimited channels of programs to be consumed by their listeners.

The situation changes in the case of televisions due to the signal-image factor. One of the biggest costs that televisions have is live broadcasts, either due to the connection of a journalist in a news show from the scene of the events or because of the large operation that was needed until now to be able to produce and carry out the signal of an event. This signal by terrestrial cable, through repeaters or by satellite, arrives from abroad to the broadcaster's headquarters, and from there it is distributed through its central control to each home. Now that signal can reach the television station through the internet via streaming, and its cost is much lower.

The rental of a Digital Satellite News Gathering (DSNG) and the hiring of the satellite strip has a minimum cost of 1,500 euros for the transmission of a two-hour event, while the encoder (video signal converter for internet) and the router (the device that sends that signal) cost 150 euros (emeeme.com). Therefore, the cost is 10 times lower if the transmission is by streaming. The costs inherent to the infrastructure necessary for these live broadcasts from outside the central studios are significantly reduced thanks to the use of these IP networks. This also leads to the rapid implementation of the service, as the start-up time frames only depend on the production of the content.

Another saving is derived from the possibility of the new role of the journalist in modern multimedia groups, since the same writer/informant makes a radio report, goes live for television, and produces content for social networks or the network's website. He is a tri-media journalist. With this new technology is born the possibility that a journalist or several at the same time can enter live through an app, as in the case to which we have referred previously of citizen-informants. These journalists can all enter a newscast, an information show, or a special broadcast from different parts of the world at the same time.

The latest technology today makes it possible to turn any mobile device into a live broadcast unit. Once this app is installed on each journalist's mobile and after configuring it in simple steps, the broadcast starts as if it were a video recording.



Figure 5. The app replaces the use of signal shuttles
Source: self-made

Automatically, the digital platform that supports it, collects the video stream of each journalist, generates a player, and publishes it on the website of each channel. Furthermore, the video stream can be captured by third-party broadcasting software, so they use this broadcast as one more video source in a professional production. The cost of an app with these characteristics is 10,000 euros (shoowit.com). If we take into account the costs of satellite broadcast on each occasion described above, investing in this tool, also contributes to reducing spending for multimedia groups.

Despite this, it must be taken into account that this type of digital distribution of audiovisual content involves a delay, a greater delay of seconds of signal reception (it can reach 10"-15" depending on the quality of the signal) when the broadcast is live, unlike satellite broadcast, which has a lag of just 2 or 3 seconds. This can make it difficult to have a fluid dialogue in a live news show between a presenter and the journalist who is on the scene.

6.4. It boosts the audiovisual sector

Added to the lower cost of streaming broadcasts are the savings from outsourcing services and its contribution to boosting the communication sector. Streaming companies can carry out the production and making of the television signal at a cost 50% lower than that of a large television network (Óscar Montón, personal interview, October 15th, 2019). For example, the price of a 2nd A Division football match in Spain is reduced to 4,000 euros if you outsource this service (Óscar Montón, personal interview, October 15th, 2019). The operation includes: a mobile unit with six camera operators, three assistants, a filmmaker, a camera control technician (CCU), a sound

technician, a replay system operator, a mixer operator, a producer, and a chief of the mobile unit.



Figure 6. The process of sending the signal by streaming to the central TV control where the signal is distributed to different channels

Source: self-made

If it is, for example, a children's basketball game, the necessary operation is reduced by half and the costs fall to 1,500 euros. But if it were a conference or the presentation of a book, for example, some companies offer this 90' service with two cameras and the production editor for 500 euros (www.lasombraproducciones.com). In short, all this brings new opportunities in the audiovisual sector and, specifically, for production companies when it comes to offering their services, which would be increased if any channel bets on creating content for its multichannel platform through streaming.

7. IN CONCLUSION

Generalist televisions in Spain continue to be the first leisure option and, therefore, have a relevant role in society. The research shows the growth that has occurred in Spain and the rest of the world of streaming consumption in recent years and reflects its greater increase as a result of the Covid 19 pandemic. In Spain, it has been 108%, and this has led to greater production of streaming content by both generalist broadcasters and paid platforms, which have seen an increase in their subscription income.

The work shows how generalist television has to assume its new role as a distribution medium in relation to other platforms and its growth margin, which is linked to two factors: its potential for the creation of its own content with the use of streaming technology, and its informative character as mass media, a differential feature compared to entertainment platforms. For all this, it has a fundamental position to be part of the television menu of users along with entertainment. The work shows how the

new role of viewers, who want to interact with the broadcaster, choose content, and be protagonists, offers new opportunities for generalist televisions to interact with their audiences.

The research represents an advance in knowledge in this area because it reveals how new technological tools constitute new television opportunities since there are apps that allow the journalist and the viewer to enter a news program or show live through their mobile phone. In this way, technology through streaming meets another demand of society. The public becomes the protagonist of the information, not a mere consumer of content. There is an increase in the participation of citizens, who want to be active, develop content, and this contributes to greater democratization of streaming.

Generalist televisions have high technology to broadcast via streaming through their website with unlimited channels through digital multi-platforms to reach all their audiences and generate traffic with enormous possibilities of content variety. Streaming over the Internet is also 10 times less than satellite transmission, which lowers signal and content production costs, and boosts the audiovisual sector since television production companies can offer these services to generalist televisions.

The results also confirm that 9 out of 10 Internet users in Spain usually connect to the Internet through their mobile phones regularly and the format that is most consumed is short videos and videos on demand, which gives more business opportunities to content-creating generalist televisions.

For future research, it would be necessary to analyze whether television networks are taking advantage of these prospects and the challenges before them. Other studies may be aimed at finding out how television channels monetize the investment of new content and what e-commerce policies these companies use, studying whether there is a distinction between the commercial policies used by private and public channels.

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