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Article

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European Research on Management and Business Economics (ERMBE)

Provided in Cooperation with:

European Academy of Management and Business Economics (AEDEM), Vigo (Pontevedra)

Suggested Citation: Medina, Esther; Mazaira, Andres; Alén, Elisa (2022) : Innovation in the broadcasters' business model: A bibliometric and review approach, European Research on Management and Business Economics (ERMBE), ISSN 2444-8834, Elsevier, Amsterdam, Vol. 28, Iss. 3, pp. 1-9,
<https://doi.org/10.1016/j.iedeen.2022.100202>

This Version is available at:

<https://hdl.handle.net/10419/294103>

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Innovation in the broadcasters' business model: A bibliometric and review approach[☆]



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ARTICLE INFO

Article History:

Received 30 May 2021

Revised 23 April 2022

Accepted 4 June 2022

Available online 28 June 2022

Keywords:

Mass media

Television

Traditional audiovisual media

Internet

JEL classification:

O320

ABSTRACT

The aim of this paper is to relate innovation with the broadcasters' business model, by way of a bibliometric and review analysis. This comprises to study how they have incorporated the innovation and the effect of a disruptive innovation (as the Internet and other technologies) in their business model. To achieve these objectives a review of the scientific literature has been carried out, followed of an analysis in which obtained papers were classified according three dimensions: (i) Value Architecture Innovation, (ii) Value Offering Innovation and (iii) the Revenue Model Innovation. These dimensions are based on a reinterpretation of a previous classification which consider that business model innovation materialises with a change of the company that affects at least one out of the three mentioned dimensions. In this way, a classification of the reviewed documents has been established based on these dimensions, showing that broadcasters have adopted a sustained business model innovation, with 48%, 44% and only 8%, respectively, in each dimension. By means of a scientific mapping of the keywords of the documents reviewed, a series of main and secondary topics have been established within each dimension, which have been analysed in terms of their contents and temporal evolution. It discusses the difficulties faced by broadcasters in adapting to the new audiovisual ecosystem. This study also argues that the Internet is one of the most disruptive innovations they have had to face and, therefore, in order to survive, they must take on this type of innovation to transform their business model.

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1. Introduction

Broadcasters' business models have gone from a simple structure, based fundamentally on advertising (Picard, 2012) to a complex structure with the emergence of new technologies. On the one hand, those related to emission: cable, satellite, Internet (Sohn, 2005), social networks (Álvarez Monzoncillo, 2011) and on the other hand, those related to the displaying content: set-top boxes, laptops, tablets and smartphones (Burroughs, 2019).

It was the large technological companies such as Netflix, Amazon and HBO, to name some of the largest, that created an innovative business model around audiovisual consumption (Chan-Olmsted & Ha, 2003; Rayna & Striukova, 2016; Afilipoaie, Iordache, & Raats, 2021). They were able to exploit the singularities of the Internet, new technologies (including mobile devices, big data and artificial intelligence) and have created a change consumption user (anytime,

anywhere and on any device) that has established itself as the natural one for younger audiences (Martin, 2021; Neira et al., 2021).

Innovation has been the great ally of broadcasters to adapt to this disruptive environment, knowing that it is key to provide the necessary competitiveness and ensure survival in the new audiovisual ecosystem (Crespo-Pereira & Legerén-Lago, 2019). In this way, researchers have investigated how this paradigm shift raises new questions related to political, cultural and economic contexts and to new formats and new forms of user participation (Sixto-García et al., 2022; Verboord & Nørgaard Kristensen, 2021). Other research has focused on innovation and existing theories of innovation (Hippel, 2005; Tapscot & Williams, 2006). Some researchers have turned to innovation and existing theories on this concept (Hippel, 2005; Tapscot & Williams, 2006), to understand and explain the evolution of media in general and of broadcasters in particular (Storsul & Krumsvik, 2013). Thus, for example, actor-network theory (Callon, 1984; Latour & Woolgar, 1986) has been applied in studies on innovation in broadcasters' newsrooms (Hemmingway, 2017). Also, Schumpeter's (1943) dynamic competition theory and the role of disruptive innovations (Christensen, 2000) are addressed in some studies on broadcasters (Ansari et al., 2016; Islam & Ekekwe, 2012; Stöber, 2004). There is also a growing literature on

[☆] We have no known conflict of interest to disclose.

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internet business models (ebusiness) by academics and consultants (Osterwalder & Pigneur, 2002; Sharma, 2013), the lines of these works mainly classify these models into different categories (Rappa, 2001; Timmers, 1998; Tapscott, Ticoll, & Lowy, 2000), in decomposing business models into their “atomic” elements (Afuah & Tucci, 2003; Hamel, 2000; Petrovic et al., 2001; Rayport et al., 2004; Weill et al., 2001), in the critical evaluation of existing business models and the redesign of innovative business models (Eriksson & Penker, 2000; Osterwalder & Pigneur, 2002 and Weill & Vitale, 2001). Others are increasingly interested in how environmental turbulence interacts with business model change (Wirtz et al., 2010) and in investigating the effect of market volatility on the processes by which firms try to adjust their operations and adapt their product portfolios to remain competitive. Therefore, in general, in the academic literature, broadcasters' innovation has been related to technology, product, process, regulation, leadership, organisational structure, culture and creativity (Storsul & Krumsvik, 2013) and business models emerging from the internet have been analysed, but no clear lines have been established for the study of broadcasters' business model innovation. To fill this gap, a bibliometric analysis and literature review has been carried out, especially with regard to the incorporation of the Internet and the formulation of hypotheses on the type of innovation that broadcasters should propose in order to face the future. The importance of these reviews lies in being key to the development of the research field (Díez-Martín et al., 2021) and this is demonstrated by the many research studies related to other fields through these analyses (Malpica Zapata et al., 2021; Valle et al., 2021). For the development of the bibliometric analysis and a literature review, the model proposed by Spieth and Schneider (2016) was reinterpreted. Their work contributes to the literature on business model innovation by providing a comprehensive definition of the construct, as many studies currently use the concept without providing a definition (Zott, Amit, & Massa, 2011). Furthermore, they contribute to the conceptual understanding of business model innovation as these authors consider that business model innovation materialises with a change of the firm in at least one of these three dimensions (i) Value Architecture Innovation, (ii) Value Offering Innovation and (iii) Revenue Model Innovation. Value Architecture Innovation refers to the exploration of new applications and combinations of a firm's base of resources and competences or within its external partner network (Spieth & Schneider, 2016). Value Offering Innovation refers to designing a new value offering that meets an existing but as yet unfulfilled customer demand, or that stimulates an additional but not yet consciously perceived demand (Spieth & Schneider, 2016). Finally, Revenue Model Innovation refers to the innovation of a firm's core earnings logic (Spieth & Schneider, 2016).

Thus, their conceptualisation of the construct fits perfectly with the possibility of classifying the academic literature to establish the innovative character of the broadcasters' business model, thus adapting to the objectives of the present work, which are posed in the following research questions:

Q (1): How have broadcasters incorporated innovation into their business model?

Q (2): How have they faced such a disruptive innovation as the Internet?

Q (3): Should broadcasters assume disruptive innovation in their business models?

2. Methodology

To fulfil the main aim of the paper and answer to the research questions, we are going to develop a systematic review of the literature. In this regard, it is important to remember that this type of review is neither a meta-analysis, nor a literature review in depth (López-Morales, 2018: 334). Its three distinctive characteristics are: (1) systematic and organized; (2) clear, replicable and updated; and (3) synthetical, because it combines evidence that responds to the

research questions pointed out before the review. Hence, to make the systematic literature review more accurate, it was divided in 4 stages (Gaur & Kumar, 2018). Document search, selection, and classification that are discussed in this section, while the fourth one consisted in the analysis and discussion of the results.

2.1. Search of documents

Literature search was conducted in the academic database Scopus because it is considered the largest database for multidisciplinary scientific literature (Aghaei Chadegani et al., 2013) and it includes a higher number of publications than JCR where one of its limitations is its limited coverage of business sciences (López-Morales, 2018). The document collection was done during November 2020, including all the previous documents until this date.

Different searches were performed to identify relevant papers for the review. As it can be seen in Table 1, we used different keywords to cover all the research related with innovation, broadcasters and business model. We also consider all the sub-areas of study directly or indirectly related with our topic, only the sub-areas in which the research will clearly not be related were not considered (e.g. Nursing or Chemical engineering). This process allowed us to identify 2070 documents.

2.2. Selection of documents

Then, the abstracts of the 2070 documents obtained were read to select those related to innovation and the broadcasters' business model. If reading the abstract there were doubts about the adequacy or not of the paper, the entire document was read. Following this process, 587 documents were selected.

2.3. Classification of documents

To establish the connection between innovation and the broadcasters' business model, in a second stage, the full texts of the selected documents were read and classified according to the dimensions proposed by Spieth and Schneider (2016). These authors consider that business model innovation materialises with a change of the company in at least one of these three dimensions: (i) Value Architecture Innovation, (ii) Value Offering Innovation and (iii) Revenue Model Innovation. In order to adapt the dimensions to the classification of the academic literature the relationships of the keywords (included in the titles, abstracts and keywords of the selected documents) were studied, through a scientific mapping or visualisation of bibliometric networks through VOSviewer (van Eck & Waltman, 2010), using as the type analysis and counting method “Co-occurrence,” as the unit of analysis “All keywords” and as the counting methods “Full counting,” and choosing for the threshold a minimum number of occurrences of a keyword of 5 (of the 3010 keywords, 105 achieve the threshold). The representation was performed using the Network Visualisation with 6 clusters (Fig. 1). According to this result, “main” and “secondary” topics were established to classify the documents. The JCR was used to evaluate the quality of the selected articles, as it is more restrictive than the Scopus indexes. Likewise, its topics have been previously established and are considered more consistent. To do this, for each of selected documents, the relative position of the journal in relation to the total journal including in the area for the corresponding year of publication was search and recorded employing the Journal of Citation Reports website (<https://jcr.clarivate.com/>).

3. Results and discussion

3.1. Value architecture innovation

Value Architecture Innovation refers to the exploration of new applications and combinations of a firm's base of resources and

Table 1

Description of the searches performed (1-4) including the number of documents, the applied filters and the number of documents obtained after filtering and deleting duplicates.

Search number	Search text	Initial no of documents	Subarea filter ²	Type of document filter	Language filter	no of documents after filtering	Avoiding duplicates	no of documents after deleting duplicates
1	innovation and broadcast* ¹	1117	"Engineering"; "Computer Science"; "Social Sciences"; "Business, Management and Accounting"; "Arts and Humanities"; "Decision Sciences"; "Economics, Econometrics and Finance"; "Materials Science"; "Multidisciplinary"; "Undefined"	"Article", "Conference Paper", "Review", "Book chapter", "Book" and "Conference Review" ³	"English"	987		987
2	innovation and television	1384				1115	"AND NOT" search 1	793
3	innovation and mass media	595				345	"AND NOT" search 1 and 2	290
4	innovation and "business model" and (broadcast* or television or "mass media")	72				63	"AND NOT" search 1, 2 and 3	0
Total documents								2070

¹ the asterisk was used to include different possibilities: broadcaster, broadcasters, broadcasting, etc.

² only the sub-areas related to the television ecosystem were selected.

³ "Note", "Editorial" and "Short Survey" were not considered to add value to this review.

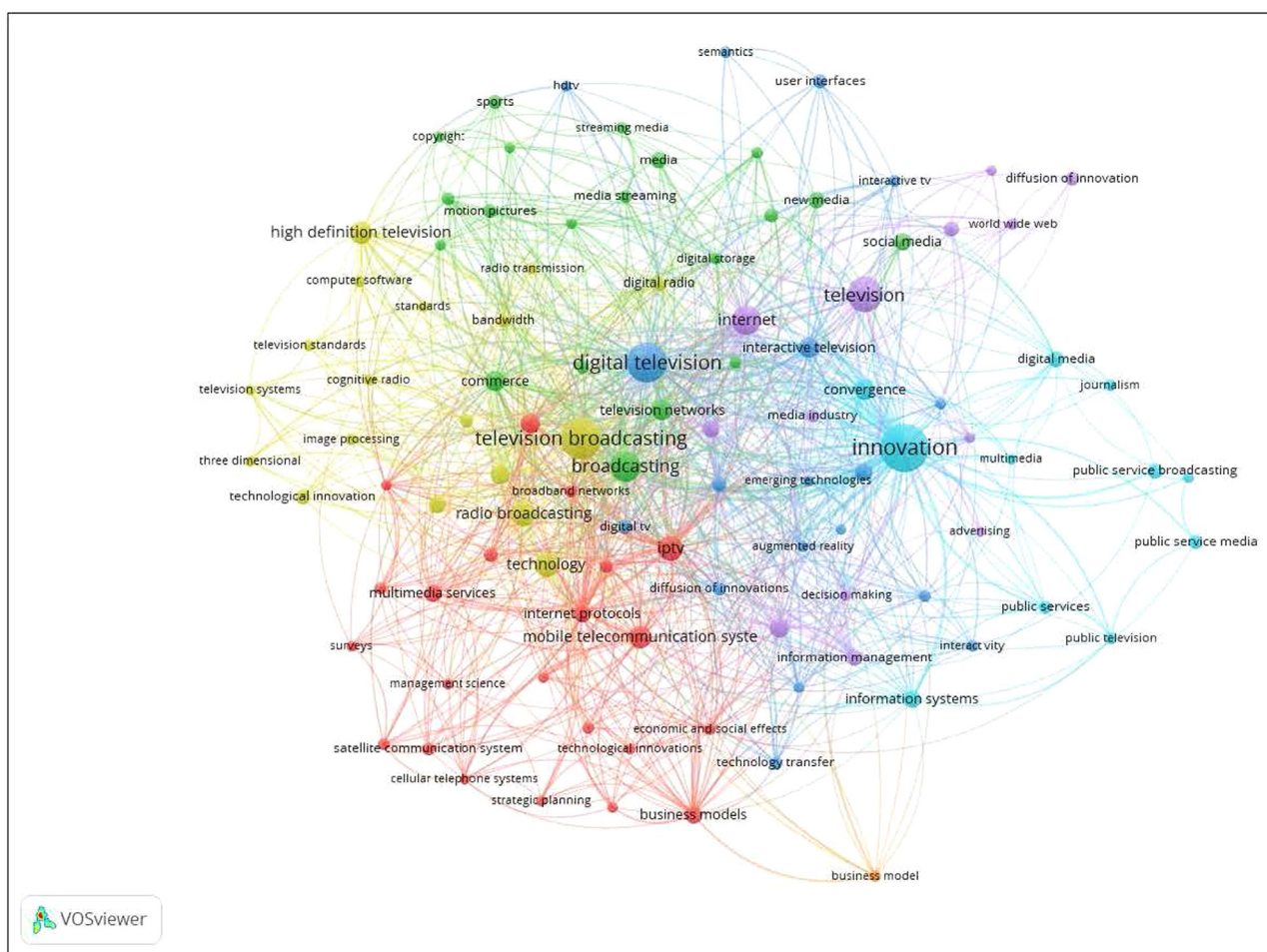


Fig. 1. Visualisation of bibliometric networks (scientific mapping) performed with VOSViewer, with the Network Visualisation method using 6 clusters (represented in different colours) of the keywords with an occurrence >5 (labels in the figure). The size of each circle is proportional to the number of documents that include the keyword with which it is labelled. The lines between the keywords represent the relationships between the papers that include these keywords. (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

competences or within its external partner network (Spieth & Schneider, 2016). Of the three dimensions studied, this one accumulates the largest number of documents analysed, with 48% of the total. Documents prior to the 1980s are very scarce (Fig. 2).

In the middle of this decade, the scientific production related to this dimension increased, and from the end of the 1990s onwards it

increased continuously, although with a great deal of variability between years. Fig. 3.A shows the main and secondary topics of this dimension. The main and secondary topics established are consistent with the topics from the JCR (Fig. 1SM.A), so that "communication" is related to the main topic of "products," the JCR topics of "engineering" and "telecommunications" are related to "technology". In Value

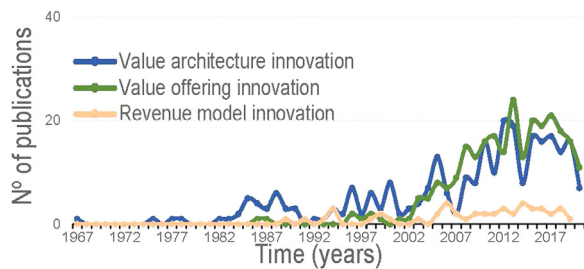


Fig. 2. Temporal evolution of the number of annual publications from 1967 to 2020, obtained in the bibliographic review carried out and classified according to their inclusion in each of the dimensions of Spieth and Schneider (2016).

Architecture Innovation, the main topics with the highest number of documents are “technology” (33% of the documents in this dimension), “product” (30%) and “regulation” (15%) (Fig. 3.A). Also secondary topics are included in Fig. 3.A. There are several reasons why the topic “technology” is the main driver of research. On the one hand, technology produces a direct change on broadcasters and an indirect one through the new way of using this technology. And finally, technological development generates new user behaviour, which research has not been able to ignore (Steinmann, 2003). As for the secondary topics of technology, it is worth noting their evolution over the different decades, especially in the case of “broadcasting system,” which, with the advent of convergence between television and the Internet, practically disappears from academic studies. The opposite effect happens with “sports” and “radio,” which in the decade of the 2010s accumulate the largest number of papers. The documents related to “video” do not maintain a remarkable evolution. The topic “sports” seems to be the perfect ally of broadcasters’ innovation and a sure bet to guarantee audience. Media innovation has always been linked to sports events (the Olympic Games, soccer broadcasts, etc.), both in its contribution to the universalisation of the narrative of technology (Humphreys & Finlay, 2008; Miah, 2013) and to the improvement of transmission and production systems with the use of technology (Liang, 2013). In addition, the use of algorithms and statistics have been crucial in enriching such narratives (Bergeron, 2009; Decroos et al., 2017; Hahn et al., 2018). In relation to the main topic “product,” television “formats” (its major secondary topic, Fig. 3.A) are a sign of unprecedented change in television that anticipates demands by responding to the evolutions of the audiovisual ecosystem (Keane & Moran, 2008). Innovations in “narratives” are also a classic of academic studies because they allow assessing the quality of programming and are used as a method to encourage audience participation and engagement (Murphy, 2014). In the case of “program,” their analysis not only shows the possible existing social reality, but it is also possible to trace the differences between public and commercial channels. Thus, public media (PSB) consider their audience as citizens, while commercial channels cater to their audience as consumers (Koeman et al., 2007). Within the main topic of “regulation,” it is worth noting how the radio spectrum has undergone different innovative regulatory restructurings as technology has been introduced into the audiovisual ecosystem. Certainly, spectrum regulation has been a strong barrier to entry for other competitors due to the economic characteristics of the broadcasting market. Such a spectrum can be seen as an indicator of the transition from the hegemony of broadcast television to a post-broadcast era of convergent and multiplatform media (Flew, 2006). In the case of PSBs, one of the causes of their structural crisis in innovating the business model is the decline in political support and funding received, along with privatisation and deregulation (Donders et al., 2012; van der Groep, 2010). In relation to the rest of the secondary topics, it is noteworthy that the papers on “public service” increase decade by decade from the ‘80s onwards (Fig. 3.A). Also relevant is the evolution of “educational broadcast,” which has not been related to immersive

technologies, as will be analysed in section 5, and which has decreased the documentation related to this secondary topic from the ‘90s onwards (Fig. 3.A).

3.2. Value offering innovation

Value Offering Innovation refers to designing a new value offering that meets an existing but as yet unfulfilled customer demand, or that stimulates an additional but not yet consciously perceived demand (Spieth & Schneider, 2016). This dimension accumulates a similar number of analysed documents as the previous one, with 44% of the total. Documents prior to the mid-1990s are very scarce (Fig. 2). From then on, and in a remarkably similar way to the previous dimension, they increase steadily. Fig. 3.C shows the main and secondary topics of this dimension. The main and secondary topics established are consistent with the topics from the JCR (Fig. 1SM.B). “Communication” and “telecommunications” are related to the two main topics (“convergence” and “emerging technologies”), while the JCR topic of “sociology” is also related to the two main topics because it deals with technological change in the media from the point of view of user behaviour. Finally, the “business” topic is related to all the new business models incorporated in the main topic of “convergence”. In the innovation of the value offer, the main topics are “convergence” (70% of the documents in this dimension), “emerging technologies” (19%) and “interactivity” (11%) (Fig. 3.C). Thus, in this dimension, the main topic “convergence” is in the majority and, thanks to the advance of digital technologies, telecommunication networks, media and devices have been able to converge (Jarvenpaa & Loebbecke, 2009; Kim et al., 2008). This has led to major paradigm shifts for broadcasters, who have had to create synergies with the Internet, mobile devices and social networks (Direito-Rebollal et al., 2019). As the boundaries between these channels become more ambiguous, the competition between them over winning customers (Kim et al., 2008). Thus, digital convergence must be understood as a phenomenon that is attributable to the emergence of new business models from the development of the Internet, although it is not only due to this factor, but also to industrial deregulation, business globalisation and new competition strategies (Rim et al., 2009). However, broadcasters progress towards convergence has been slower, more uneven and partial than many had anticipated (Blackman, 2004). To this must be added the complication of incorporating another new convergence process brought about by mobile television, one of the outstanding secondary topics “mobile,” which has become a reality with telecommunications infrastructures, information technology and media content (Jarvenpaa & Loebbecke, 2009). Of the other secondary topics of “media convergence,” “Internet” (7%, representing 2% of the total number of documents reviewed), “IPTV (Internet Protocol Television)” (12%) and “digitisation” (3%) should also be highlighted. Thus, the adoption of the Internet by the television industry has been a considerably turbulent and lengthy process. The Internet problematised television as a product and threatened the industry’s business models, resulting in widespread uncertainty about its adoption (Taneja & Young, 2013). IPTV, with the secondary topic “IPTV,” became a subject of interest in the academic world, related to broadcasters’ innovation. This interest is due to the fact that it differs from traditional digital television systems, which generated great speculation. From its conception, the goal of IPTV was to provide alternative viewing channels over the Internet, rather than to enhance current viewing channels (enhanced television) or provide users with additional control over current viewing channels (personal television) (Tseklevs et al., 2009). The IPTV business model also includes triple play (another of the secondary topics to be highlighted in this dimension), pay TV, pay VOD, advertising-based TV, etc. (Tseklevs et al., 2009). In other words, alternative business models that opened up other possibilities for commercial exploitation. Finally, as a secondary topic, the digitalisation of broadcasters

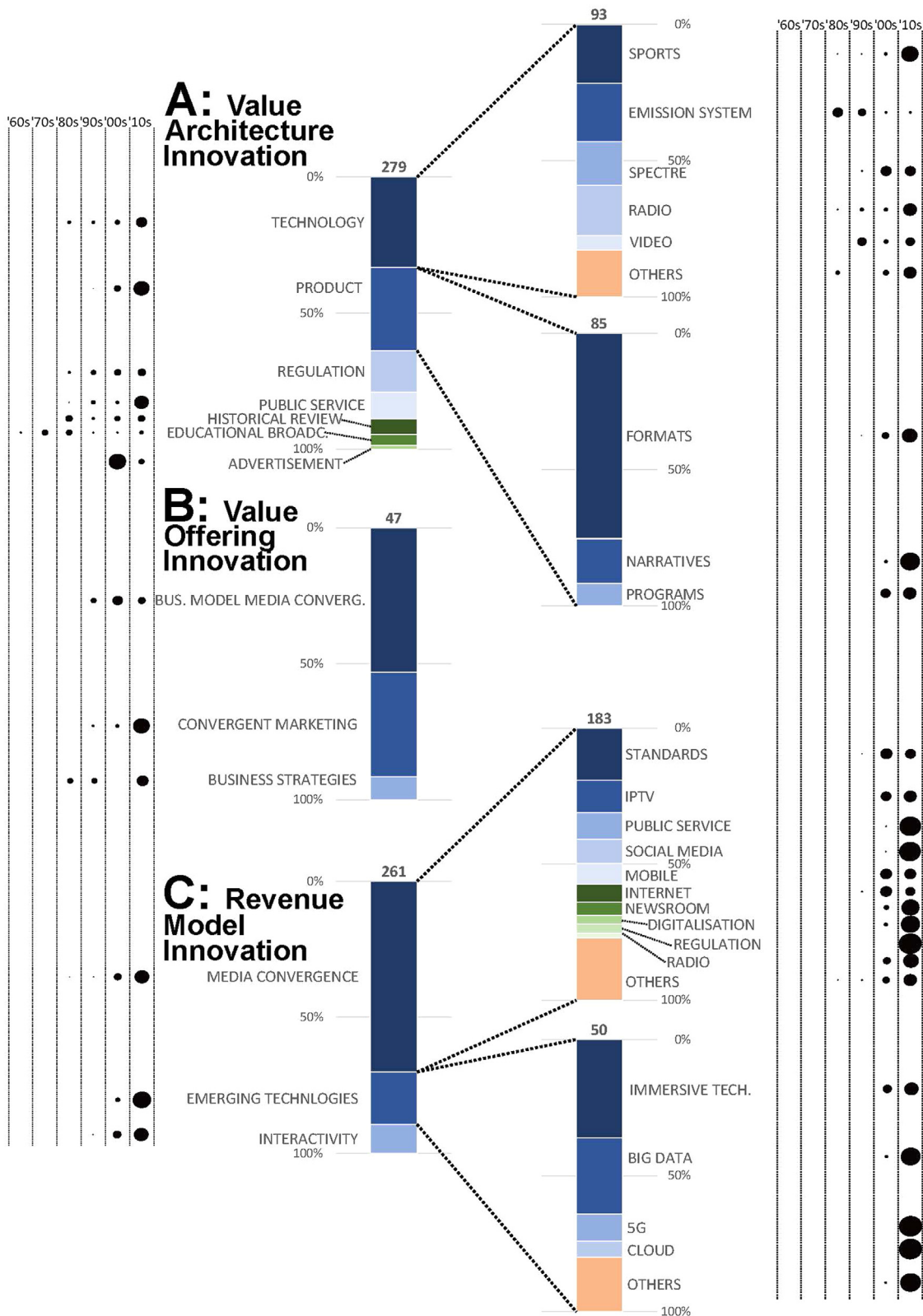


Fig. 3. Central part of the graph. Figures on the left: stacked bars showing the percentage shares of each of the dimensions of Spieth and Schneider (2016) according to the main topic identified in the publications included in the literature review carried out. A: Value Architecture Innovation; B: Revenue Model Innovation; C: Value Offering Innovation. Figures on the right: stacked bars showing the percentage shares of each of the major main topics according to the corresponding secondary topics identified in the publications included in the literature review. "other" in "media convergence" includes: "files", "multi-devices", "streaming", "transmedia storytelling", "VoD", "web", "crossmedia" and "OTT"; "other" in "emerging technologies" includes: "neuroscience", "legislation", "speech to text", "AI" and "IOT". Sides of the graph, time evolution (decades) of publications for each of the main and secondary topics represented. The size of the dot is proportional to the number of documents corresponding to the topic.

stands out, which has also affected their business model and has been one of the main drivers of innovation processes in broadcasters (Larrondo et al., 2016). Apart from the reduction of production costs and the benefits of speed, it allows the distribution of content through different media and thus, theoretically, opens endless opportunities (Blackman, 2004).

In relation to the second main topic of this dimension, emerging technologies, the majority secondary topic refers to “immersive technologies” (36%), followed by “BigData” (28%), “5G” (10%) and “cloud” (6%). Within “immersive technologies” (mostly including “3D” and occasionally “AR,” “VR” and “virtual studios”), Augmented Reality (AR), as an innovative technique, has gradually been implemented in broadcasting sectors, and there is an optimistic outlook on the installation of these contents in broadcasting, as it is customisable, dynamic and interactive (Yan & Hu, 2017). For the time being, in the context of broadcasters, individual efforts have been made to use the possibilities of AR to enhance or transform various aspects of the broadcasting chain, although these efforts appear to be disjointed (Saeghe et al., 2020). Moreover, the documents in which “AR” is discussed represent only 1% of the documents analysed. Finally, the secondary topic “5G” should be highlighted. A technology that will undoubtedly have a particular impact on broadcasters in the short term and which, for the moment, has more literature in the documents selected for this review than virtual reality or augmented reality (two of the topics that, together with AR, are included in the secondary topic “immersive technologies”). In relation to the main topic “interactivity” (mainly “iTV” and incidentally: “3D,” “HBBTV,” “multi-devices,” “OTT,” “SMS,” etc.), the traditional TV viewing experience is being replaced by experiences on devices, in which viewers interact with TV content, using them as second screens (Hussein & Mu, 2017). The current TV scenario is suffering profound changes, mostly caused by a transformation in consumers’ habits (Abreu et al., 2018). To adapt to this new context, pay-TV operators’ services are adding new features to ensure customer flexibility in terms of content availability and mobile access. At the same time, OTT operators are offering a great diversity of online videos, which has substantially increased the possibilities for interactivity. This scenario leads to the hybridisation of the ways TV is viewed (Abreu et al., 2018), and generates new competitors for broadcasters.

3.3. Revenue model innovation

Revenue Model Innovation refers to the innovation of a firm’s core earnings logic. Firms develop new ways of generating earnings and managing their costs while simultaneously meeting customer needs and providing the firm with the highest possible profit it can derive from its resources and competences (Spieth & Schneider, 2016). This dimension accumulates a much lower number of papers than the previous two, representing only 8% of the total. The existing documents on this topic in the mid-2000s are very scarce (Fig. 2). Since then, they have increased discreetly and steadily up to the present day. The main topics established are consistent with the topics from the JCR (Fig. 1SM.C). The high percentages of the JCR topics “business” and “economic” are related to the three main topics.

In Revenue Model Innovation, the possibilities of new business models offered by media convergence is one of the topics most followed by the scientific community, with 53% of the documents, followed notably by the different advertising formats and their adaptation to new technologies, with 38% of the documents, i.e., with the two main secondary topics “business model media convergence” and “convergent marketing”. Convergence, in this dimension, being relatively new, attempts to understand them from a systemic perspective have been thus far few or limited (Rim et al., 2009). In their adaptation to the new audiovisual ecosystem, initially separate industries increasingly operate in the same market space, encroaching on each other. This causes a complex and confusing scenario as

they must face the competition they already had as well as the new competitors and the pressures of new mergers arising from this new ecosystem (Blackman, 2004; Lai & Chou, 2017). Thus, the transformation process triggered by the Internet has caused a total dissolution of the value chain of traditional industries by replacing them with totally new ones (Rim et al., 2009).

3.4. Q(1): how have broadcasters incorporated innovation in their business model?

In the review and classification carried out, the innovation with the business model was mostly related to innovation of the value offer and innovation of the value architecture, representing 92% of the works, with innovation being incorporated gradually into the business model. Only 8% corresponded to innovation in the revenue model. Therefore, broadcasters have reacted when there has been a disruptive innovation that has affected their fundamental principles: linearity in their programming and a business model based on advertising, in most cases. This is reflected in the fact that practically all the contributions related to the main topic “convergence” are from the present century and were mainly published in its second decade. The paradigm shift in terms of consumption and user behaviour did not come from broadcasters, companies already operating in the market, but from outsiders, such as Netflix, as in most cases of disruptive business model innovations (Rayna & Striukova, 2016). In this way, these companies, outside the market, have created new business models that have caused broadcasters to require a necessary adaptation of their entire traditional model (Chambers, 2016; Islam & Ekeke, 2012). However, the low representativeness of the documents related to the revenue model and the difficulty of regulating the new audiovisual scenario (Hutchins, 2016; Ryan & Shinnick, 2010) highlight that they are in transformation processes without a new business model that meets their needs. The need for new ways of measuring their audiences through Big Data also reaffirms this lack of model. At the moment this secondary topic has few contributions in the first decade of the 21st century (Fig. 3.C.), although everything suggests an explosion in academic research, since, for many, this new approach to audience research promises more stability, perhaps even predictability, for a sector that is often characterised by risk and uncertainty (Kelly, 2019). On the other hand, the topic of “immersive technologies,” referring to recent advances in technologies that enable immersive representations, such as virtual, mixed and augmented reality, have raised the interest of the broadcast and research communities (Saeghe et al., 2020), which is increasing greatly in the second decade of the 21st century (Fig. 3.C.). This means that they can establish another line of development more suited to the objectives set in the broadcasters’ mission, especially at the level of product innovation (main topic “product”), which during the first decade of the century had a strong interruption and increased in the second decade of the century (Fig. 3.A). It should be noted that immersive technologies are not related to the educational part, which has a certain notoriety, although the number of works is very low, during the decades of the ‘60s and ‘70s, extending to the ‘80s and then declining in the ‘90s (Fig. 3.A). It should be noted that one of the opportunities to enhance the business model of broadcasters is to incorporate educational content (Crespo-Pereira et al., 2017), and everything suggests that will do this by using immersive technologies (Saeghe et al., 2020; Tseklevs et al., 2009; Yan & Hu, 2017). On the other hand, these “real-virtual and online-offline boundaries’ disappearance and linkage and expansion” will dramatically upgrade the implementation and value of cultural contents (Jung & Lee, 2019). This will involve broadcasters employing disruptive technologies to strengthen their engagement with culture. Also, in the second decade of the 21st century (Fig. 3.C), the contributions of other topics such as “cloud” and “5G” were developed in an exclusive way. The future of the audiovisual industry is to offer immersive and interactive

experiences from any device at any time and place. This development depends on the full deployment of 5G technology (Crusafon, 2018). Thus, the spectrum (topic “spectrum”) had an increase from the first decade of this century and was maintained during this last decade (Fig. 3.A.), becoming a constant in media research, which, with 5G, will continue to be maintained.

Broadcasters can be compared to the traditional press. At first, the press turned its entire core business to the Internet without a consolidated model, in the hope that digital advertising would bring in revenues that never materialised in a sustainable model. In recent years, the search for new business models has become a key objective for newspaper companies to ensure the survival of newspapers in the digital convergence scenario (Casero-Ripollés, 2010), and newspapers have had to consider new business models with the possibilities of differentiation offered by the Internet (Freeman, 2001). Thus, strategies for the migration from print to digital have had to be promoted, as is the case with The Financial Times and The Telegraph (Schlesinger & Doyle, 2015), and different models have already been adopted, as is the case with The Wall Street Journal, which combines free and paid content (freemium model) (Vara-Miguel et al., 2014). The academic literature has proliferated as these models have emerged.

3.5. Q(2): how have they faced such a disruptive innovation as the internet?

The adoption of the Internet by the television industry has been a considerably turbulent and protracted process. The Internet problematised television as a product and threatened the industry's business models, resulting in widespread uncertainty about its adoption. For the first time, television networks had to adapt their offerings to an entirely new platform with quite different capabilities than traditional platforms (Taneja & Young, 2013). The whole benefit of the Internet is that it moves away from keeping audiences on TV channels. In fact, broadcasters initially integrated the Internet as a complementary tool to enhance the value of their products offline rather than as a new means of additional business opportunity (Chan-Olmsted & Ha, 2003). The Internet, in economic theory, is treated as a revolutionary technology and has been considered evolving. However, according to Schumpeter's dynamic competition theory, it is categorised as a disruptive technology that can generate creative destruction, i.e., affect the economic fundamentals of markets and industries and destroy existing actors and structures if adaptation and change do not occur (Küng et al., 2008). Broadcasters, in a first stage, have presented a defensive resistance to the Internet, and are now trying to find ways to survive it (Taneja & Young, 2013). However, the Internet alone does not create a competitive advantage. Advantage is gained primarily through innovation, inventive pricing, etc. Internet technology offers new opportunities for differentiation (Freeman, 2001), which is undoubtedly one of the characteristics that broadcasters will have to take advantage of. Considering that the Internet is part of the destabilisation of broadcasters, together with the technological advances related to audiovisual consumption, only 2% of the works analysed in the academic world are related to the innovation of their business model, a figure somewhat lower than expected, since the Internet puts their entire business model in check.

3.6. Q(3): should broadcasters assume disruptive innovation, through disruptive technologies, in their business model?

It has been shown, in the classification of innovation in the business model of broadcasters, that they have been conservative in their innovations, with a pattern of incremental or sustained innovation, due to the difficulty of adapting to disruptive business models through disruptive innovations (Campos-Freire et al., 2016; Storsul & Krumsvik, 2013). This is evident in the percentages of documents,

being in first place, those related to the main topic “convergence,” with 31%, and in second and third place, the main topic “technology” and “product,” with 16% and 14% respectively. In other words, incremental adaptations at the technological level and the innovation of new “narratives,” “formats” and “programs” are two of the main innovations in the business model related to the innovation of the value architecture. In the case of the main topic “convergence,” broadcasters have had to respond to disruptive innovations of the new media ecosystem (Veo, 2009). Another noteworthy aspect of this bibliometric analysis is the lack of innovation related to the innovation dimension of the revenue model, with 8% of the works, making it clear that it is practically non-existent. In this way, the lack of revenue model solutions for the adaptation of broadcasters in their digital transformation processes or adaptation to the new business models emerging from the Internet is evidenced, adding to the lack of model evidenced in Section 4. Despite the efforts of broadcasters to adapt their newsrooms with new dedicated structures, to experiment with new formats and to produce content exclusively for the web and social media, and that the most active ones tried to include innovation as a driver of change to ensure their survival in the new audiovisual ecosystem (Crespo-Pereira et al., 2017; García-Perdomo, 2021), these efforts have not been enough. Moreover, the broadcaster has found it difficult to put the user at the centre of the business to ensure the change from a product-centred orientation to a customer-centred orientation (Lowe, 2008). In a context of major transformations in consumption habits and an increase in the offer of on-demand services, the television ecosystem requires new and disruptive approaches to face this demanding scenario (Abreu et al., 2018).

Broadcasters are already facing new technologies (BigData, immersive experiences through mixed, augmented, virtual and 3D reality, 5G, etc.) that will affect their business models. At the moment, individual efforts, such as with Augmented Reality (“AR”), have been made to improve or transform various aspects of the broadcasting chain, although these appear to be disjointed (Saeghe et al., 2020). In addition, current AR is mainly applied in news and sports programmes, but there is a need to develop the potential applications of AR in a wide range of broadcasting programmes and for it to become an indispensable part of broadcasting (Yan & Hu, 2017). Another adaptation they must face is determined by 3D. While the main thrust and innovation of the 1990s was to bring the Internet to the television environment, the 21st century will be about bringing television to the Internet and 3D to television to create a personalised and immersive user experience (Tseklevs et al., 2009). Thus, a cross-device system (Hussein & Mu, 2017), a new television era of converged wireless and mobile content delivery, user-authored content, multimodal interaction, intelligent personalisation, intelligent space awareness, and 3D content sensations, which will create ambient and immersive experiences (Tseklevs et al., 2009), is envisioned that broadcasters will have to cope with. Therefore, as interactive media markets become increasingly segmented, broadcast products need to capture the characteristics of the corresponding times maintaining its own idiosyncrasy, optimising their own mode of operation (Gao, 2015). The Internet, technological innovations, and the changing media environment, with telecom operators and OTT TV, as well as online media operators around the world, offer endless opportunities to consumers that broadcasters will have to seize with the emergence of new business models (Bright, 2011; Lai & Chou, 2017; Mangani, 2000; Rohman & Bohlin, 2010). For all these reasons, broadcasters will have to assume disruptive innovation, through disruptive technologies, in their business model.

4. Conclusion and final remarks

Based on the above discussion, it can be concluded that innovation in the broadcasters' business model has been mainly related to

innovation in the value offer and innovation in the value architecture, i.e., broadcasters' concerns have been focused on product innovation, adapting it to the convergent environment and based on technological evolution. On the other hand, the gap in revenue model solutions for their adaptation to the new business models emerging from the Internet is evident.

Another of the conclusions that has been established is that in the reviewed documents it has been detected that there are no robust research groups in the scientific community that have as an established line of research the one addressed in this bibliometric analysis. Thus, of a total of 1107 authors of the total number of papers, 1041 have signed one paper (94%), 50 two papers (5%) and 11 three papers (1%), while only 0.5% of the authors have participated in more than 3 papers (3 authors in 4 papers and only 1 author in 5 or 6 contributions). Similarly, the number of citations between the different papers in this bibliometric analysis is exceptionally low (at the time of the bibliometric analysis, 33% of the papers are not cited, while 14% are cited only once and 16% of the papers are cited more than 10 times), again demonstrating the lack of a solid body of knowledge on the subject studied. Moreover, co-citation among the reviewed papers is exceptionally low, in no case exceeding 10 citations, with only 109 papers with between 3 and 10 co-citations. This calls for lines of research that focus on broadcasters' innovations in general and specifically on innovations in their business models. The changes to which they have been exposed imply that they will have to face digital transformations, which also opens another possibility for a very interesting line of research, which is currently a gap in the academic world. In addition, research with case studies of current practices in broadcasters should be considered.

Supplementary materials

Supplementary material associated with this article can be found in the online version at doi:10.1016/j.jedeen.2022.100202.

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