



## Article

# Catalysts of Change: Technological Innovations Shaping Spanish Public Proximity Media

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**Abstract:** Technological innovation is transforming local public media. New tools, applications, and platforms are allowing it to improve its reach, the quality of the content it broadcasts, and its interaction with audiences. We set out to determine the main lines of action in the technological innovations adopted by Spanish regional public service media. We conducted a qualitative study based on corporate documentary analysis and in-depth interviews with the heads of the innovation and technological support areas of the four regional corporations with the largest budgets: Corporación de Radio y Televisión de Galicia (CRTVG), Euskal Irrati Telebista-Radio (EiTB), Corporació Catalana de Mitjans Audiovisuals (CCMA), and Radio y Televisión de Andalucía (RTVA). The results showed that, without neglecting their social commitment, technological innovation was one of the main axes in the strategic plans of the organisations studied. The use of new technologies in their adaptation to the current audiovisual ecosystem represents changes in creation, distribution, and management.

**Keywords:** technological innovation; public service media; proximity; CRTVG; EiTB; CCMA; RTVA



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## 1. Introduction

The regional public audiovisual system in Spain, made up of fifteen corporations, performs an important mission that has traditionally been related to the promotion of the cultural identity of each territory, local information, the promotion of vernacular languages, and support for creative industries in their respective regions (Miguel de Bustos and Casado del Río 2012; Olmo López and Navarro Moreno 2015). Despite sharing common objectives, the peculiarities of each entity make the Spanish regional audiovisual system one of the most complex and heterogeneous in Europe (Richeri 2005). Their diversity is manifested in elements such as the age of the corporations, their size, the organisational structures adopted by each, or the budget allocation they receive through public funds from their respective regional governments.

The characteristics of the public model of regional radio and television broadcasting, together with factors such as digital transformation and the emergence of new media players, bring about challenges that jeopardise both their legitimacy and their effectiveness in fulfilling their mandates. The main challenges they face are budgetary restrictions, declines in advertising revenue, loss of credibility, media diversification, and audience fragmentation (Cañedo and Rodríguez-Castro 2023; Marzal Felici and Zallo Elgezabal 2016). To ensure their viability and, thus, the continuation of their public service, corporations are being forced to redefine their operational strategies in a highly competitive media environment in which transnational platforms dominate (Donders 2019; Gesto-Louro and Campos-Freire 2020; Cañedo and Segovia 2022).

In redefining themselves, regional Spanish public broadcasters are beginning to innovate. This change is attributed to the recognition of this dimension as an essential element of public value in the European media context (EBU 2012; Cañedo et al. 2022); the goal is

for public entities to adapt to the digital sphere without neglecting their social responsibility (Głowacki and Jackson 2013; Zaragoza and Avilés 2020; Donders 2021; Meier et al. 2022; Cañedo and Rodríguez-Castro 2024). Considering Schumpeter's original theory of economic development, where innovation is a fundamental strategy for the growth of companies (Schumpeter 1934), this dimension can facilitate adaptation. Its implementation in organisations involves changes that can manifest in four areas: organisation, product, process, and marketing (OECD 2018). From a media perspective, the introduction of change into the organisational model or the development of a new product can involve innovation in more than one of these areas (Storsul and Krumsvik 2013).

The extent to which innovation takes place differs depending on whether it is linked to incremental changes that organisations make to their operating models, services, and products (with the aim of improving them) or whether it involves a complete break with traditional practices. This distinction, based on the degree of novelty, is reflected in incremental versus disruptive innovation (Christensen 1997; Prudkin and Mielniczuk 2019). Alice Lam argues that an organisation's ability to innovate depends, among other factors, on the effective use of new technologies. Likewise, according to Lam, the introduction of a new technology implies the opportunity and challenge of implementing new organisational forms (Lam 2011).

Technical progress plays a crucial role in the conception of innovative ideas for technological innovation (Arias-Robles et al. 2023). Thus, technology drives innovation (Moreira Flores 2017; Vargo et al. 2020), although its development involves more complex processes than mere adaptation to technical change (Storsul and Krumsvik 2013). In the current media context, the use of technology in content production is becoming increasingly intense. The advancement and development of new technological tools have revolutionized how such content is created, distributed, and consumed.

As the technological environment expands, facilitating the use of new resources to enhance efficiency, media outlets are confronted with new challenges (López-García and Vizoso 2021). Currently, disruptive technological innovations such as the implementation of online streaming platforms, the use of immersive techniques, or the emergence of Artificial Intelligence applications offer opportunities for regional public media to enhance the user experience. However, these innovations also require significant investments in training, organizational adaptation, and the development of new business models to ensure the long-term sustainability of public broadcasting corporations.

In short, generating innovation in regional public broadcasting corporations is not a simple task. On the one hand, it requires the coordination of multiple elements and the integration of activities in various specialised functions, knowledge domains, and application areas (Lam 2011; Medina et al. 2022). On the other hand, rigidity, hierarchy, and vertical relationships are predominant features of regional public broadcasters that do not facilitate their evolution. These characteristics, typical of mechanical organisations (Burns and Stalker 1994), are more in tune with the broadcasting era of twentieth-century television (FORTA 2022) than with that of today's global platforms and content (Goyanes and Campos-Rueda 2022). The lack of flexibility in adapting organisations to innovative processes makes change difficult to implement.

Chesbrough's (2003) open innovation model, which suggests that organisations should be open to external cooperation in order to internally develop innovative initiatives, may be a good strategy to ensure the sustainability of the Spanish autonomous public audiovisual system. A proposal for open innovation oriented toward public institutions is the HIP (Hexagonal Model of Public Innovation) (Oliván 2020). This model proposes the transformation of organisations through six vectors driving change: openness, transversality, agility, prototypes, the creation of communities, and the promotion of the use of new technologies. In the context of regional public broadcasters, to maximise the benefits of open innovation, the collaboration network can and should be articulated around production companies, technology companies, public institutions, users, and society itself.

Currently, each of the corporations of the Spanish autonomous public audiovisual system, to different degrees, is strategically immersed in digital transition and adopting new forms of multiscreen broadcasting to meet the changing trends and demands of audiences, who have now become active and interactive users (FORTA 2022). Although technological innovation might allow local public service media to survive, it is faced in a constantly evolving media environment (López-Olano et al. 2022). It is also necessary to guarantee the public service mission of media organisations in order to maintain their legitimacy in the eyes of their main stakeholders (Rodríguez-Castro et al. 2022). Therefore, this study deems it imperative to examine whether, despite the mentioned difficulties, corporations utilize technology as a driver of innovation. The proper exploitation of new technologies can enhance both the operational efficiency of proximity public service media and the fulfilment of their mission by providing relevant, diverse, and accessible content.

The foregoing prompted the following research questions (RQs):

RQ1. What are the main technological initiatives being developed by the regional public broadcasters of Galicia (CRTVG), the Basque Country (EiTB), Catalonia (CCMA), and Andalusia (RTPA)?

RQ2. Which link in the value chain is most affected by technological innovation?

RQ3. What challenges does the implementation of technological innovation entail for these corporations?

## 2. Materials and Methods

In order to answer these research questions, a multiple case study was conducted. The use of this method for the analysis of technological innovation in local public media made it possible to obtain information from various sources for the development of convergent lines of enquiry (Yin 1994). Two qualitative techniques were applied: corporate documentary analysis and in-depth interviews. Regarding the former, access to documentary sources—corporate grey literature—allowed for a critical examination of each corporation's operating procedures and performance evaluations related to innovation. In-depth interviews, characterised by direct, face-to-face communication between researchers and interviewees (Canales Cerón 2006), made it possible to deepen the information obtained from the documentary analysis and explore themes of innovation not identified in the reports analysed.

A total of sixteen interviews were conducted with managers in areas linked to production, innovation, digital transformation, and technological support, with four interviews carried out with each of the corporations under study. In the case of CRTVG, interviews were conducted with the Director of the Innovation and Business Area, the Director of the Technological Support and Media Area, the Director of the Technical and Systems Department, and the Deputy Director of the Media Department. On the other hand, interviews were conducted in the Basque entity with the Director of Strategy and Research, the Director of Operations and Production, the Director of Systems, and the Director of Exploitation and Engineering. Regarding CCMA, the interviewees included the Director of Engineering and Technology, the Director of Innovation and Digital Transformation, the Director of Production, and the Deputy Director of Digital Media. Finally, interviews were conducted with RTVA with the Director of Innovation, Business, and Communication, the Technical Director, the Director of Production and Design, and the Corporate Director of the Andalusian entity.

The interviews, which ranged in duration from 60 to 90 min, were conducted in person at the headquarters of the corporations between October 2021 and March 2022. Each session was attended by a researcher to ask the questions and another to compile the most significant details of the responses. Prior to the interviews, the participants were contacted to provide information on the nature of the study.

A questionnaire structured around three thematic blocks was designed for the interviews. First, questions related to the structure of the corporation and the department of the interviewed manager were asked. The second part of the interview was aimed at finding

out what the main technologies implemented were, the objectives pursued with their implementation, and whether the innovations were developed internally or outsourced. Finally, questions were asked about aspects that can act as brakes or accelerators of change within a corporation. All interviewees gave oral consent to the recording of the sessions and the anonymised dissemination of their responses for academic purposes. Once the interviews were completed, they were transcribed for thematic analysis.

In the selection of the corporations, purposive sampling was used, considering aspects such as ease of access for the interviews, size of budget (given the importance of its role as an instrument for the management and visualisation of actions involving change), and the prioritisation of technological innovation.

### 3. Results

The results are structured in two main blocks. First, the main structural data and the approaches to innovation management within the corporations are presented. This first block provides an overview of how the innovation process is approached and managed within these organisations. Second, the main technological innovation actions carried out by the four corporations are detailed, along with the objectives of their implementation and the challenges they face in their execution. This second section provides a more detailed analysis of the specific innovative initiatives and the obstacles encountered in their implementation.

#### 3.1. Structural and Innovation Management Data

The corporations have been broadcasting regularly for more than thirty-five years in their respective areas of coverage. Moreover, they have the largest budget allocations in Spain and the largest staff in terms of personnel employed (Table 1). All are part of the Federation of Autonomous Regional Radio and Television Organisations (FORTA), which facilitates joint activities between them and with organisations of the state regulatory system.

**Table 1.** Characteristics of the entities.

Corporation	Region	Year of Creation	Budget (€) (2022)	Employees (2022)
EiTB	Basque Country	1982	172.6 million	1100
CCMA	Catalonia	1983	300.6 million	2406
CRTVG	Galicia	1985	121.5 million	896
RTVA	Andalusia	1987	154 million	1372

Prepared by the authors with data from the management reports of the corporations.

All four corporations have, in their organisational structures, departments focused on innovation and digital transformation, as well as budget allocations for technology upgrades and development. Despite the fragmentation of their audiences, the data recorded by the main channels of these media groups are positive. Thus, screen shares in 2022 were 8.6% for ETB2 (EiTB), 8.9% for Canal Sur (RTVA), 10.1% for TVG (CRTVG), and 14.1% for TV3 (CCMA), which continues to be the most-watched regional television channel in Spain (AIMC 2023).

Euskal Irreti Telebista (EiTB), as a forerunner in its field (it was the first regional public broadcaster established in Spain), set itself the objective of guaranteeing financial and audience stability by signing the 2022–2025 Contract-Programme with the Basque government in 2022. This contract establishes an integrating framework of relations, in which the public service mission, content, and budget allocation are defined in order to offer quality services. Elements of the agreement are related to the provision of public service, as well as to a commitment to advance technologically (EiTB 2023a). The latter has materialised through the implementation of advanced technological management, the acquisition of new technologies adapted to contemporary consumption patterns, and the

development of Big Data and artificial intelligence tools to improve content management capacity. It is also agreed to invest in improving organisational practices and modernising facilities.

To ensure compliance with these commitments, EiTb's management structure, characterised by its transversal approach to shared management, incorporates various departments aimed at tackling technological challenges. These include the Digital Transformation Department, attached to the strategy and communication area, and the Technology and Operations Department. The digital transformation process, initiated in 2020 by EiTb, is a priority in the group's 2030 Strategy (EiTb 2023b).

In the case of the Galician Radio and Television Corporation (CRTVG), the only audiovisual media company that guarantees continuous broadcasting 24 h a day in the language of the region, the digital transformation process advances hand in hand with Galician Digital Strategy 2030 (Xunta de Galicia 2020), a digital framework designed by the Galician government. This strategy provides a comprehensive approach that allows the corporation to focus on the main vectors that contribute to boosting the regional public enterprise in the context of the digital ecosystem.

In the Galician corporation, responsibilities for promoting technological development are allocated to two main areas: Technological Support and Media, and Innovation and Business. The distribution of these responsibilities depends on the specific objective, the measure to be implemented, and the strategic line pursued. In the case of measures and objectives related to technical and operational dimensions, the main responsibility lies with the Technological Support and Media area. However, when it comes to objectives linked to market competition or the marketing of products and services, the innovation area takes on a more prominent role (CRTVG 2023). In order to promote transversal operation, CRTVG has the Technological Renewal and New Channels Commission within its Board of Directors, which is responsible for the development of sectorial work related to technology. With the same purpose, but within the management structure, there is the Projects, Technology and Systems Commission. However, according to those interviewed, there is a shortage of committee meetings, which may represent a challenge for the effective implementation of technology initiatives.

The Corporació Catalana de Mitjans Audiovisuals (CCMA) stands as an emblematic institution in the context of public media in Spain. Not only is it the second-oldest autonomous public service media in the country, but it is also distinguished by the fact that it currently has the largest budget. Due to the size of the corporation, CCMA has a Management Committee made up of the president, the media directors, and the directors of corporate areas.

In relation to technological innovation, the most relevant initiatives are carried out by the areas of Innovation and Digital Transformation, as well as Digital Media and Engineering and Technological Infrastructures. Throughout its history, both its main television channel, TV3, and its flagship station, Catalunya Ràdio, have had a solid reputation for their capacity for innovation in terms of content, images, and technology. However, in the most recent stage of the corporation, which was marked by the provisional nature of its governance, innovation was not a priority. A change of course came with the arrival of a new president in March 2022. The president created a commission with the aim of drawing up a contract programme that would address, among other aspects, the promotion of digital transformation (CCMA 2023). In February 2024, the government of Catalonia approved this document, marking a significant milestone in the CCMA's commitment to technological innovation and adaptation to the digital environment.

Finally, Radio y Televisión de Andalucía (RTVA), the youngest of the public broadcasters analysed in this study, recently launched a contract programme agreed to with the Andalusian regional government for the period 2024–2026. Beyond its stabilising function, this document represents an important step forward in the modernisation and digital adaptation of the Andalusian broadcaster, promoting the comprehensive transformation of its operating processes, services, and audiovisual production. This initiative is conceived with

the aim of improving effectiveness and efficiency in business management, responding to the demands and opportunities posed by the constantly evolving digital environment.

The management of innovation in RTVA is coordinated transversally by the Innovation, Business and Communication Department, which reports directly to the general management of the public broadcaster. In addition, the corporation's Technical Directorate is responsible for the management of communication resources and networks, and its Production and Design Directorate leads the innovative production actions included in its Strategic Plan 2021–2026 (RTVA 2023a). The transversal nature of innovation management is materialised through a Digital Transformation Commission made up of the heads of the different departments of the corporation, who meet monthly to coordinate actions related to innovation.

Through their organisational structures and by virtue of the agreements established with regional governments, the four corporations undertake various technological innovation initiatives that affect different links in the production chain, as detailed in the following section.

### 3.2. Technological Innovation Actions at EiTb, CRTVG, RTVA, and CCMA

The results obtained from the analysis of the four regional broadcasting corporations reveal an ongoing process of the digitalisation of media and content, which implies an imperative for technological innovation. This innovation is manifested in the search for and adoption of new formulas and tools that enable continuous improvements in the capacity to adapt to the constant evolution of audiovisual systems and the changing demands of audiences. In this challenging context, these institutions are driven to explore strategies that not only strengthen their presence and relevance in the digital environment, but also ensure the efficient delivery of diverse and quality content on multiple platforms, in line with their mission of public service.

#### 3.2.1. Technological Innovation at the Organisational Level

From an organisational perspective, according to the interviewees, these entities are directing their energies towards the creation of automation tools that optimise workflows and the formation of alliances that promote this objective. In this sense, EiTb is working on advanced technology management through the design of a new operating model that responds to the challenges of digitalisation. The aim is to provide the corporation with cutting-edge mechanisms and capabilities that allow it to respond immediately to the needs of its audiences, as well as advanced tools for data management. Highlights include the design and launch of the Data project, participation in the European consortium TEMs (European Media Data Space) for secure data exchange, and the agreement with BCAM (Basque Center for Applied Mathematics) for research on recommendation systems in the web environment. In addition, EiTb has developed its customer relationship management to manage relations with the corporation's main clients, as well as an experimentation laboratory (EiTbLab) for the creation of new formats.

With regard to radio, EiTb has renewed its digital content production system by implementing the Dalet Galaxy five system. This new platform enables the comprehensive management of the multimedia assets of the company, offering a wide range of tools and functionalities for the editing, collaboration, and distribution of digital content. Additionally, Dalet Galaxy five integrates workflows enriched with advanced technologies such as artificial intelligence and machine learning, facilitating the automation of repetitive tasks and process optimization. This renewal process, which covered the years 2021 and 2022, was carried out by the company awarded the contract, Telefónica Servicios Audiovisuales (TSA). Finally, it is worth mentioning that the Basque corporation is part of an R&D&I agreement in collaboration with Vicomtech, an applied research institute specialising in computer graphics, visual computing, and multimedia technologies.

On the other hand, CRTVG modified its workflow with the implementation of a high-definition production platform in 2018, which has affected all the links in the corporation's

value chain. The company awarded the contract for its development was again TSA, which was also responsible for the construction of the data processing centre to house the platform. A renewal of the digital television production system and investment in a new radio production system are planned for 2024. Internally, programmes such as “xestión de novas” and “reporte de incidencias” have been developed, with the aim of contributing to the automation and agility of processes in daily production tasks.

CCMA, for its part, has implemented an initiative called the Kondo system based on a new agile and transversal management model. To this end, it has introduced VMIX technology, a 4K-quality video-mixing software, and the ATEM system for live productions with integrated control. In addition, CCMA participates in regional research projects such as ViVIM and PICAE, focused on the creation of new audiovisual formats and the development of analytical tools to improve the user experience, respectively. Finally, the Catalan corporation is a member of a project funded by the Spanish Ministry of Science and Innovation, namely REMISS, focused on the development of technologies to reduce the dissemination of ‘fake news’.

RTVA defines its lines of technological innovation through the aforementioned Strategic Plan 2021–2026. One of the most important projects was the launch of the Integrated Digital Content Management Platform, which has enabled a new model of collaborative and remote work between territorial centres. The system, developed by an external company (Telefónica), allows for the adoption of new features, such as the integration of artificial intelligence and a link with social network platforms. Internally, the corporation has developed technological tools that facilitate day-to-day productive activity, such as the implementation of the GNews autonomous signage system, the four-channel video playout system, and the Timeelections App for time control in electoral debates.

### 3.2.2. Technological Innovation in Distribution and Exhibition

Technological innovation in distribution is closely linked to the implementation of Over The Top (OTT) digital platforms (Table 2). These platforms not only act as content distribution channels, but also drive the development of new tools and functionalities that optimise the delivery and accessibility of materials to end users.

**Table 2.** Over The Top (OTT) digital platforms.

Corporation	OTT Platforms	Year of Creation	Thematic
RTVA	CanalSur Más	2021	Generalist
EiTB	Primeran	2023	Generalist
CCMA	3Cat	2023	Generalist
CRTVG	AGalega	2024	Generalist

Own elaboration with data extracted from interviews with corporate managers.

CanalSur Más, launched in December 2021, marks an important milestone as the first regional, public, on-demand content platform in Spain (RTVA 2023b). Subsequently, the other public service media analysed in this study followed suit, launching their own OTT platforms with the main objective of modernising, increasing their reach, and diversifying their audience in the digital landscape. Importantly, these platforms not only seek to provide a new, free service with quality and varied content to meet the diverse demands of users, but also reflect the corporations’ commitment to promoting and encouraging a greater production of audiovisual content in their respective, co-official languages. This contributes significantly to preserving and enriching the linguistic and cultural diversity of each region.

These new platforms are accessible on the web and through native applications for mobile devices, being compatible with smart TVs. In all scenarios, the development of OTT platform projects has involved collaboration with external technology companies.

In addition to OTT platforms, relevant technological innovations in distribution include the development of podcast platforms (radiogalegapodcast.gal (CRTVG) created in

2021, EiTBPodkast (EiTB), developed in 2021, and CanalSur Podcast (RTVA) created in 2021) and thematic platforms (G24.gal (CRTVG) created in 2021, SX3 (CMMA) developed in 2022, and Makusi (EiTB in development)), the launch of new mobile applications (EiTB Albistek and EiTB Nahieran (EiTB) inaugurated in 2021), the renewal of technological infrastructure for the adaptation of channels to the IP system (Noticias 3/24 (CCMA) released in 2023), the launch of news services through instant messaging applications (WhatsAppOrain (EiTB) launched in 2023), and the growing presence of corporations on social networks such as Twitch and TikTok.

These initiatives demonstrate the corporations' continued efforts towards adapting to emerging trends in media consumption and reaching a wider audience through various digital channels. In addition, the transition to 5G technology and partnership with UHD SPAIN reflect the entities' commitment to the implementation of new image resolution standards.

Finally, to improve the user experience, the corporations employ emerging technologies such as Big Data, artificial intelligence, tracking tools, and voice-activated digital assistants. These technologies make it possible to collect and analyse data to personalise and optimise the services offered, anticipating users' needs and preferences and providing fast and effective responses to their queries or requirements.

### 3.3. Major Challenges in Technological Innovation

Despite the challenges faced by these regional corporations, such as budget shortages or loss of audiences, processes of technological innovation for their adaptation to the digital sphere are underway. However, according to the interviewees, they face multiple obstacles every time they attempt to implement changes within their organisations. One of the most significant is the rigidity of the socio-occupational framework. Managers point to a regulatory mismatch between the demands of innovation and the constraints imposed by the existing labour framework in terms of professional categories. They argue that labour legislation and associated jurisprudence encourage almost the opposite of what is required to carry out innovative processes.

In this context, the technological innovation necessary for digital transformation implies the incorporation of new professional profiles, a process hindered by the structural rigidity and the socio-labour framework of public companies. Related to the above, the heads of the areas interviewed stated that the workforces of their corporations are ageing, which leads to a certain resistance to change on the part of workers less familiar with new technologies. Finally, managers mention a high rate of unionisation, which they argue makes it difficult for workforces to adapt to the multitasking work required by the digital multimedia environment.

In relation to budget allocation, although the interviewees recognised budgets earmarked for the updating and development of technologies, they considered them to be insufficient. The four corporations were unanimous in expressing concern about the lack of budgetary sustainability. They stated that the over-dimension of fixed costs, especially those related to wages, reduced the capacity for technological investment.

## 4. Discussion and Conclusions

This research analysed the main lines of action related to technological innovation in autonomous public service media in Spain through the study of four cases. The results show that, despite the heterogeneity that characterises the Spanish public audiovisual system (Richeri 2005), the corporations under study are at a similar stage of transition towards digitalisation. This convergence underlines the importance of technological innovation, especially with regard to the creation and distribution of digital content through thematic channels and streaming platforms. It is expected that these proximity media organisations will aspire to become relevant competitors that adapt to changing audiovisual consumption habits. To achieve this scenario, the findings provide a comprehensive overview of the confluence between technology and innovation in all areas affecting the production of regional

public broadcasting corporations: financial, organisational, production, distribution, and consumption.

Financial investment and an organisational structure that integrates departments in charge of promoting and coordinating innovative initiatives reflect the commitment of these corporations to adapting to technological changes and constantly improving their services. The agreements established with their corresponding regional governments, in which the priorities of technological innovation are defined and the necessary financial resources are allocated, are relevant in this sense.

However, television and radio, as the linear media of the corporations analysed, have a predominantly mechanical organisational structure (Burns and Stalker 1994), which makes it difficult for them to adapt to the new forms of creation and dissemination brought about by technological innovation. Therefore, in this era of digital transformation, it is crucial to move towards organisation that is open to change for more agile and flexible functioning. In this context, the mainstreaming of technological innovation actions through specialised departments or steering committees becomes a key strategy to streamline processes and work towards the concept of a “single company”.

From an organisational perspective, these actions include the implementation of digital production systems, the development of automation tools to optimise workflows, and the formation of partnerships to promote innovation. Digital Transformation, Infrastructure, or Technology Support departments are working on new forms of management based on optimising internal resources in balance with outsourcing. Larger and more complex initiatives in terms of technological innovation are carried out by companies awarded through tenders called by corporations, while simpler applications, defined by their incremental nature (Christensen 1997; Prudkin and Mielniczuk 2019), tend to be developed internally. In both cases, as reported in previous studies (Lam 2011; Storsul and Krumsvik 2013), the implementation of new technological systems implies changes in organisational structure.

In the area of distribution, the main initiatives are related to the use of social networks as another service for the distribution of content, the development of new apps to reinforce the presence of the corporations on mobile devices, the creation of podcast platforms with a mobile-first design, and the launch of OTT platforms. It is important to point out that the technological innovation processes that these organisations are undergoing have among their objectives the contribution of value to the societies in which they operate, fulfilling their public service mission. In this sense, although the corporations have distribution agreements with transnational OTT platforms, they have developed their own platforms to improve the quality of their services and contribute to the promotion of their co-official languages, given that their presence on these platforms is residual.

Finally, from the display point of view, the use of new Big Data and artificial intelligence techniques stands out, with the aim of improving the user experience through a more personalised offer. In addition, the migration towards 5G technology and the collaboration with UHD SPAIN demonstrate the commitment of these organisations to the adoption of innovative visual quality protocols.

Despite progress, the corporations face several challenges in technological innovation. One of the most significant is the rigidity of the socio-labour framework, which hinders the incorporation of new professional profiles and the implementation of changes within organisations. Moreover, resistance to change on the part of certain segments of the workforce and the high rate of unionisation represent additional obstacles to adapting to the new demands of the digital environment. Overcoming these challenges will require not only measures to modernise organisational and working structures, but also efforts towards fostering a culture of innovation and collaboration.

In conclusion, the current moment of transition towards the digital sphere positions technological innovation as a transversal need in all stages of audiovisual production in autonomous public broadcasting corporations in Spain. This becomes one of the main drivers of change for the transformation of these organisations (Oliván 2020). The main challenges of the current media environment are faced by investing in technological inno-

vation, adapting to new consumption models, and preserving the public service function in a constantly evolving digital context.

Finally, despite the exhaustive efforts made in this research, it is essential to acknowledge its limitations. Firstly, the sample size stands out. Although the methodology section details the selection criteria of the analysed corporations, expanding the scope of the study to include the entire universe of regional public entities in the Spanish context could enrich the research. Additionally, the temporal context can also pose a limitation, given the continuous evolution of technological innovation within entities such as those analysed. Taking these factors into consideration, it would be relevant to explore future lines of research, such as considering other regional corporations, both from Spain and other European countries, for a comparative analysis. Similarly, it would be interesting to examine the impact of technological innovation in regional public service media on audiences, aiming to understand how these innovations affect their consumption habits.

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