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Television in Catalan for All: a study on sensory accessibility services in Catalan-language broadcasters

Abstract

People with disabilities or functional diversity form a significant part of the population (15%) and access to communication is a right recognized by the United Nations Convention on the Rights of Persons with Disabilities (CDPD) ratified by Spain in 2007. This study aims, on the one hand, to analyse the state of the art of accessibility services that are currently offered in a sample of seven Catalan-language TV stations; and, on the other hand, to put forward some suggestions for improvement based on user needs and demands in order to increase, both in terms of quality and quantity, the accessibility services available. A sample of seven broadcasters (namely, Televisió de Catalunya, Radiotelevisión Española, IB3 TV, betevé, 8tv, El Punt Avui TV and Girona TV) was analysed using different methodological approaches, allowing us to triangulate the data and, therefore, offer an overview of the current situation to identify new paths of work. The main conclusion is that, although Spanish television broadcasters are legally obliged to produce accessible content, this is still a pending topic for those included in our sample. It is hoped that this study will serve to denounce legal irregularities. Yet, it is also hoped that this analysis will pave the way for those in charge of granting equal access to the media, since our results offer a point to depart from for future improvements.

Keywords

Media accessibility, audio description, subtitling for the deaf and hard of hearing, Catalan Sign Language interpreting, Catalan-language broadcasters.

1. Introduction

Persons with disabilities or functional diversity represent 15% of the world's population and access to communication is a right recognized by the United Nations Convention on the Rights of Persons with Disabilities (UNCRPD), ratified by Spain in 2007 with the optional Porto Protocol, and in 2010 by the European Union. Following accession to the UNCRPD, the European Union has launched different initiatives with the aim of guaranteeing and enforcing the rights of persons with disabilities, such as the Audiovisual Media Services Directive of 2010, which states that:

The right of persons with a disability and of the elderly to participate and be integrated in the social and cultural life of the Union is inextricably linked to the provision of accessible

audiovisual media services. The means to achieve accessibility should include, but need not be limited to, sign language, subtitling, audio-description and easily understandable menu navigation (Directive 2010/13/EU of the European Parliament and of the Council, 2010, p. 6).

In Article 7, this same directive affirms that “Member States shall encourage media service providers under their jurisdiction to ensure that their services are gradually made accessible to persons with a visual or hearing disability” (Directive 2010/13/EU of the European Parliament and of the Council, 2010, p. 15).

The latest action of the European Union on accessibility issues dates from 2016, with the approval of the Directive on the Accessibility of the Websites and Mobile Applications of Public Sector Bodies, which excludes public broadcasters from complying with it. Despite this, the European Accessibility Act, issued by the European Commission in 2015, does require broadcasters to make their websites accessible.

Similarly, there is some legislation on media accessibility both at national and regional level. In Spain, it appears in the General Act 7/2010, of March 2010, on Audiovisual Communication, which specifies the percentage of TV programmes that must incorporate subtitles for the deaf and hard of hearing as well as the number of hours of audio description and sign language interpreting that must be broadcast weekly up to 2013 (see Table 7). In Catalonia, accessibility issues are addressed in Law 13/2014, of October 2014, on Accessibility.

This new legislative context is accompanied, on the one hand, by a change of perspective as to what is meant by “disability” and “accessibility.” Toledo (2018, p. 1), inspired by the definition provided by the United Nations (UN), argues that “accessibility is about giving equal access to everyone, by breaking obstacles and barriers between people with disabilities and their goal, while also giving their civil, political, economic, social and cultural rights”. In addition, Toledo (2018) highlights that media accessibility is currently under the umbrella of Translation Studies, specifically under that of Audiovisual Translation. Both accessibility and translation have a common denominator since they both aim at facilitating access to information and entertainment. Moreover, sensory accessibility services, such as audio description and subtitling for persons with hearing loss, can be seen as specific cases of intralingual (within the same language), interlinguistic (between two different languages) and intersemiotic (from language into another, non-verbal system of symbols) translation. On the other hand, Greco (2016) argues that accessibility is not a human right per se, but rather a tool, a precondition that facilitates the achievement of human rights. Additionally, in 2017, the UN’s International Telecommunication Agency (ITU) published a report on access to telecommunications for people with functional diversity, in which it defended a shift from the medical model of disability, which only contemplates the physical problem of the individual and whose sole purpose is rehabilitation, towards a social model, which sees society as the responsible for preventing people with functional diversity from being able to interact with their environment. Li and Looms (2015, p. 268) argue that the barriers to information that users suffer are due to the lack of appropriate accessibility technologies and services rather than to the disabilities they may have.

This change of paradigm therefore implies the empowerment of the group, providing them with tools and services that allow them to access equally to, in this case, audiovisual content. It is precisely in this context, and thanks to the funding provided by the Catalan Audiovisual Council, that the project “Sensory accessibility services in TV stations broadcasting in Catalan: current situation, needs and proposals for the future” was carried out in 2018. This paper presents the main results of the project, which aimed at evaluating the accessibility services on offer taking a representative sample of Catalan-language broadcasters as a case study.

The study departed from the following five objectives:

1. Analyse the type of accessibility services offered (audio description, subtitles for the deaf and hard of hearing and Catalan sign language interpreting), both in linear broadcasts and in the video-on-demand services (VoD).
2. Study the level of accessibility of the broadcasters' websites.
3. Examine the level of accessibility and services offered through their applications for smartphones and tablets.
4. Determine the volume of accessibility services offered and their level of compliance with the law.
5. Assess user experience, focusing on their needs and level of satisfaction regarding accessibility services.

Meeting all these objectives was also seen as an opportunity to bridge an existing research gap, namely media accessibility in the context of Catalan-language broadcasters, which has only been approached by a handful of researchers (Matamala & Orero, 2008; Quintanas, 2017; Rovira-Esteva & Tor-Carroggio, 2018; Tor-Carroggio & Rovira-Esteva, 2019).

With this paper we hope to contribute to a deeper understanding and social awareness of the current situation, as well as set the foundations for both quantitative and qualitative increases in accessibility services offered by Catalan-language broadcasters to guarantee universal access.

2. Methodology

As a result of the little research focusing on the topic within the Catalan-language context, we considered it necessary to carry out a descriptive study, opting for a mixed research method combining qualitative and quantitative data. A thorough analysis of the current offer was carried out in order to come up with a representative sample of television broadcasters in the Catalan language. We decided to include, *betevé*, Catalonia's Radiotelevisión Española (RTVE) and Televisió de Catalunya (TVC)¹ as public broadcasters, and Televisió de Girona (Girona TV), 8tv and El Punt Avui TV as private broadcasters. Although IB3 Televisió (from the Balearic Islands) does not belong to the Autonomous Region of Catalonia, it was also added because it broadcasts in Catalan. Initially, we also wanted to include À Punt Media (from the Autonomous Region of Valencia), but this had to be discarded because it was verified that it had not yet started broadcasting at the time of conducting this research. Therefore, the final sample included seven broadcasters in total, both public and private, which have either national, regional or local scope. We considered that the differences among them would ensure the representativeness that we sought. It is important to take into account that Televisió de Catalunya, and more specifically the channel TV3, has been the audience leader in Catalonia for eight consecutive years up to 2018 with a 13% share of viewers annually (Antich, 2018). Therefore, it was considered that including more local broadcasters with a much more limited number of viewers would not have added more representativity to our results. Also, most regional general-interest broadcasters were included in our sample, except for a couple, which mostly offer sports and music programmes. Since this type of content cannot always be made accessible, the researchers concluded that including these monographic channels could skew the results. The sample of programmes selected for analysis included a vast variety of audience profiles and a broad range of genres, such as news, entertainment, sports, popular science, kids, culture, series, magazines and fiction.

The assessment of accessibility services in linear TV consisted of watching and analysing a sample that included eight channels of the five broadcasters that we knew beforehand were offering accessibility services, with 18 different programmes and 70 different broadcasts in total².

¹ Televisió de Catalunya comprises several different channels, namely TV3, 33, Súper3, 324 and Esport3, all of which have been included in the analysis.

² A detailed list of the programmes analysed for this study can be seen in Rovira-Esteva & Tor-Carroggio (2018).

Regarding the accessibility services offered by the VoD service, the analysis was carried out in a sample of programmes and broadcasts that were viewed on a laptop and also through the applications. Seven broadcasters, eight channels, 62 different programmes and 170 broadcasts were evaluated in total.

In order to assess the web accessibility of the broadcasters, we first searched for any explicit information about accessibility and accessible content. Then, we conducted an analysis with the help of Achecker (www.achecker.ca) and TAW (www.tawdis.net), two specialized tools that automatically evaluate the different aspects of accessibility for which they have been designed. The objective of using these tools was not to comment on each problem, since some aspects are very technical and need to be resolved by professional web developers, but rather to gauge the work that still needs to be done in this regard. It should be mentioned that these two tools take the Web Content Accessibility Guidelines (WCAG)'s AA level as a standard for the analysis. The AA level, which is the reference for the study, requires offering live subtitles, audio description and the option of changing the size of the text, among others. Regarding web accessibility, a checklist of issues to be analysed was specified. The checklist was agreed with a person with low vision who is an active user of websites. The items included are also crucial to comply with the WCAG (see Table 2).

We also checked the degree of accessibility of the applications for smartphones and tablets of the broadcasters under study, wherever they were available. Since there are neither international standards nor automatic tools that could be used in this case, another checklist was drafted adopting a user-centric approach so that it contained the items we considered to be the most relevant for persons sensory impaired (see Table 5). These were checked by analysing a sample that included eight different channels corresponding to five broadcasters, with 20 different programmes and 57 broadcasts in total.

One researcher in our team with low vision helped us to carry out an analysis of each of the broadcasters' websites and applications for smartphones and tablets by also following the checklists drafted in order to complete our assessment with the personal experience of a functionally diverse user that usually interacts with this type of environments with a screen reader.

The quantification of accessible content was possible thanks to the data provided by the broadcasters, which was contrasted with the law that applies to each case, either nationally or regionally.

In order to assess user satisfaction and needs, three different questionnaires targeted at three distinct user profiles were designed: one for the blind or the visually impaired, one for the signing deaf or hearing impaired and another for the oralist deaf or hearing impaired. The questionnaires were made accessible by, for instance, interpreting and recording the questions into Catalan Sign Language. Before distributing them, they were piloted with end users and approved by our university's ethics committee. Three types of questions were included: closed, open-ended and matrix questions. The goal of the questionnaires was to assess their degree of satisfaction with the services that are currently offered and to find out what their needs and expectations are in this regard. The questionnaires were distributed with the help of cooperating user associations which kindly contacted their members and asked them to answer the surveys, either online or face to face. We obtained responses from 19 valid blind or low-vision informants, 20 signing hearing-impaired informants and 20 oralist hearing-impaired informants.

Finally, the accessibility managers of each TV station were contacted by email for face-to-face or on-line interviews. As noted by Fàbregues *et al.* (2016), the researcher who chooses a more qualitative approach ends up using interviews whenever the objective is to better comprehend the object of study from the interviewee's perspective. The interview was considered a key tool for the study for several reasons. Firstly, to contrast and expand the information obtained by other channels. Secondly, to resolve doubts arising from preliminary

observation and analysis of available data. Thirdly, to get to know TV accessibility managers' experience in the world of accessibility, which included the difficulties they have to face, the feedback obtained from viewers' so far, how they are organized and their plans for the future, among others. Finally, to offer them the opportunity to explain themselves, since it was foreseen that the results would make clear all what still needs to be done in terms of accessible services. Some of these arguments coincide with those presented by Fàbregues *et al.* (2016), who consider interviews to be a good option when data is to be triangulated or when the researcher considers that the participant should have more control over "the interrogation", for example. We prepared a semi-structured interview with a series of generic questions organized thematically in three sections, such as the organization of the accessibility department (if any), the offer of accessibility services and web accessibility. Table 1 shows the information regarding the interviewees:

Table 1: Interviewees' information.

Broadcaster	Interviewee	Position	Date of the interview
Televisió de Catalunya (TVC)	Rosa Vallverdú	Head of Accessibility	1 February 2018
Betevé	Jordi Colom	Director of Technology and Innovation	1 February 2018
Girona TV	Àlex Martí	Director of Televisió de Girona	2 February 2018
IB3 Televisió	Joan Carles Martorell	Director of IB3 Televisió	Sent via email on 24 January 2018 and received on 7 February 2018
Radiotelevisión Española (RTVE)	Francisco Armero	Director of Broadcasts and Accessibility	Sent via email on 10 February 2018 and received on 19 February 2018

Two of the broadcasters (8tv and El Punt Avui TV), refused to be interviewed on the basis that they were not offering any accessibility services at that time. The interviews that were carried out were useful for gathering further information to gain a deeper insight of the current situation and help us contextualize our results, such as why some broadcasters do not offer accessible content yet or, when they do, why the volume of this kind of content is not compliant with the law, among other aspects.

The results of our study are divided in seven different sections, each one focusing on the following different elements of the broadcasters' accessibility services and content: websites, linear broadcasts, VoD service, applications for smartphones and tablets, user satisfaction and needs, and volume of accessible content in relation to the established legal requirements. The findings section is followed by a discussion about the implications of the main results. Finally, the main conclusions of the study are summarized and some ideas for improving the present situation are suggested.

3. Findings

This section presents the results of the study by summarising the most relevant findings. It is divided into seven subsections so that each of the elements under analysis can be clearly identified.

3.1. Web accessibility

As mentioned previously, the last action of the European Union on accessibility dates from 2016, with the approval of the Directive on the Accessibility of the Websites and Mobile Applications of Public Sector Bodies, and broadcasters are exempted from complying with it. The forthcoming European Accessibility Act, though, stipulates the following in its annex:

The provision of services in order to maximize their foreseeable use by persons with functional limitations, including persons with disabilities, shall be achieved by: (...) (b) providing information about the functioning of the service and about its accessibility characteristics and facilities as follows:

(i) the information content shall be available in text formats that can be used to generate alternative assistive formats to be presented in different ways by the users and via more than one sensory channel;

(ii) alternatives to non-text content shall be provided;

(iii) the electronic information, including the related online applications needed in the provision of the service shall be provided in accordance with point (c).

(c) making websites accessible in a consistent and adequate way for users' perception, operation and understanding, including the adaptability of content presentation and interaction, when necessary providing an accessible electronic alternative; and in a way which facilitates interoperability with a variety of user agents and assistive technologies available at Union and international level (...). (Annex to the Proposal for a Directive of the European Parliament and of the Council on the approximation of the laws, regulations and administrative provisions of the Member States as regards the accessibility requirements for products and services, 2015, p. 6-7).

Also, Article 33 of Catalan Law 13/2014, of October 2014, on Accessibility, states that websites must comply, at least, with the level of accessibility that is determined and must contain information regarding this level and the date on which the last revision of the accessibility conditions was carried out (Llei 13/2014, del 30 d'octubre, d'Accessibilitat). However, according to our analysis, none of the websites analysed is totally accessible since all of them present problems of different kinds, as shown in Table 2.

Table 2: Broadcasters' web accessibility.

	8tv	Betevé	El Punt Avui TV	IB3	RTVE	TVC	Girona TV
Claims to have reached level AA	x	✓	x	x	x	✓	x
Offers information about the accessibility of the site and its accessible content	x	x	x	x	x	✓	x
Both the structure of the site and the distribution of the headings are adequate for screen readers	✓	✓	✓	x	✓	✓	✓
All images, links and buttons are accessible or are labelled with alternative text	✓	x	✓	x	✓	✓	✓
The VoD service has both accessible playback screen and buttons	x	✓	x	✓	x	✓	x
Problems detected by specialized tools	✓	✓	✓	✓	✓	✓	✓

Televisió de Catalunya is the broadcaster that best fits the model of an ideal standard, followed by betevé, 8TV, Radiotelevisión Española and Girona TV. However, even the website of

Televisió de Catalunya, which claims that is designed to meet the AA level, presents problems according to the technical tools used for automatic analysis. These problems are summarized in Table 3. It must be noted that both “known errors” and “problems” are issues that the tools used are certain that negatively affect accessibility.

Table 3: Broadcasters’ web accessibility.

Broadcasters	Achecker			TAW		
	Known errors	Probable errors	Potential errors	Problems	Threats	Non-verified problems
8tv	5	0	540	38 (25 P)	172	16
Betevé	277	0	1,286	236 (177 P)	2,164	14
El Punt Avui TV	48	0	340	4 (1 P)	1	18
IB3	250	18	1,149	194 (143 P)	1,156	14
RTVE	60	6	2,277	11 (7 P)	86	17
TVC	48	0	1,149	85 (65 P)	1,423	18
Girona TV	108	2	961	30 (22 P)	260	17

The websites of betevé and IB3 Televisió are those that present the most “known errors” and “problems.” It should also be noted that many of the problems are related to perceptibility (P), implying that the information and the components of the interface are not shown to the users so that they can understand them. For instance, to make sure a website is fully accessible it is necessary to include alternative text for the non-textual content, such as links, buttons, and images; provide alternative synchronized options for time-dependent synchronized multimedia content; and present the information in different ways without missing any item of information, either in form or in content. Therefore, broadcasters need to work hard on this aspect if they want to guarantee the right to information for all their users, especially to those with functional diversity.

3.2. Accessibility services on the linear TV

Once the analysis of all the programmes and channels of the sample was completed, it was clear that Televisió de Catalunya is the most complete broadcaster (see Table 4), since it incorporates the three accessibility services that were evaluated, namely audio description, subtitles for the deaf or hard of hearing and Catalan Sign Language interpreting. However, as we will see later, the volume of supply for each service varies enormously and, in the case of audio descriptions, the service is only available for Smart TVs. Moreover, the program guide includes the symbol for subtitles, but not so for the programmes with audio description or sign language interpreting.

Table 4: Accessibility services offered on linear TV.

	8tv	Betevé	El Punt Avui TV	IB3	RTVE	TVC	Girona TV
Offers accessibility services	✗	✓	✗	✓	✗	✓	✗
Allows to make a search by accessibility services	✗	✗	✗	✗	✗	✗	✗
Program guide with symbols that identify the accessible content	✗	✗	✗	✗	✗	✓/✗	✗

Televisió de Catalunya subtitles almost all its content, except for some musical and sports programmes. It audio describes mainly fiction, but not exclusively. The TV news at midday and in the evening from the 3/24 channel are interpreted into Catalan Sign Language daily. It must be highlighted that Televisió de Catalunya is the only broadcaster that also offers some

audio subtitles, which are subtitles read by a voice so that blind and partially sighted people can have access to this service too. This broadcaster is also the only one to offer accessible content that caters to children with functional diversity. This fact is thought-provoking and should raise our awareness so that the unfair treatment these children are being given is revised and readdressed.

IB3 Televisió and betevé also offer accessible content, but they still do not cater to visually impaired users. IB3 Televisió subtitles all its news programmes (at midday, in the evening, at the weekends and their rebroadcasts), 80% of the movies they broadcast and some pre-recorded programmes. This could not be verified because it was impossible for us to see the subtitles from Catalonia, since the option to send subtitles outside of the Balearic Islands was not activated at the time of conducting our research. The broadcaster was unaware of it and by the time we finished writing this paper they were still working on a solution. Also, IB3 Televisió broadcasts the parliamentary session every Tuesday and the Ramon Llull Awards, which are celebrated once a year, with sign language interpreting. It should be stated that the sign language used in the Balearic Islands is neither Spanish nor Catalan Sign Language, but Balearic Sign Language, which experts claim can be understood by Catalan Sign Language users as well.

Betevé offers the news with subtitles every day at 8 p.m. through teletext, but they are currently working on modernizing this method. As for fiction, it offers subtitles through the teletext for those movies that have previously been broadcast on TV3 (channel belonging to TVC). Also, from Monday to Friday, betevé broadcasts the news at 8.55 a.m. through the TDT in Catalan Sign Language. This is later shared on their social media. Betevé also offers the opening address for the Barcelona Mercè Festival with Catalan Sign Language interpreting through the TDT and the Internet. It should also be highlighted that during the interview we were informed that they plan to offer audio description services for fiction very soon.

3.3. Level of accessibility of smartphone and tablet applications

Out of the seven broadcasters in our sample, only four have an application for smartphones and tablets (see Table 5), but Televisió de Catalunya is the only one that also offers accessibility services. Even so, only the applications of IB3 Televisió and RTVE present a simple navigation screen reader design, while only that of Televisió de Catalunya has all the buttons and links labelled with alternative text. Therefore, it seems that in the case of applications, the situation is even worse than in the case of websites. The reasons that could explain our findings could be, on the one hand, the fact that the law does not say anything explicitly and, on the other, that there are no international standards in this regard.

Table 5: Accessibility of broadcasters' smartphone and tablet applications.

	8tv	Betevé	El Punt Avui TV	IB3	RTVE	TVC	Girona TV
Has an app	✗	✓	✗	✓	✓	✓	✗
Offers accessibility services	-	✗	-	✗	✗	✓	-
Has a section devoted to accessibility	-	✗	-	✗	✗	✗	-
Simple navigation design for screen readers	-	✗	-	✓	✓	✗	-
All buttons and links are labelled with alternative text	-	✗	-	✗	✗	✓	-
Accessible playback screen	-	✗	-	✗	✗	✗	-

3.4. Accessible content through the VoD service

As shown in Table 6, the only broadcaster that offers accessible content through its VoD service is Televisió de Catalunya, which incorporates videos with subtitles for the deaf and Catalan Sign Language interpreting (the latter only delivered during the news). In the case of audio description, the service is only available for Smart TVs.

Table 6: Accessibility services in the VoD service.

	8tv	betevé	El Punt Avui TV	IB3	RTVE	TVC	Girona TV
Offers accessibility services	x	x	x	x	x	✓	x
Allows searches by typology of accessible content	x	x	x	x	x	x	x
Has a program guide with symbols that identify accessible content	x	x	x	x	x	✓/x	x

3.5. Data gathered from the interviews

Due to space limitations, it is not possible to reproduce the entire content of the interviews in this paper. Therefore, only the information that was found especially relevant and complementary to the data gathered from other sources will be presented.

The only broadcaster from the sample that currently has both an accessibility department and an accessibility manager is Televisió de Catalunya. This department is in charge of supervising the quality of the access services, which are outsourced. It is also responsible for offering a supplementary information service that consists of a weekly e-mail sent to subscribers through a mailing list informing about all the audio described content for that week. The broadcaster's accessibility manager informed us that, although errors may occur, the malfunctions reported in the complaints might not always be related to the quality of the access services, but rather to technical problems caused by the television set on the viewers' side. Televisió de Catalunya's awareness about accessibility does not come as a surprise, because this broadcaster has participated, along with the Universitat Autònoma de Barcelona, in different European technology and innovation projects that aim to improve accessibility services.

Despite Televisió de Catalunya offering the most comprehensive service in terms of sensory accessibility, the rest of broadcasters showed interest in sharing and increasing the volume of accessible content, if any. In fact, Televisió de Catalunya is already sharing its subtitled content with the other two broadcasters that offer this accessibility service in Catalan, i.e., betevé and IB3 TV. Unfortunately, this is only happening unidirectionally and through the Federation of Autonomous Radio and Television Broadcasters (FORTA). In the case of betevé, this is possible thanks to this broadcaster implementing the same system to guarantee interoperability.

Although only three broadcasters offer accessibility services in Catalan, and to a different extent, during the interviews it was found out that other broadcasters had made some attempts to provide accessible content. This was the case of Girona TV, which carried out a pilot project some years ago in collaboration with Girona's Deaf Persons Association, aimed at offering a news program in Catalan Sign Language. The main limitation were the high costs, which the broadcaster could not afford: while willing to bear the technical costs, they expected the user association to pay for the interpreter. The user association did not agree on the grounds that such a program would not only benefit its members, but also other persons. Another interesting fact regarding Girona TV is that some years ago they tried to produce automatic subtitles, but they were dissatisfied with the quality obtained. RTVE is the other

broadcaster that admitted not offering any accessibility services in Catalan because the national law does not specify in what language these need to be provided. Yet, they are working on providing subtitles in the news because that is the most demanded service.

Other broadcasters, such as *betevé*, plan to increase their services in the short to mid-term because they have started carrying out tests to implement a third accessibility service: audio description.

3.6. Volume of accessible content and compliance with legal requirements

Apart from the qualitative aspects linked to accessibility, it was deemed necessary to complete the investigation with a quantitative analysis of the situation. The Spanish General Act 7/2010, of March 2010, on Audiovisual Communication sets a minimum volume of accessible content on the linear TV, which depends on both the type of accessibility service and on whether the broadcaster is public or private. This law only determined the mandatory volumes of accessible content until 2013 (see Table 7). After that year nothing is specified, which leads us to believe the current requirements are the same as those of 2013.

In Catalonia, Law 13/2014, of October 2014, on Accessibility states that broadcasters must incorporate accessibility services gradually. This law was subject to an implementation plan that is still pending. The Catalan Audiovisual Council (CAC) also drafted the Agreement 19/2013 in 2013, which came into effect in the same year. Its aim is to ensure TV content is accessible by gradually incorporating subtitles for the deaf and hard of hearing, Catalan Sign Language interpreting and audio description. This agreement is heavily influenced by the Spanish General Act on Audiovisual Communication because the broadcasters have the same obligations volume-wise in both cases.

The Spanish General Act on Audiovisual Communication applies to all the broadcasters analysed, except for *betevé* and *Televisió de Girona*, which are local TV stations and, thus, have to comply only with Catalan legislation. Therefore, even though these two laws do not apply to the same broadcasters analysed, they are all requested the same amount of accessible content, be it through the Spanish General Law on Audiovisual Communication or through the Catalan law on accessibility and the abovementioned CAC Agreement.

Table 7 shows the percentage and number of hours of accessibility content offered by broadcasters in 2017. The data is mainly based on the information provided by the interviewees. Although the current legislation does not mention audio subtitles, we have also included them because, since the end of 2008, *Televisió de Catalunya* has offered them whenever foreign languages are spoken and subtitled.

The data obtained through the broadcasters reveals that there is a clear breach of the current legislation. The percentage of subtitling is close to or even exceeds the legal requirements only in the case of *Televisió de Catalunya*, although unevenly between its different channels. Yet, in the case of Catalan Sign Language interpretation and audio description, the number of hours required is not reached, but exceeds by far the volume offered by other broadcasters. In addition, the Catalan Sign Language interpretation service is limited almost exclusively to news content.

Table 7: Volume of accessible content (2017).

Accessibility service	Private broadcasters				Public broadcasters				
	By law	8tv	El Punt Avui TV	Girona TV	By law	Betevé	IB3	RTVE	TVC
Percentage of programmes with subtitles for the deaf and hard of hearing	75%	0%	0%	0%	90%	1.2% ³	24.3%	0%	ES3: 30.7% 3/24: 70.75% TV3: 85.76% CS3/33: 96.6%
Hours/week of programmes with audio description	2	0	0	0	10	0	0	0	CS/33: 83 h TV3: 8.9 h
Hours/week of programmes with Catalan Sign Language interpreting	2	0	0	0	10	0.4 h ⁴	2 h	0	3/24: 9 h
Hours/week of programmes with audio subtitles	-	0	0	0	-	0	0	0	477 h

3.7. User satisfaction

The analysis of the questionnaires revealed that, regarding the quantity of accessible content offered, the best-rated broadcasters are Televisió de Catalunya, IB3 Televisió and betevé. These three broadcasters are, in fact, the only ones that offer, if not all, at least some accessibility services. 8tv gets the worst overall score. As for quality, Televisió de Catalunya gets the best score again. Regarding the accessibility of their websites, there was a large volume of non-responses and diversity of opinions, but Televisió de Catalunya takes a leading position once more. Televisió de Catalunya's smartphone and tablet applications are also the ones that are best rated by users.

As for the need to make broadcasts accessible, the three groups of users agree, to different extents, on considering the following as priority programmes: fiction, documentaries/ popular science programmes, the news and children's programmes. When asked whether they would accept an increase in the supply of accessible content if it were delivered by non-professional audio describers, subtitlers or interpreters, the respondents gave positive answers in the first two cases. Conversely, non-professional sign language interpreting is not an acceptable alternative for the signing deaf.

Sign language informants are also less willing to accept automatic subtitles. Instead, the percentage of the oralist deaf or hearing impaired that would accept them is double that of the sign language users. The most accepted types of programmes to be made accessible with non-professional accessibility services were children's programmes, the news and documentaries/popular science programmes.

³ This is an estimated number, since subtitling hours with movies have not been taken into account because they vary. However, although the percentage may be slightly higher, it is obvious that it is far from what is established by law.

⁴ This is an estimated number, since it does not comprise the Barcelona Mercè Festival opening speech, which is also broadcast with Catalan Sign Language interpreting.

Visually impaired users seem to be willing to accept synthetic voices to be able to enjoy a larger volume of audio described content. In contrast, the hearing impaired are not in favour of using avatars. On the broadcasters' side, the idea was received unequally. Televisió de Catalunya's Head of Accessibility was not willing to do so. Betevé and Girona TV were open to explore new paths that could lower costs, but also felt somehow reluctant because of the difficulties it entailed to guarantee quality.

As it can be observed in Table 8, which summarizes the informants' answers, functionally diverse users have different habits, needs and expectations as far as accessibility services in television broadcasting are concerned. These results imply that different solutions will need to be sought in order to adapt and satisfy the different profiles.

Table 8: User satisfaction regarding the accessibility services offered.

Question	Blind and low vision users	Oralist hearing impaired users	Sign language users
Quantity of audio description/subtitles/ Sign language interpreting	36.9% of the informants are satisfied or very satisfied with TVC, while 8tv and RTVE are the worst rated.	TVC is the most highly rated (66.6% are satisfied or very satisfied), followed by betevé. 8tv gets the lowest score (42.9 are dissatisfied or very dissatisfied).	TVC is the most highly rated regarding subtitles (85% are satisfied or very satisfied), whereas, as for Catalan Sign Language interpreting, half of the respondents feel little or no satisfaction at all.
Quality of audio description/subtitles/ sign language interpreting	TVC is the only broadcaster positively evaluated (47.4% are satisfied or very satisfied).	TVC is the most highly rated (71.4% are satisfied and very satisfied), while 8tv is the worst (52.4% are very dissatisfied), followed by betevé.	TVC is the most highly rated regarding subtitles (85% are satisfied or very satisfied), whereas as for Catalan Sign Language interpreting, 10% of the respondents feel satisfied.
Satisfaction with web accessibility	TVC (21%) betevé (16%) RTVE (10%) 8tv (5%)	TVC (33%) 60% had no comment on the rest.	TVC (30%). 80-85% had no comment on the rest.
Satisfaction with smartphone and tablet apps	TVC is the only broadcaster with which users feel very satisfied (21.2%), followed by RTVE (10.5%) and betevé (5.3%).	TVC satisfies users the most (42.8% are satisfied or very satisfied).	TVC satisfies users the most (30% are satisfied or very satisfied).
Need to make content accessible	Fiction (63.2%), documentaries/ popular science programmes (57.9%), the news (47.4%), children's programmes (42.1%).	Except for sports programmes, 71% consider it very necessary to make the rest of programmes accessible.	The news and fiction (80%), children's programmes (70%), documentaries/ popular science programmes (75%).
Willing to accept non-professional services	Audio description: Yes (62%) / no (32%)	Subtitles: yes (95%) Sign language: yes (29%)	Subtitles: yes (40%) Sign language: yes (30%) / no (55%)
Automatic subtitles	-	Yes (76%)	Yes (40%)

Programmes in which non-professional/ automatic services could be used	-	The news, cultural programmes and fiction (85%), documentaries/ popular science programmes (80%).	The news, documentaries/ popular science programmes (53%), cultural programmes (47%).
Use of synthetic voices or avatars	Yes (68%) The news (67%), documentaries/ popular science programmes (53%) and fiction (47%).	Yes (29%)	No (40%) / yes (30%) Entertainment, documentaries/ popular science programmes, cultural programmes and the news (50%).

4. Discussion

Despite the gaps detected, the situation has considerably improved in the past few years. This improvement is illustrated by the increase in terms of volume and typology of the accessible content available, which has been reported by the broadcasters' annual reports or by the interviewees themselves. These are all symptoms that accessibility is gaining notable weight in the public agenda. It must be taken into account that the laws concerning accessibility were issued either at the start of the economic crisis or when Spain was suffering severely from it. This improvement had already been detected at a national level by Díaz-Cintas (2010), but it is also observable in the Catalan case bearing in mind that, for instance, *betevé* was not offering any accessible content before 2007 and is currently carrying out tests to offer audio description.

Only one broadcaster from our sample provides the three accessibility services required by law, but it does not offer them in the quantity the law specifies, although in some of its channels the requirements are almost met. The access services in the rest of the broadcasters are still in need of improvement. Table 9 offers an overview of the situation of accessibility in the Catalan-language broadcasters analysed. It is important to reflect on whether the small supply of accessible content is due to financial reasons or if a lack of awareness is also a major contributor to the problem. The fact that broadcasters believe the lack of sensory accessibility services stems from budgetary availability also needs to be borne in mind.

Table 9: Overview of the broadcasters under study.

	8tv	Betevé	El Punt Avui TV	IB3	RTVE	TVC	Girona TV
Abides by the current legislation	x	x	x	x	x	x	x
Accessible content in linear TV	x	✓	x	✓	x	✓	x
Accessible content in the VoD service	x	x	x	x	x	✓	x
Accessible website	x	x	x	x	x	x	x
Accessible app(s)	x	x	x	x	x	x	x

As discussed before, none of the websites analysed is totally accessible. According to both the manual and the automatic analysis performed, all of them present different problems. The accessibility of smartphone and tablet applications is limited. This could be an issue, because they are the preferred way for younger generations to access audiovisual content. Therefore, those who are sensory impaired face a lack of services, both in terms of accessible content and ways to access them.

Our findings show that different measures should be taken to ensure law enforcement, not only for legal reasons, but also for ethical considerations that take into account the rights of persons with functional diversity, especially disabled children, as an especially vulnerable group. We have also seen that the term “functionally diverse” includes users with different expectations and needs, showing varying degrees of acceptance of the proposed solutions to increase the volume of accessible services. In this regard, it is important to build bridges of communication between users and broadcasters in order to know the needs and level of satisfaction with the current services of the former, as well as carry out reception studies to empirically confirm the viability of such alternative solutions.

The breach of legislation in the Catalan territory contrasts with the national picture. The Spanish National Commission of Markets and Competition presented a report (2019) corresponding to the volume of accessible content broadcast in 2017 by national broadcasters. Their study included all of them, which in total comprise 26 channels. According to their report, the most mainstreamed access service are subtitles for persons with hearing loss. Yet, in their case, out of the 26 channels, only two did not comply with the law regarding this accessibility service. The public national broadcaster not only complied with the law requirements, but also exceeded the minimum threshold. Regarding audio description, all broadcasters complied with the minimum threshold required in each case and some even surpassed it. This report also showed that sign language interpreting is the service offered the least. It is also the only one the national public broadcaster (RTVE) does not offer enough quantity of. It can, therefore, be seen that the national picture differs from the Catalan one. This difference could be due to the Spanish national broadcasters having more pressure and being evaluated more often.

5. Conclusion and proposals for improvement

The main conclusion is that, although broadcasters are aware of the need (and the obligation) to provide accessible content, the current situation can be improved.

Throughout our research, and after triangulating the information gathered from different sources and informants, we have identified some accessibility issues in the Catalan-language broadcasters that could be improved with little or no financial effort.

First, there is a series of technical aspects that could be easily dealt with. It would be advisable to include symbols for all the different accessibility services in the VoD service. Accessible content could also be sorted according to the type of accessibility service they offer to allow users to make more effective searches. Although evaluating the quality of the accessibility services offered by the broadcasters did not fall under the scope of the present study, we would identify this as a research gap and possible future line of research. It would also be useful to explore automatic solutions to increase the offer of accessibility services. This alternative is welcomed by most users and could reduce costs, but user-centric and reception studies should be carried out to make sure their opinions are taken into account.

Second, since the majority of broadcasters are interested in sharing and increasing the volume of accessible content, new ways to materialize their intentions could be explored. This could be done by stepping up exchanges among professionals, sharing costs and content, through official financial aids or by collaborating with user associations and universities that are training media accessibility experts.

Third, except for *Televisió de Catalunya* and probably *Radiotelevisión Española* as a result of its experience with accessible content in Spanish, it would be necessary for broadcasters to receive more information and training in media accessibility, since during the interviews the majority did not seem to be very up to date. Even if the services are outsourced, the contracting party should establish the quality threshold to be achieved.

Fourth, we believe Televisió de Catalunya's supplementary service to inform about the audio described content for each week is a sound practice, which could be extendable to other broadcasters that offer or are planning to offer accessibility services.

Fifth, although the Directive on the Accessibility of the Websites and Mobile Applications of Public Sector Bodies (2016) does not apply to the websites and mobile applications of public service broadcasters, the European Accessibility Act does require them to make their website accessible. The law has just been approved, so it is highly recommended that broadcasters examine the deficiencies detected in their websites and proceed to remedy them as soon as possible.

Sixth, legislation concerning media accessibility should specify the exact volume of accessible content for every year until 100% of TV content is made accessible and should include standards for navigation through second screens and other new devices. The case of Brazil is especially illustrative because the official calendar decided in 2006 included the volumes for the following eleven years. This has allowed a more progressive transition towards media accessibility (Toledo, 2018). It would also be prudent to devise policies to encourage audiovisual accessibility, such as tax deduction. The bodies in charge of supervising that the legal minimums are met should also penalize broadcasters that do not comply with the law. Nonetheless, Orero *et al.* (2007) point out that, regarding audio description, only films, TV series and documentaries should incorporate audio description. These types of programmes only represent 35% of the broadcast content. As for the other TV programmes, it must be underlined that not all types of content can be audio described and, in the case of the news and quiz shows, blind users would be able to follow what is going on if they were produced more carefully.

Seventh, the establishment of a protocol to collect and use the Catalan Sign Language interpretation offered in public events is suggested with the objective that it could benefit and be broadcast by all television stations.

Eighth, and in terms of academic study, it would also be interesting to propose a new line of research that would compare the Catalan case with that of other European countries in order to see where we are in relation to other places with a similar socio-economic situation. Studies such as Toledo's (2018), which compares the legislation on accessibility and the way in which the Brazilian subtitles for the deaf and hard of hearing are produced with the situation in the United States, Canada and the United Kingdom, could be a good starting point.

Last but not least, broadcasters could benefit from employing media accessibility experts with functional diversity, since their experience would almost certainly provide an enriching contribution. At the very least, it would be advisable to have regular communication and generate areas of exchange between broadcasters and user association representatives, so that they could jointly evaluate the present of accessible content and plan new actions to ensure improvements for the future. In other words, we need to take a user-centric approach so people with disabilities become integral and essential contributors to the media industry.

It is worth mentioning that Orero *et al.* (2007, p. 41) has already underlined that in order to favour the development of media accessibility, five key factors have been identified: regulation, communication, training, production and signalling. As far as we can see, these recommendations remain valid and very necessary more than ten years later. Hopefully, this new reminder will constitute a new starting point in order to improve the accessibility services of television broadcast in Catalan. This would confer heightened internal awareness and could also help increase the social visibility of these groups.

As an endpoint to this paper, we would like to reflect on the main contributions and weaknesses of our study. We consider it is innovative in the sense that it is the first published research to offer an overview of the current situation of accessibility services of a representative sample of Catalan-language broadcasters following a user-centric mixed approach. Yet, we believe it was crucial to conduct such a study because Spain has specific

legislation that protects the access to information of persons with disabilities. Consequently, it is possible to legally demand equal access to the media in the terms the laws contemplate. Our analysis provides users with powerful evidence to publicly denounce an injustice that can legally be claimed for and contributes to their empowerment. At the same time, and despite being a case study, we hope the issues raised can give policy-makers and broadcasters a point to start working on or, at least, some food for thought, regardless of the language used in the broadcasts. However, it also presents several limitations that we need to be aware of. On the one hand, our sample size is rather small and not random, which prevents us from generalizing the results. On the other hand, publicly denouncing broadcasters who are breaching the law as far as the offer of compulsory accessibility services is concerned, does not necessarily mean the situation is going to improve in the short run. All in all, we hope to have contributed to raising awareness about the current situation, which can be taken as a departure point for future research, but also can provide end-users with objective data to help them demand that their rights are respected.

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