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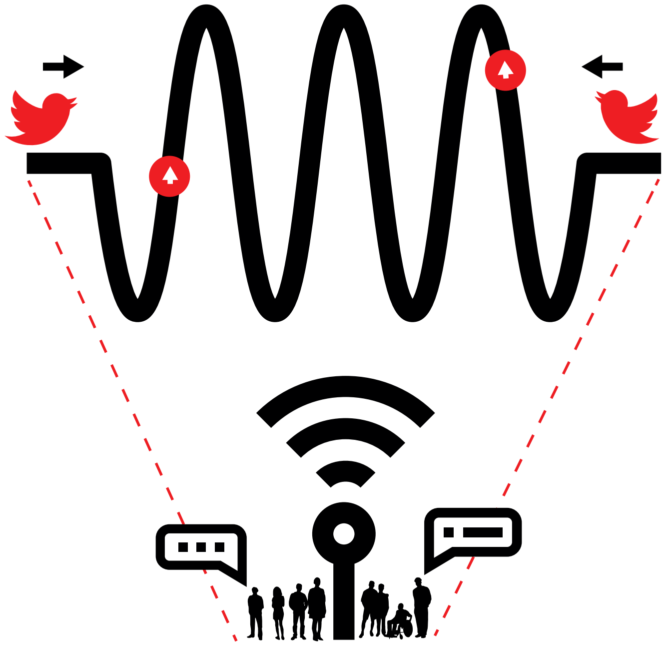

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Why are some websites researched more than others? A review of research into the global top twenty

Mike Thelwall

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Abstract

The web is central to the work and social lives of a substantial fraction of the world's population, but the role of popular websites may not always be subject to academic scrutiny. This is a concern if social scientists are unable to understand an aspect of users' daily lives because one or more major websites have been ignored. To test whether popular websites may be ignored in academia, this article assesses the volume and citation impact of research mentioning any of twenty major websites. The results are consistent with the user geographic base affecting research interest and citation impact. In addition, site affordances that are useful for research also influence academic interest. Because of the latter factor, however, it is not possible to estimate the extent of academic knowledge about a site from the number of publications that mention it. Nevertheless, the virtual absence of international research about some globally important Chinese and Russian websites is a serious limitation for those seeking to understand reasons for their web success, the markets they serve or the users that spend time on them. The sites investigated were *Google*, *YouTube*, *Facebook*, *Baidu*, *Wikipedia*, *QQ*, *Tmall*, *Taobao*, *Yahoo*, *Amazon*, *Twitter*, *Sohu*, *Live*, *VK*, *JD*, *Instagram*, *Sina*, *Weibo*, *Yandex*, and *360*.

Keywords

Webs; Major websites; Popular websites; Scholarly interest; Academic research; Success reasons; Comparative research; Cybermetrics; *Google*; *YouTube*; *Facebook*; *Baidu*; *Wikipedia*; *Yahoo*; *Amazon*; *Twitter*; Review article.

1. Introduction

The web is important source of information and communication for work, social and personal reasons. Social scientists therefore need to understand how it affects people's lives. For example, an inability to access websites can cause problems in richer nations (**Dutton**; **Reisdorf**, 2019), knowledge of usage patterns can help marketing initiatives (**Mariani**; **Di-Felice**; **Mura**, 2016), and investigations of social network sites are important to understand modern political movements (**Bolsover**; **Howard**, 2019). Websites offer many different affordances and it is important to investigate the most popular sites and genres so that their individual values can be known. Despite this, there are apparently no academic studies of the extent to which popular websites have been researched, a gap that the current paper addresses.

There have been previous reviews of internet-related research, especially in the early days of the web, finding that no academic discipline dominates it (**Hunsinger**, 2005; **Silver**, 2004), and the consequent lack of a systematic approach allows important sites to be ignored. An investigation of (online) social media research 2004-11 found it to be exponentially growing, with most articles originating from the USA (61%) or UK (11%) (**Coursaris**; **Van-**

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Osch, 2014). A later study confirmed the exponential growth but, with different methods, found China to be second most productive country (**Gupta**; **Dhawan**; **Gupta**, 2015). There have also been reviews of social science research about individual websites, such as *Facebook* (**Caers**; **De-Feyter**; **De-Couck**; **Stough**; **Vigna**; **Du-Bois**, 2013), or an aspect of use of a website, such as health information on *YouTube* (**Gabarrón**; **Fernández-Luque**; **Armayones**; **Lau**, 2013) but there are not enough of these to be helpful for a systematic comparison of website research.

This article assesses whether globally popular websites have attracted substantial research interest, in terms of published journal articles related to them or mentioning them

This article assesses whether globally popular websites have attracted substantial research interest, in terms of published journal articles related to them or mentioning them. The extent of academic interest in a website seems likely to be affected by a range of factors other than its overall popularity, however, and the following are hypothesised to be relevant: Country of use (popularity in countries that do not publish in international journals may lead to less research); Age (newer sites have had less time to be researched); provision of raw data for other purposes (such data increases the chance that a site is exploited for tangential research); novelty (more novel sites are more important to investigate), whether it contains user-generated data to investigate (**Chi**, 2008) and whether it supports activities within extensively researched areas. The citation impact of research about a website may also be an indicator of the extent to which the site is considered important within academia. Factors that may affect citation rates include country of use (since there are national differences in average citation impact) and website age (since newer websites have had less time for follow-up research about the site to cite earlier research about it).

2. The content of *Scopus*-indexed research focusing on a top 20 website

This section briefly reviews research into each of the top 20 websites in April 2019 (according to *Alexa*: Table 1; see the Methods for more details) published in *Scopus*-indexed journal articles. It focuses on research from a social science perspective that deals with affordances of the site for users, how the site is used, or characteristics of the site that are relevant to uses of it. Each section is mainly based on a search for the name of the site in *Scopus*-indexed journal article *titles* to restrict attention to research that has the site as a major focus or component. This section is not a traditional literature review in the sense of critically analysing the research covered. Instead, it attempts to characterise the scope of the papers. This gives insights into what has been researched but not how it was researched or what was discovered.

Table 1. Background information about *Alexa.com*'s top 20 websites in April 2019.

Rank	Site	Birth	Country	Type
1	*Google*	1998	USA	Search, email, scholar, maps, others
2	*YouTube*	2005	USA	Video sharing
3	*Facebook*	2004	USA	Social network
4	*Baidu*	2000	China	Search engine, email, maps, others
5	*Wikipedia*	2001	USA	Encyclopaedia
6	*QQ*	1999	China	Instant messaging
7	*Tmall*	2008	China	Retail (B2C)
8	*Taobao*	2003	China	Retail (C2C)
9	*Yahoo*	1994	USA	Search, email, others
10	*Amazon*	1994	USA	Bookstore, retail (B2C)
11	*Twitter*	2006	USA	Microblog messaging
12	*Sohu*	1996	China	Search, online gaming, others
13	*Live*	2005	USA	Email, calendar, office software, others
14	*VK*	2006	Russia	Social network
15	*JD*	1998	China	Retail (B2C)
16	*Instagram*	2010	USA	Photo sharing, video sharing
17	*Sina.com.cn*	1998	China	Search, email, maps, others
18	*Weibo*	2009	China	Microblog messaging
19	*Yandex*	1997	Russia	Search, email, maps, others
20	*360.cn*	2005	China	Internet security, games, others

Google

Google is primarily known as a web search engine. There have been many studies of search engine user queries based on their search engine log files (**Jansen**; **Spink**; **Saracevic**, 2000) but none of these involved *Google* since it did not share its logs with researchers. The search behaviour of *Google* users has also been investigated, seeking to understand the search process (**Lorigo**; **Pan**; **Hembrooke**; **Joachims**; **Granka**; **Gay**, 2006). One article also analysed *Google* search output, seeking evidence of coverage or bias (**Vaughan**; **Thelwall**, 2004).

Many early papers also analysed the impact of *Google* on specific use contexts, such as library services (**Norris**, 2006), on the findability of online services (**Ashmore**; **Gross**, 2006), on specific types of user, such as deaf web users (**Smith**, 2006), or on specific information needs, including health-related (**Pérez-López**; **Pérez-Roncero**, 2006). Some research not focusing on *Google* searching nevertheless found it to be an important component of information behaviour, as in the example of an investigation into problem solving in a chemistry laboratory (**Shultz**; **Zemke**, 2019). Overall, however, since the web has become the default source for many types of information, there are many purposes and contexts for web searching and so it probably can never be fully understood. Nevertheless, most researchers are probably experienced users of *Google* and so detailed studies may be less important than they were in the early years of the search engine.

It seems unlikely that the volume of research reflects the volume of use; *Gmail* is probably far more widely used than *Google Scholar*

Google provides many services other than web search, including email, word processing, spreadsheets, discussion groups, academic search, image search and mapping. Each of these may generate dedicated bodies of social science research but this has not always occurred. For example, in April 2019 *Scopus* reported 341 journal articles containing the phrase "*Google Earth*" in their titles, compared to 248 for *Google Scholar*, 91 for *Google Maps*, 58 for *Google Books*, 29 for *Google Docs*, 13 for *Google Drive*, 11 for *Gmail*, and 1 for *Google Photos*. It seems unlikely that the volume of research reflects the volume of use; *Gmail* is probably far more widely used than *Google Scholar*. The case of *Google Scholar* is interesting because it fits well into the active research area of scientometrics by providing citation data (**Bar-Ilan**, 2008). Moreover, it provides a convenient source of data for analysis and so can be researched relatively quickly and cheaply, at least compared to standard *Google* searches. Thus, the volume of research about a service may be influenced by the pre-existence of academics with relevant expertise and the ease with which the service can be researched. In contrast, *Gmail* may be little researched because email is well understood and *Google*'s offering is not fundamentally novel.

YouTube

There is a substantial body of research into aspects of *YouTube* culture, such as an analysis of Black women natural hair vloggers (**Neil**; **Mbilishaka**, 2019), factors that helped the Ice Bucket Challenge to spread virally (**Kwon**, 2019), *YouTube* commenting (**Murthy**; **Sharma**, 2019; **Thelwall**; **Sud**; **Vis**, 2012) and Mexican protest songs (*corridos*) as an alternative collective memory about traumatic events (**Castillo-González**; **Leetoy**, 2019). The specificity of these examples nevertheless suggests that their results would not generalise easily and that *YouTube* cultures may be too varied to be investigated systematically.

YouTube is also used by social scientists as a source of public evidence about a topic, even though the site itself is not relevant to the enquiry. For example, teams have investigated parents' video reactions to their children's autism diagnosis (**Lloyd**; **Osborne**; **Reed**, 2019), family reactions to being affected by the opioid crisis in the US (**Johnson**; **Worth**; **Brookover**, 2019), and squirrel videos to help understand their behaviour (**Jagiello**; **Dyderski**; **Dylewski**, 2019). Many articles are also hybrid, discussing the *YouTube* aspect of a wider issue, such as the representation of medical aspects of gender transformation (**Miller**, 2019).

There are many investigations into the quality of health information on *YouTube*, concerned that patients may find misleading information. Topics covered include disc herniation (**Gokcen**; **Gumussuyu**, 2019), prostate cancer (**Loeb** *et al.*, 2019), premature ejaculation (**Kaynak**; **Kaya**; **Aykaç**, in press) and facelifts (**Derakhshan**; **Lee**; **Bhama**; **Barbarite**; **Shaye**, 2019). *YouTube* may be important for health information for users that prefer an explanation from a person to reading (for example) an encyclopaedia article.

The value of *YouTube* in support of formal education has been recognised in many disciplines. These include dance (**Iannone**, 2019), science (**Thelwall**; **Mas-Bleda**, 2018) and clinical medicine (**Rangarajan**; **Begg**; **Somani**, 2019). Its support for research has also been assessed (**Kousha**; **Thelwall**; **Abdoli**, 2012).

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The business, economics, politics or law of *YouTube* has been studied, including its international cultural adaptation strategies (**Mohan**; **Punathambekar**, 2019), the effectiveness of vlogger brand endorsements (**Munnukka**; **Maity**; **Reinikainen**; **Luoma-aho**, 2019; **Xiao**; **Wang**; **Chan-Olmsted**, 2018), social media advertising strategies (**Feng**; **Xie**, 2019), political advertisements (**Sohal**; **Kaur**, 2018), reactions to Russian political events (**Ushkin**, 2014) and *Russia Today*'s *YouTube* programming strategy (**Orttung**; **Nelson**, 2019).

> *Facebook* seems to be particularly well researched in academia, at least from a social sciences perspective

Facebook

Facebook has been extensively researched since its academic beginnings. It was preceded by *Friendster* and *MySpace*, which were arguably more novel social network sites, but it has become more successful and eclipsed both in popularity. Social science *Facebook* research seems to typically investigate why and how (**Chen**; **Kuo**; **Hsieh**, 2019) people or organisations (**Lam**; **Au**; **Chiu**, 2019) use the site in many different educational, or social contexts. Other types of use are also investigated, such as politics (**Yuan**; **Feng**; **Liu**, 2019). Thus, *Facebook* seems to be particularly well researched in academia, at least from a social sciences perspective. This may be because it is frequently used by academics and its communications are relatively open (in comparison to email) and rich (in comparison to *Twitter*).

Baidu

The *Baidu* website, which is mainly known for its web search engine, is mentioned in only 11 *Scopus*-indexed social science journal article titles. Five used the *Baidu Index* tool that reports the volume of *Baidu* searches for a given keyword to track interest in topics through user searches, such as AIDS in China (Li *et al.*, 2019). Another analysed the construction of pages in *Baidu Baike*, which is a Chinese version of *Wikipedia* (**Cheng**; **Dong**, 2018). Three papers compared *Baidu* to *Google* in terms of results or political background (e.g., **Jiang**, 2014) and two were about legal issues (e.g., **Zhang**, 2011). There seems to be no research in *Scopus* focusing on how people use *Baidu* searches, and only two articles investigating the processes behind the construction or use of *Baidu Baike* (**Cheng**; **Dong**, 2018; **Wang**; **Sun**; **Shen**; **Zhang**, 2018).

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Presumably there are also many relevant Chinese-language articles that are not in *Scopus*.

Wikipedia

Wikipedia has been discussed for the new way in which it creates and disseminates knowledge (**Hartelius**, 2010) as well as for issues relating to the creation and maintenance of high quality content (**Hara**; **Shachaf**; **Hew**, 2010), including sources of references (**Rodríguez-Mateos**; **Hernández-Pérez**, 2018), and the motivations of its volunteers (**Yang**; **Lai**, 2010). The lack of female contributors has been a topic of concern (**Ford**; **Wajcman**, 2017). *Wikipedia* has generated issues for education, as a potential teaching resource (**Moy**; **Locke**; **Coppola**; **McNeil**, 2010; **Vetter**; **McDowell**; **Stewart**, 2019) as well as for the accuracy of its content as well as for referencing issues in assignments: the importance of primary sources and the credibility of editable information sources (**Rand**, 2010).

The content of *Wikipedia* is also sometimes analysed from an accuracy perspective, similarly to *YouTube*. Medical research, for example, has examined the accuracy of relevant *Wikipedia* pages, on the assumption that they are likely to be consulted by patients (**Leithner** *et al.*, 2010; **Simpson**; **Le**; **Malicka**, 2018). *WikiProject Medicine* within *Wikipedia* is a related project to ensure the accuracy of medical pages (**Heilman** *et al.*, 2011). Some articles have also assessed evidence for political or gender bias (**Gauthier**; **Sawchuk**, 2017; **Stahel**, 2018), or discussed potential coverage gaps (**Luyt**, 2018; **Thelwall**; **Sud**, 2018).

In addition to the potential educational and health information values of *Wikipedia*, it has also been discussed to understand its role as an open access intermediary, conveying scientific information to the public (**Minguillón**; **Lerga**; **Aibar**; **Lladós-Masllorens**; **Meseguer-Artola**, 2017; **Teplitskiy**; **Lu**; **Duede**, 2017).

Wikipedia is also extensively used as a knowledge resource for natural language processing applications (**Azad**; **Deepak**, 2019; **Ray**; **Singh**; **Joshi**, 2010), which is peripheral to user issues, and is sometimes assessed as a source of citation impact evidence (**Kousha**; **Thelwall**, 2017; **Pooladian**; **Borrego**, 2017; **Thelwall**, 2016).

A few studies have analysed aspects of *Wikipedia* use. One analysed temporal trends in searching, showing that external events trigger increases in relevant search volumes (**Geiß**; **Leidecker**; **Roessing**, 2016; **Segev**; **Sharon**, 2017). Another compared male and female student use of the site in Spain, finding that both genders used it equally, but males were less critical of its content (**Obregón-Sierra**; **González-Fernández**, 2019). Student perceptions of the value of *Wikipedia* for education have also been surveyed on a small scale (**Blikstad-Balas**, 2016; **Cummings**; **DiLauro**, 2017). The perspective of users outside of education concerning *Wikipedia* has largely been ignored, however, except in terms of news-related searches.

QQ

Two articles have investigated use contexts for *Tencent QQ* instant messaging: factors associating with knowledge sharing in groups (**Yuan**; **Liu**, 2017) and reasons why students may use it to support their learning (**Ma**; **Au**, 2014). The marketing effectiveness of the site and its business model viability have also been investigated (**Huang**; **Kim**; **Kim**, 2013), as have users' privacy concerns (**Meng**; **Zuo**, 2008). Whilst this is a small set of articles, they are insightful for the user perspective.

Tmall

Only three *Scopus*-indexed journal articles mention *Tmall* in their titles, none of which focus on the site itself.

Taobao

The e-commerce site *Taobao* is the subject of a small number (38 *Scopus* title search matches) of insightful *Scopus*-indexed journal articles that investigate aspects of its use. For example, one paper analyses the *Taobao* villages phenomenon, which involves villages reorganising their production and distribution to make commodities for sale through the site (**Qi**; **Zheng**; **Guo**, 2019). Another investigates factors affecting consumer reluctance to trust the site (**Han**; **Kim**, 2017). Other articles also exploit data from the site to investigate economic models or theories, such as returns policies that optimise profits (**Zhou**; **Hinz**, 2016).

Yahoo

The role of the news services offered by *Yahoo* has been analysed from a business perspective for insights into its market niche (**Li**, 2017) or business model (**Rindova**; **Yeow**; **Martins**; **Faraj**, 2012). and aspects of its internal business processes have also been investigated (**Matsuo**, 2015; **Pathak**; **Bathini**; **Kandathil**, 2015). Early research investigated the topics that users searched for (**Segev**; **Ahituv**, 2010) and the directory system used by *Yahoo* to organise web pages (**Callery**; **Proulx**, 1997). The accuracy of the answers given on *Yahoo Answers* has been assessed for medical topics (**Ohigashi** *et al.*, 2017), as discussed above for *YouTube* and *Wikipedia*. In contrast, music-related answers have been investigated from an information behaviour perspective, focusing on the types of questions asked and the types of answers given (**Hertzum**; **Borlund**, 2017). Also in contrast, the knowledge present in *Yahoo Answers* has been analysed from a *Wikipedia*-like perspective (**Shen**; **Li**; **Liu**; **Grant**, 2015). Political issues related to *Yahoo* in China have also been discussed (**Stevens**; **Xie**; **Peng**, 2016).

> The perspective of users outside of education concerning *Wikipedia* has largely been ignored, however, except in terms of news-related searches

Yahoo is also used as a data source for natural language processing and related research (**Figueroa**; **Gómez-Pantoja**; **Neumann**, 2019; **Olivares**; **Vivanco**; **Figueroa**, 2018), and has been used for scientometric impact analysis (**Zahedi**; **Shirazi**; **Dehghani**, 2010).

Amazon

The core functions and economic model of *Amazon* have been topics of investigation. The usefulness of *Amazon* reviews for consumer purchases has been analysed (**Chi**, 2008; **Lee**; **Trimi**; **Yang**, 2018), as have aspects of its business model (**Hadgkiss**; **Morris**; **Paget**, 2019; **Ritala**; **Golnam**; **Wegmann**, 2014; **Zhu**; **Liu**, 2018) and legal issues (**Rühl**, 2018). Its recommender system technology is important to the site and has wider commercial value (**Smith**; **Linden**, 2017). Other than indirectly through purchase decisions, however, the user perspective has been mostly ignored for *Amazon.com*. One topic-limited and indirect exception is a study of reactions in *Goodreads.com* to its takeover by *Amazon.com* (**Albrechtslund**, 2017).

The *Amazon.com* website is also sometimes used as a convenient source of data to test marketing theories, such as the efficacy of convenience pricing online (**Chenavaz**; **Drouard**; **Escobar**; **Karoubi**, 2018). The *Mechanical Turk* environment for recruiting cheap labour has been exploited by many academic papers as a tool for research, and its value has also been analysed in a meta-study (**Berinsky**; **Huber**; **Lenz**, 2012).

Twitter

The role of *Twitter* as a news source has been examined from multiple perspectives, including perceived credibility of sources (**Edgerly**; **Vraga**, 2019), cross-cultural information flows (**Mao**; **Menchen-Trevino**, 2019) interaction with news channels (**Ackland**; **O'Neil**; **Park**, 2019) and agenda setting for the mainstream media (**Quinn**; **Prendergast**; **Galvin**, 2019). Sports news has also been investigated, for example analysing gender bias in official sports team accounts (**Grace**; **Mueller**, 2019). Perhaps also related to news coverage, politics is widely discussed on *Twitter* and investigated (**O'Boyle**, 2019), including for evidence of the partisanship and bias of journalists (**Lacatus**, 2019; **Usher**; **Holcomb**; **Littman**, 2018). Social campaigns, such as the #MeToo movement, have also been investigated (**Xiong**; **Cho**; **Boatwright**, 2019).

Various ways of exploiting *Twitter* in education have been proposed and evaluated (**Luo**; **Xie**, 2019; **Ober**, 2019). *Twitter*-based marketing campaigns have also been evaluated, including an international comparison of alcoholic drinks (**Gupta**; **Lam**; **Pettigrew**; **Tait**, 2019).

Twitter has also been used as a convenient source of public opinion information by researchers that are not interested in the site itself. For example, cycling-related tweets reveal information about cyclists' motivations (**Das**; **Dutta**; **Medina**; **Minjares-Kyle**; **Elgart**, 2019), tweets about a walking trail might reveal problems with parts of it (**Wilson**; **Lovelace**; **Evans**, 2019), and tweets about a tobacco product may reveal how users react to it (**Malik**; **Li**; **Karbasian**; **Hamari**; **Johri**, 2019).

The usage patterns of groups have been investigated in *Twitter*, including teachers (**Carpenter**; **Kimmons**; **Short**; **Clements**; **Staples**, 2019), politicians (**Spierings**; **Jacobs**; **Linders**, 2019), journalists (**Tandoc**; **Cabañes**; **Cayabyab**, 2019), and non-profit organisations (**Dong**; **Rim**, 2019).

Overall, social science *Twitter* research seems to investigate many different types of user and use. Reflecting the widespread use of *Twitter* in social science research, there are also methodological articles on effective sampling of tweets (**Hino**; **Fahey**, 2019) and biases in *Twitter* samples (**Jiang**; **Li**; **Ye**, 2019). *Twitter* research seems therefore to be highly developed. This may be due to the ease of access of tweets through a free public applications programming interface, its widespread use, and, presumably, the familiarity of many Western researchers with it.

Sohu

Three *Scopus*-indexed journal articles mention search and online gaming site *Sohu* in their titles but none focus on the site.

Live.com

No *Scopus*-indexed journal articles mention search and services portal *Live.com* in their titles.

VK

Research on the Russian *VKontakte* social network seems to broadly follow *Facebook* research in topic, but is much rarer and mostly available in Russian. For example, one paper (with only the abstract in English) analysed a Bhuddist *VK* discussion group (**Badmatsyrenov**; **Skvortsov**; **Khandarov**, 2018) and another analysed discussion of a terrorist attack in Romania on the site (**Barabash**; **Bobryshova**; **Lepilkina**; **Karabulatova**, 2018), and another investigated self-presentation in the site (**Shchekoturov**, 2017). *VK* data has also been used to map HIV networks (**Rykov**; **Koltsova**; **Meylakhs**, 2016) and teenage interests (**Polivanova**; **Smirnov**, 2017).

JD.com

One journal article focuses on *Amazon*-like retail site *JD.com*, analysing the quality of its reviews, and proposing a system to automatically classify this (**Liu**; **Fu**; **Liu**; **Sun**, in press).

Instagram

As relevant to an image-based site, much Instagram research addresses visual aspects through either qualitative or quantitative methods. Self-presentation strategies are a common theme (**Yau**; **Reich**, 2019), including the relationship between posts and body image (**Baker**; **Ferszt**; **Breines**, 2019) and special groups, such as female body builders (**Marshall**; **Chamberlain**; **Hodgetts**, 2019) and American skateboarders (**Dupont**, in press). The role of *Instagram* in aspects of everyday lives has been addressed through user attitudes towards current and potential future romantic partners (**Lee**; **Choi**; **Lee**; **Sung**, 2019), coping with cancer (**Stage**, 2019) and promoting healthy behaviours (**Santarossa**; **Coyne**; **Lisinski**; **Woodruff**, 2019). User reactions to viewing *Instagram* posts have also been analysed from the perspective of the emotions generated (**De-Vries**; **Möller**; **Wieringa**; **Eigenraam**; **Hamelink**, 2018).

Influential sets of pictures have also been examined, such as one from North Korea (**Holiday**; **Anderson**; **Lewis**; **Nielsen**, 2019), and dieticians' food photograms (**Inan-Eroglu**; **Buyuktuncer**, 2018).

Marketing is important for *Instagram*, as for *YouTube*, because of its novel affordances. Issues covered include the effectiveness of influencers in promoting brands (**De-Veirman**; **Hudders**, 2019; **Konstantopoulou**; **Rizomyliotis**; **Konstantoulaki**; **Badahdah**, 2018) and visual marketing strategies used in the site (**Laestadius**; **Wahl**; **Pokhrel**; **Cho**, 2019). Individual **market segments** have also been addressed, such as tourism (**Kuhzady**; **Ghasemi**, 2019) and television (**Martín-Quevedo**; **Fernández-Gómez**; **Segado-Boj**, 2019).

Overall, *Instagram* seems to have been extensively researched from various user perspectives as well as for marketing.

Sina.com.cn

No *Scopus*-indexed journal articles mention *sina.com.cn* and none seem to mention the *Sina* web company (except in the context of *Sina Weibo*) in their titles.

Weibo

The potential for *Weibo* to promote healthy behaviours has been investigated, such as through posting fitness information from electronic devices (**Dong**; **Chen**; **Wang**, 2019) and by identifying the factors that help health messages to be shared virally (**Liu**; **Lu**; **Wang**, 2017). It has also been investigated for its ability to facilitate social support for people with long-term illnesses (**Han**; **Li**; **Qu**; **Zhu**, 2018).

Politics has also been analysed, such as by identifying ideological positions expressed through weibos (**Huang**; **Gui**; **Sun**, 2019), international differences in the framing of news discussions (**Bolsover**, 2017), public discussion of "Brother Wristwatch" 表哥, a corrupt safety official caught out on *Weibo* from crowdsourced images of him wearing expensive watches (**Feng**; **Wu**, 2018), how discontent with some government actions is expressed (**Wu**, 2018), government censorship of the site (**Cairns**; **Carlson**, 2016; **Vuori**; **Paltemaa**, 2015), and how it can facilitate political involvement for college students (**Wang**; **Shi**, 2018).

Weibo is used for brand marketing and therefore it is important to analyse commercial strategies, including from linguistic (**Li**; **Wu**, 2018) comparative (**Wen**; **Clark**; **Kang**; **Fine**, 2016) perspectives. Other use cases examined include librarianship through a comparison with *Twitter* (**Huang**; **Chu**; **Liu**; **Zheng**, 2017), journalist posting strategies (**Fu**; **Lee**, 2016), information dissemination by non-government organisations (**Zhou**; **Pan**, 2016), rural migrant workers' posts (**Zhang**, 2013) and the effectiveness of *Weibo* for crisis communication (**Ngai**; **Jin**, 2016).

Like *Twitter*, *Weibo* has been used as a convenient source of public sentiments about topics unrelated to the site, such as green buildings (**Liu**; **Hu**, 2019) and tourist opinions about attractions (**McCartney**; **Pek**, 2018). It has also been used for information about the external environment, such as through reports about air quality and pollution (**Graminius**; **Haider**, 2018), and as a natural language processing resource (**Ling**; **Marujo**; **Dyer**; **Black**; **Trancoso**, 2016).

As with *Wikipedia* and *Twitter*, *Weibo* has been used as a source of evidence about the impact of academic research and the extent to which science is discussed (**Yu**; **Xu**; **Xiao**; **Hemminger**; **Yang**, 2017).

Weibo has also been investigated from a more general perspective to understand how discussion topics evolve in the site, and how this contrasts with *Twitter* (**An**; **Yu**; **Lin**; **Du**; **Zhou**; **Li**, 2018).

Many of the above studies have analysed aspects of the user experience on *Weibo*, users have also been surveyed to find out which benefits they believe they get from it (**Gan**, 2018), how users may be anxious about their posts (**Li**; **Lin**, 2016) and privacy and anonymity conditions have been investigated (**Chen**; **Li**; **Hu**; **Li**, 2016). Overall, therefore, there is a rich and diverse academic literature about *Sina Weibo*.

Yandex

No *Scopus*-indexed journal articles mention Russian search engine *Yandex* in their titles. Like *Google*, *Yandex* offers a range of services from email to maps.

360.cn

No *Scopus*-indexed journal articles mention Chinese internet security and games site *360.cn* in their titles. None of the matches of the search for 360 seem to be about the site either. This seems to be a background service that many not be directly mentioned in research that uses it.

Summary

The amount of *Scopus*-indexed research mentioning the top 20 websites in article titles is highly variable, from extensive coverage of *Facebook*, *Twitter*, *YouTube* and *Weibo* to no research focusing on *Yandex* and *360.cn*. Part of the difference is likely to be due to language (because *Scopus* is dominated by English) and first mover (the first popular website of a type should attract the most attention due to novelty) issues. In addition, some websites have opportunities for substantial user content generation, e.g., *Facebook*, *Twitter*, *YouTube*, *Weibo* but not *Google*, *Yandex*, *360.cn*. Also, more flexible sites seem to attract more attention than those with a single activity focus, such as *Tmall* and *Taobao*.

Whilst sites that are flexible in use and allow user content generation have attracted the most research, typically from the social sciences investigating social issues, usage patterns or commerce, it seems likely that this research is far from comprehensive. For example, whilst there is a large volume of research covering multiple aspects of *YouTube*, it seems likely issues relevant to *YouTube* are too complex to be analysed with any degree of completeness. Similarly, it seems likely that academia could investigate only a small fraction of *Facebook* uses because it is a flexible community site. This is exacerbated for *Facebook* by its default privacy policy so that user behaviours are typically hidden. Thus, paradoxically, the sites that are most researched may also have the most scope for further research into other aspects of their use.

3. Methods

The above section briefly reviewed research with a major focus on a top 20 website, using the heuristic of mentioning the site in the title. The reminder of the article is a bibliometric analysis of the prevalence and citation impact of articles that mention these websites in their abstract, keywords or title. This wider scope allows an analysis of the influence of the sites on research, a different focus.

"The amount of *Scopus*-indexed research mentioning the top 20 websites in article titles is highly variable, from extensive coverage of *Facebook*, *Twitter*, *YouTube* and *Weibo* to no research focusing on *Yandex* and *360.cn*"

The top 20 of the *Alexa.com* top 500 global websites list in April 2019 was used as the source of popular websites.
https://www.alexa.com/topsites

Alexa.com uses a range of sources of evidence, including browser extensions and website scripts, to estimate the number of visitors to major websites over the previous three months,
https://www.alexa.com/about

The exact sources of data and algorithm combining them are commercial secrets but the site has credibility through its owner, *Amazon*, its long history (since 1996) and prior use in academic research (e.g., **Han**; **Kim**, 2017; **Lui**, 2015; **Vaughan**, 2012). Nevertheless, its traffic data should be treated as estimates rather than precise values. In addition, it is not clear how it deals with web traffic through smartphone apps rather than web browsers and it does not adequately rank popular internet services that do not primarily operate through their websites, such as *WhatsApp*. Another limitation for the current study is that the figures do not consider whether a website is relatively new and cannot therefore have had much research published with it.

The *Scopus* citation index was used to estimate the prevalence and citation impact of international research about the chosen websites. *Scopus* was used in preference to the *Web of Science* because it has wider coverage, and particularly for non-English and non-Western sources (**Mongeon**; **Paul-Hus**, 2016). *Scopus* queries were used to identify articles mentioning one of the top 20 websites. Since the websites could be mentioned peripherally in the full text of an article, the queries were restricted to the parts of an article that normally signal its core content: the title, abstract and keywords. The queries were tested and modified when they produced a high proportion of false matches, as in the case of *QQ*, *Live*, *VK*, *JD*, and *Sina* (Table 2). There were a few ornithology matches for *Twitter* (about 2 per year) but this proportion is too low to greatly influence the results. The Russian name of *VK* (*ВКонта́кте*) produced only a single match and so its English translation was used. The *Scopus* queries were submitted on 18 April 2019. Documents not within academic journals were subsequently excluded, as were documents from before a website existed, or from after 2018 (for field normalisation purposes, as described below). The results are nevertheless limited by the comprehensiveness of the English-language queries used to identify relevant articles.

Table 2. The *Scopus* queries submitted on 18 April 2019 to identify articles mentioning one of *Alexa*'s top 20 websites.

Rank	Site	Query	Full query
1	*Google*	*Google*	TITLE-ABS-KEY(Google) AND DOCTYPE(ar)
2	*YouTube*	*YouTube*	TITLE-ABS-KEY(YouTube) AND DOCTYPE(ar)
3	*Facebook*	*Facebook*	TITLE-ABS-KEY(Facebook) AND DOCTYPE(ar)
4	*Baidu*	*Baidu*	TITLE-ABS-KEY(Baidu) AND DOCTYPE(ar)
5	*Wikipedia.org*	*Wikipedia*	TITLE-ABS-KEY(Wikipedia) AND DOCTYPE(ar)
6	*QQ*	*Tencent QQ*	TITLE-ABS-KEY(Tencent QQ) AND DOCTYPE(ar)
7	*Tmall*	*Tmall*	TITLE-ABS-KEY(Tmall) AND DOCTYPE(ar)
8	*Taobao*	*Taobao*	TITLE-ABS-KEY(Taobao) AND DOCTYPE(ar)
9	*Yahoo*	*Yahoo!*	TITLE-ABS-KEY(Yahoo!) AND DOCTYPE(ar)
10	*Amazon*	*Amazon.com*	TITLE-ABS-KEY(Amazon.com) AND DOCTYPE(ar)
11	*Twitter*	*Twitter*	TITLE-ABS-KEY(Twitter) AND DOCTYPE(ar)
12	*Sohu*	*Sohu*	TITLE-ABS-KEY(Sohu) AND DOCTYPE(ar)
13	*Live*	*live.com*	TITLE-ABS-KEY(live.com) AND DOCTYPE(ar)
14	*VK*	*Vkontakte*	TITLE-ABS-KEY(Vkontakte) AND DOCTYPE(ar)
15	*JD*	*jd.com*	TITLE-ABS-KEY(jd.com) AND DOCTYPE(ar)
16	*Instagram*	*Instagram*	TITLE-ABS-KEY(Instagram) AND DOCTYPE(ar)
17	*Sina.com.cn*	*sina.com.cn*	TITLE-ABS-KEY(sina.com.cn) AND DOCTYPE(ar)
18	*Weibo*	*Weibo*	TITLE-ABS-KEY(Weibo) AND DOCTYPE(ar)
19	*Yandex.ru*	*Yandex*	TITLE-ABS-KEY(Yandex) AND DOCTYPE(ar)
20	*360.cn*	*360.cn*	TITLE-ABS-KEY(360.cn) AND DOCTYPE(ar)

The *Scopus* citation count was extracted for each journal article and used to calculate the mean normalised log citation score (MNLCS) (**Thelwall**, 2017). This is a variant of the original mean normalised citation score (MNCS) (**Waltman**; **Van-Eck**; **Van-Leeuwen**; **Visser**; **Van-Raan**, 2011), using logged citation counts to stop small numbers of very highly cited articles unduly influencing the results. The MNLCS has a value of 1 if the articles tended to have the same number of citations as other articles from the same field and year. MNLCS values above 1 indicate more citations than the world average for the field and year of publication, and values below 1 correspond to below world average citation counts for the publishing field and year. When articles were recorded within multiple *Scopus* categories, the average (arithmetic mean) of all *Scopus* categories was used as the denominator.

4. Results

There are vastly different amounts of research relating to the top 20 websites (Figure 1), ranging from 16,362 for *Google* to 1 each for *Sina* and *360.cn* (both with complex queries). There is not a strong trend for sites with more research to also have higher impact research about them, however, with a weak Spearman correlation of only 0.247 between these two.

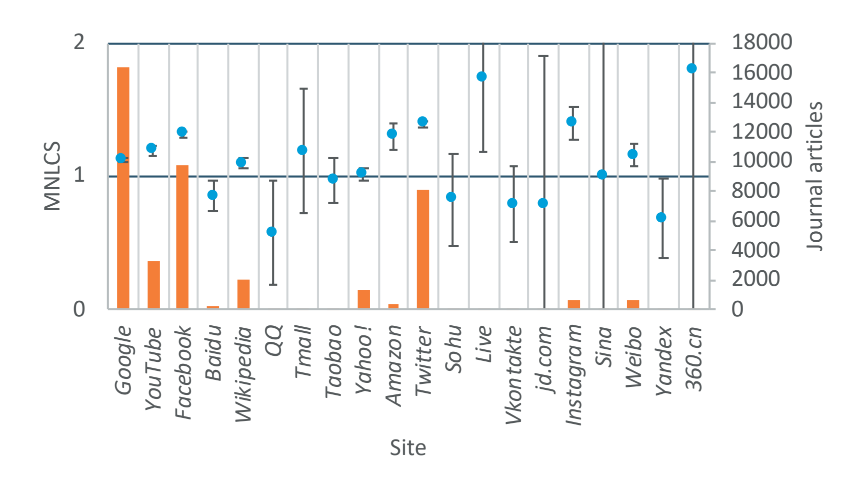

Figure 1. The number of *Scopus*-indexed journal articles 1996-2018 mentioning each website in their abstract, title or keywords (bars) and the MNLCS of these articles (dots with 95% confidence interval error bars). Websites are in decreasing order of popularity according to *Alexa.com* in April 2019. The world average MNLCS is 1 for all fields and years.

For websites mentioned by relatively many articles, there is a clear trend for the volume of research to increase over time (Figures 2 and 3). There is evidence of peaking or levelling off for *Wikipedia*, and *Weibo*, whereas *Amazon* has three years of decline before increasing again. Whilst research mentioning *Google* and *Facebook* is increasing rapidly, despite their age, it is no longer growing approximately exponentially.

Research about major websites usually has above world average citation impact (for its field and year) when the difference is statistically significant (Figure 2 and 3). The two main exceptions are that *Yahoo* research since 2002 and *Wikipedia* research since 2012 have had close to world average citation impact.

5. Discussion

Some of the global 20 most popular websites (according to *Alexa.com*) seem to have almost no journal articles closely related enough to them for a mention in the article title, abstract or keywords. Most of the websites with almost no *Scopus*-indexed research are from China (*Tencent QQ*, *Tmall*, *Taobao*, *Sohu*, *JD*, *Sina*, *360.cn*) or Russia (*VK*, *Yandex*). There is a small amount of research about the Chinese site *Baidu*, but this is relatively low for its popularity. In contrast, Chinese site *Weibo* has a substantial amount of research and is therefore an anomaly for the language issue mentioned above. This anomaly is nevertheless in line with the high volume of *Twitter*-related research since both sites have similar affordances (an applications programming interface allowing automated access to content). Thus, overall, site nationality (Table 1) is enough to explain the low position of most of the sites. A similar issue has been observed within another repository of knowledge, *Wikipedia*, which has greater coverage of topics relevant to an English-speaking audience despite its international variants (**Thelwall**; **Sud**, 2018).

Whilst China is a major contributor to international academic output, its social science research is much less international (**Liu**; **Hu**; **Tang**; **Wang**, 2015), explaining the lack of *Scopus*-indexed research about Chinese websites. *Scopus* has weaker coverage of non-English research, particularly in the Social Sciences and Humanities (**Mongeon**; **Paul-Hus**, 2016), exacerbating the problem. China accounted for only 3.5% of Social Sciences articles in *Scopus* and Russia accounted for 0.9% by April 2019. Websites that are in Chinese or Russian therefore have two obstacles for researchers: relatively few researchers publishing international academic social science journal articles can read them and relatively few may know them well enough to consider them interesting or relevant. The problem may be further exacerbated by the non-English sites being referred to in different ways and being mainly known by their original Chinese or Russian names.

“There are vastly different amounts of research relating to the top 20 websites, ranging from 16,362 for *Google* to 1 each for *Sina* and *360.cn*”

The website *live.com* is has little research that directly mentions it probably because it hosts services that are better known by other names, such as *Microsoft OneDrive*, *Outlook* and *Office*. This may also affect some of the Chinese websites.

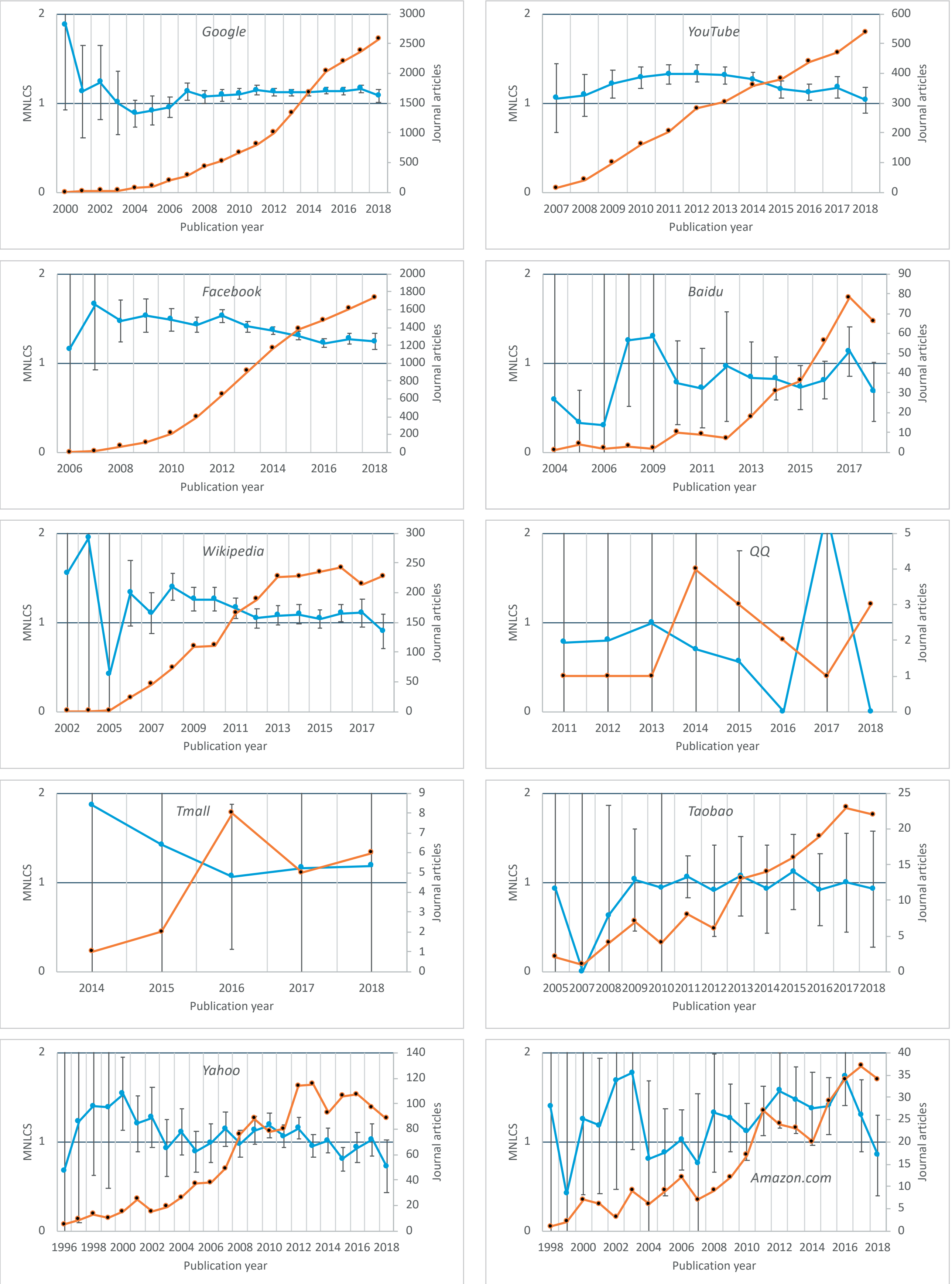

Figure 2. The number of *Scopus*-indexed journal articles 1996-2018 mentioning the specified website in their abstract, title or keywords (black dots) and the MNLCS of these articles (blue dots with 95% confidence interval error bars). The websites are the most popular 10 according to *Alexa.com* in April 2019.

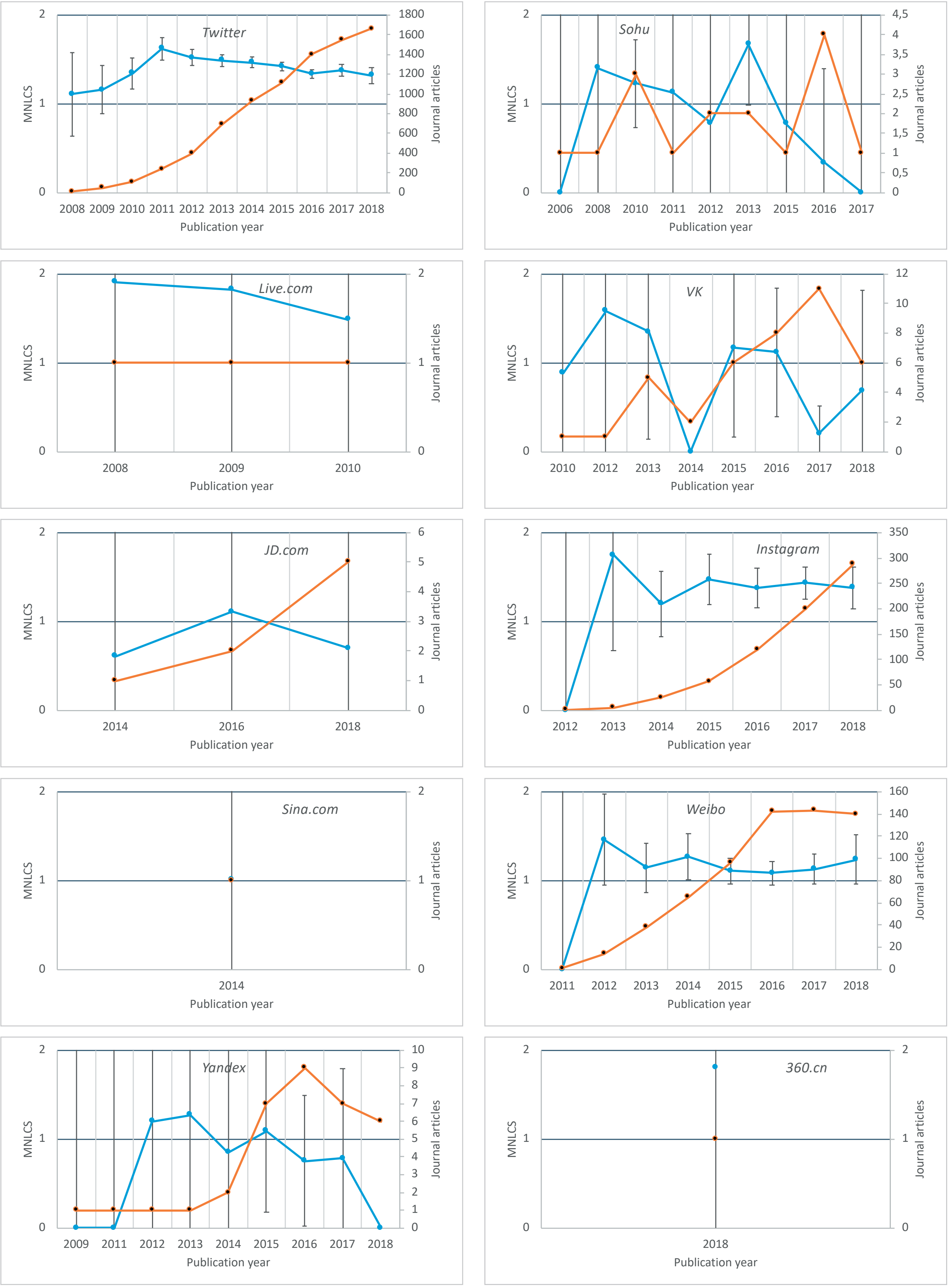

Figure 3. The number of *Scopus*-indexed journal articles 1996-2018 mentioning the specified website in their abstract, title or keywords (black dots) and the MNLCS of these articles (blue dots with 95% confidence interval error bars). The websites are the most popular 11-20 according to *Alexa.com* in April 2019.

Twitter and *Weibo* have a relatively large amount of research mentioning them. This may be because they can be easily used as a source of evidence (tweets, weibos) in text processing computer science or linguistics research. For example, 52% of *Weibo* and 46% of *Twitter* research in *Scopus* is classified as Computer Science or Mathematics. Each site is more extensively researched in its own country, with US first authors outnumbering mainland Chinese first authors by 6.2 to 1 for *Twitter* and mainland Chinese first authors outnumbering US first authors by 7.3 to 1 for *Weibo*.

Another anomaly in the graphs is that *YouTube* has about a third as much research as *Facebook*, despite *Facebook* being less popular. This could be explained by *Facebook* having been more popular than *YouTube* in the past. Another possible explanation is *Facebook*'s origins within academia and, presumably, its academic-friendly affordances. In contrast, *YouTube* may be thought to be primarily an entertainment site, even though it is used in education (e.g., **Barry** et al., 2016). The greater flexibility of *Facebook* to be a site for organising groups and providing different types of information (including videos) is probably also a factor because it provides a wider variety of use types to investigate.

Of the factors considered in the introduction, *website age* does not seem to be relevant to explain the level of research interest in a top 20 website because all the sites are over ten years old and there is not a trend for newer sites to be discussed less, at least within this list. The *novelty* of a website is a possible explanatory factor given that the Chinese and Russian websites are slightly younger than similar sites from the USA, but it seems likely that the language or geography issue is more important.

The usefulness of *Google*'s affordances for academic research methods help to explain the amount of research about it. Almost a third (31%) of papers mentioning *Google* discuss *Google Scholar*, typically as a source of data for citation analysis or literature searches. Another 14% discuss *Google Maps*, typically using it as a tool in computing or geographical information systems research (e.g., “Timely reporting and interactive visualization of animal health and slaughterhouse surveillance data in Switzerland”). These studies give no social science insights into the use of *Google*. The same is true for some of the other sites. For example, 10% of *Amazon* research uses its Mechanical Turk service and a few (12) *YouTube* articles only used a video dataset derived from it, “*YouTube Action*” or *UCF11*. Similarly, *Facebook* is used to recruit survey or interview participants around a focused topic, such as, “The psychosocial impact of ptosis as a symptom of myasthenia gravis: A qualitative study”, or to track people, “Patients with outdated details were tracked with the national health insurance database and social media (*Facebook*)” (**Kowalewski**; **Olszewski**; **Kwiatkowski**; **Gałązka-Świderek**; **Cichoń**; **Paśnik**, 2017), although most *Facebook* research seems to investigate an aspect of the use of the site itself (e.g., “Connected motherhood: Social support for moms and moms-to-be on *Facebook*”).

Academic knowledge requirements

Although the results show gaps in knowledge about important social web sites, the empirical data cannot prove that the gaps are important. It is impossible for academic research to generate all possible knowledge and so a useful consideration is whether the omissions will be a substantial disadvantage in practice. Site users, including businesses, can get information from other sources, including professional magazines, blogs, white papers, networks, and their own experience or analysis. Thus, a lack of academic knowledge does not imply that a site is being underexploited or poorly used. Apparently relatively straightforward sites, such as those for e-commerce, may not need much research to understand their fundamentals.

Research often serves educational uses so academic studies of websites may be less important when those websites are not relevant to degree courses. This may apply to the standard office services offered by *Live.com* and within other websites (e.g., email from *Google*, *Yandex*, *Sina*, *Baidu*). Thus, part of the issue is whether academic research is the most relevant avenue for publishing research about popular websites.

Despite the above consideration, the lack of knowledge is not a guarantee that a topic is unimportant. The case of neglected tropical diseases (**Hotez** *et al.*, 2007; **Mathers**; **Ezzati**; **López**, 2007) is a well-known example of a knowledge area that is recognised as being under-researched for its societal importance. Thus, the current paper can identify research gaps but qualitative judgements are needed to assess whether the gaps are important.

Citation impact

Research related to top websites seems to usually have above average citation impact, except that there is a (not statistically significant) trend for the Chinese and Russian sites to have below world average citation impact or, in the case of *Weibo*, lower citation impact than the similar site *Twitter*. This is probably due to research in these countries having lower overall average citation impact (*Elsevier*, 2013; **Fairclough**; **Thelwall**, 2015) rather than being a characteristic of the studies. Nevertheless, the lower citation impact, and the dominance of Western sites in international research, may serve as a disincentive for researchers seeking international recognition to study Chinese and Russian sites.

6. Conclusions

This study found vastly different levels of academic publishing related to the globally most popular twenty websites (according to *Alexa.com*). The main reason for differences in the amount of research about a site seems to be the following.

- Less research for non-English websites. Generalising this, there is likely to be even less research about non-English websites serving an area with few social science researchers publishing in English. Such research may be available in local language journals (where it may be most useful and most read) but seems unlikely to be visible to an international audience.
- Less research for websites that host services rather than being primary portals.
- More research about flexible sites that can be adapted for different social purposes, such as organising groups, disseminating information, or communicating with friends.
- More research about websites that provide an easily accessible source of data for computing-related research. Because of this, even if a website is important enough to be mentioned in an article title, abstract or keywords, the article's findings may reveal nothing about the site.
- More research about websites that provide affordances for research methods. As above, this type of research may not be informative about the site itself.

Thus, the level of academic interest in a website does not accurately reflect its global importance from a social science perspective or the depth of academic knowledge about it.

Despite the limitations of the methods, the results give evidence that several globally important non-US websites are mostly receiving little international research attention. This is a problem for developers seeking to understand the factors behind the success of individual websites, for marketers needing information about the role in the information, entertainment and retail infrastructures of the audiences that they serve, and for social scientists wanting deeper international insights into how users interact with websites for aspects of their daily lives (e.g., health, socialising, media consumption). Thus, there is a need for more international comparative research into popular websites as well as studies that focus on international websites. Even though such research may have lower citation impact, editors and reviewers should be aware of this important gap when evaluating the contribution of such papers.

"There is a need for more international comparative research into popular websites as well as studies that focus on international websites"

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Altmetrics and societal impact measurements: Match or mismatch? A literature review

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Abstract

Can alternative metrics (altmetrics) data be used to measure societal impact? We wrote this literature overview of empirical studies in order to find an answer to this question. The overview includes two parts. The first part, "societal impact measurements", explains possible methods and problems in measuring the societal impact of research, case studies for societal impact measurement, societal impact considerations at funding organizations, and the societal problems that should be solved by science. The second part of the review, "altmetrics", addresses a major question in research evaluation, which is whether altmetrics are proper indicators for measuring the societal impact of research. In the second part we explain the data sources used for altmetrics studies and the importance of field-normalized indicators for impact measurements. This review indicates that it should be relevant for impact measurements to be oriented towards pressing societal problems. Case studies in which societal impact of certain pieces of research is explained seem to provide a legitimate method for measuring societal impact. In the use of altmetrics, field-specific differences should be considered by applying field normalization (in cross-field comparisons). Altmetrics data such as social media counts might mainly reflect the public interest and discussion of scholarly works rather than their societal impact. Altmetrics (*Twitter* data) might be especially fruitfully employed for research evaluation purposes, if they are used in the context of network approaches. Conclusions based on altmetrics data in research evaluation should be drawn with caution.

Keywords

Bibliometrics; Societal impact; Altmetrics; Citations; Research evaluation; Scholarly communication; Social media; *Twitter*; Review article.

1. Introduction

Science and technology have had an extensive influence on different aspects of society; they have improved and made drastic changes to the quality and length of peoples' lives, and have shaped our culture, beliefs and thinking (**Burke**; **Bergman**; **Asimov**, 1985). In the past, it was clear to everyone, specifically governments and science policy-makers, that science and technology should be financially supported because of their outcomes and impacts on society (**Godin**; **Dore**, 2005): over time, good science brings magnificent changes to the development of new ideas, technologies, discoveries, and makes its potential impact on society (**Kreiman**; **Maunsell**, 2011). Vannevar Bush proposed that high-level research is the best thing for a society (**Bush**, 1945). His thoughts and efforts meant that most governmental policies in the US should focus on providing universities and research institutions with the best possible facilities and resources in order to conduct high quality research (**Van-den-Akker**; **Spaapen**, 2017).

However, the climate has changed: over recent decades, universities and research institutions have been increasingly expected and pushed to evaluate the impact and success of their research projects that are funded by governments and public funders. All institutional actors have in response increased resort to indicators and methods for measuring the impact of their research. Universities have been facing financial and resource shortages for decades, making it extremely competitive for researchers to obtain scarce institutional funding for their research projects. Today, allocation of university finances and resources primarily depends on the extent to which researchers can communicate the benefits of their research to research managers and convince them. Research evaluation has become a core element in the management of research and scientific policymaking (**Wilsdon** *et al.*, 2015).

Over many years, measuring the impact of research referred to impact on academia (based on citations). Today, universities and other research institutions are required to pay more attention to the broader impact of their research, by thinking about how their research can address and solve real world problems (**Bornmann**, 2016). To do so, they have tried to go beyond the academic impact of research and investigate the environmental, health, economic, public, and social concerns of people, industries, and other sectors. They have also started investigating how these issues should be addressed by the research projects they design and propose. To achieve such practical goals, scholars and industry sectors may work together to initiate impact activities for research projects. University knowledge- or technology-transfer offices can help accelerate and facilitate this process by assisting scholars to

(a) brainstorm research ideas that could potentially be of interest and helpful to broader groups of people,
(b) write impact statements to describe the significance of research, and
(c) assist researchers collaborate in a more efficient way with industrial sectors (**Dance**, 2013).

The broader use of evaluative bibliometrics, a term proposed by **Narin** (1976), began in the 1980s for the purpose of measuring the performance of science (**Roemer**; **Borchardt**, 2015). Evaluative bibliometrics is concerned with indicators for measuring scientific productivity, research collaboration, and citation impact (**Belter**, 2018). Although these indicators are not truly perfect or unbiased (**Moed**, 2017), they have been used in a more or less standardized way in research evaluation. However, scientometrics has experienced important changes since the 2000s. Demands for measuring societal returns gave birth to other indicators by which the societal impact of research could possibly be measured (**Miettinen**; **Tuunainen**; **Esko**, 2015). In this paper we review the literature on societal impact measurement. We particularly address three major questions:

1) Which methods have so far been employed by universities, researchers, and research funding bodies in order to evaluate the societal impact of research?
2) Are altmetrics valid indicators for measuring the societal impact of research?
3) If altmetrics are not valid indicators for measuring the societal impact of research, what do they measure?

2. Societal impact measurement

Societal impact measurement has its roots in the early 1970s, when increasing pressure from policymakers and society was put on universities and research institutions to produce more relevant and practical research that would be of economic value (**Van-den-Akker**; **Spaapen**, 2017). Since then, Western governments have paid more attention to the societal benefits of their financial investments in academic research (**De-Jong**; **Smit**; **Van-Drooge**, 2016). Societal benefits and impact became especially highlighted as a criterion in supporting and funding research projects in many disciplines during the 1990s (**De-Jong** *et al.*, 2016; **Mostert**; **Ellenbroek**; **Meijer**; **Van-Ark**; **Klasen**, 2010).

> "In the 2000s, the EU and its member states started to develop frameworks for analyzing wider societal impacts of academic research, a task that was related to the introduction of the so-called third mission of universities" (**Miettinen** *et al.*, 2015, p. 258).

The aim of the third mission was to carry out applied research in accordance with the country's real needs. The third mission was proposed after the first and second missions of universities, which mainly focused on education and research. Third mission activities included both collaboration between universities and enterprises, and interaction between universities and society (**Göransson**; **Maharajh**; **Schmoch**, 2009). For instance, Denmark's third mission, initiated in 2003, emphasized that universities should closely collaborate with society and their educational programs, and that research findings should contribute to the further development of society (**Gregersen**; **Linde**; **Rasmussen**, 2009).

UK was also among the countries that made plans to capture and measure broader external impact of research (**Samuel**; **Derrick**, 2015; **Wilsdon** *et al.*, 2015). In the UK, the *Research Excellence Framework* (*REF*) took the responsibility of measuring the quality and societal impact of research in higher education institutions, since 2014 (known as *REF 2014*). *REF* evaluates the *ex post* (after the event) research impact by considering impact on different sectors such as economy, culture, public policy, health and welfare, environment, the quality of life, creativity, production, and international development (**Samuel**; **Derrick**, 2015). The *REF 2014* has provided

> "a rich picture of the variety and quality of the contribution that UK research has made across our society and economy" (*Department for Business, Energy & Industrial Strategy*, 2016, p. 21).

For the UK organizations, research is considered to have an external impact when it has a positive influence on a sector outside academic organizations (**Wilsdon** *et al.*, 2015). For these organizations,

> "evidence of external impacts can take a number of forms – references to, citations of or discussion of an academic or their work; in a practitioner or commercial document; in media or specialist media outlets; in the records of meetings, conferences, seminars, working groups and other interchanges; in the speeches or statements of authoritative actors; or via inclusions or referencing or weblinks to research documents in an external organisation's

> websites or intranets; in the funding, commissioning or contracting of research or research-based consultancy from university teams or academics; and in the direct involvement of academics in decision-making in government agencies, government or professional advisory committees, business corporations or interest groups, and trade unions, charities or other civil society organisations" (**Wilsdon** *et al.*, 2015, pp. 44-45).

The Netherlands was one of the frontrunners in national research impact evaluation, with a focus on the economic benefits of publicly funded research. The Netherlands investigated the influence of research at larger scales beyond academia on developments in society (**Donovan**, 2008). "Societal quality" of research was first proposed in the Netherlands in the early 1990s (**Van-der-Meulen**; **Rip**, 2000), and was defined

> "as the value that is created by connecting research to societal practice and it is based on the notion that knowledge exchange between research and its related professional, public and economic domain strengthens the research involved" (**Wouters**, 2016, annex, p. 25).

In the Netherlands, the *Standard Evaluation Protocol* (*SEP*) oversees measuring the impact of science since 2003. *SEP* considers three criteria, including

- scientific quality,
- societal impact, and
- viability of the research unit.

Productivity is not considered because it is believed that it would negatively affect the quality of research. *SEP* is a program similar to *REF* in the UK, in that research units provide case studies or narratives to highlight their impact on society. Research units in the UK have also been presenting case studies showing the impact of their research on the economy and society since 2014. Analyses of the UK case studies by the *King's College London* and *Digital Science* (2015) indicated that the societal effects in the UK case studies were multi-disciplinary, with more than 60 unique impact topics (**Van-den-Akker**; **Spaapen**, 2017).

In the current post-academic science, the focus of research is on application, known as Mode 2 research. Mode 2 research goes beyond Mode 1 research (the academic perspective on science). Mode 1 research was focussed on filling a gap in knowledge, contributing to science or building a theory. The main objective of Mode 2 research is rather to produce practical results based on real problems that are socially relevant, and which would have a tangible impact in society (**Ernø-Kjølhede**; **Hansson**, 2011). Researchers have determined different categories for Mode 2 research. The *RQF Development Advisory Group* (2005) classified the research impact of Mode 2 research into four broad categories:

(a) "social benefit" such as improving quality of life, solving social issues, and improving knowledge;
(b) "economic benefit" such as reducing costs improvements in service delivery and employment;
(c) "environmental benefit" such as decreasing environmental pollution;
(d) "cultural benefit" such as enriching the culture of a society.

The main differences between academic and post academic perspectives on research are shown in Table 1.

Table 1. The academic and post-academic perspectives on science and research

	The academic perspective on science	**The post-academic perspective on research**
Norms regulating scientist/researcher behaviour	CUDOS[a], although perhaps not always an accurate description of reality, is and should be the ideal	Norms vary and are context-bound, but may be characterised through applying a mix of *Place/Mitroff*'s norms[b] and CUDOS – with an emphasis on *Place/Mitroff*'s norms
The purpose of science/research	To accumulate certified, true knowledge as an end in itself	To produce knowledge for practical application
Quality is evaluated by:	Disciplinary gatekeepers referring to intra-scientific criteria (reliability, consistency, originality, objectivity)	Practitioners and peers using both intra- and extra-scientific criteria (relevance, utility, economic impact)
The individual scientist/researcher should:	Be independent and autonomous. The scientist 'owns' his or her work and publishes it in peer-reviewed journals to pursue an individual career	Be managed in accordance with societal/organizational/corporate objectives. Researchers may pursue both individual scientific and organizational careers, in which case publication is not necessarily of the essence
The prime source of control is:	Peers in the prestige hierarchy	The management of the employing organization
Best possible development of the institution of science/research takes place through:	Self-organisation	Design by institutional and political management
Typical exponents	Merton, Hagstrom, Barber, Popper, Bush, Storer, Polanyi	Fuller, Gibbons *et al.*, Etzkowitz and Leydesdorff, Ziman

Notes: [a] Proposed by **Merton** (1968a) and **Merton** (1968b), CUDOS refers to four social norms for scientific behaviour: communism, universalism, disinterestedness, and organized scepticism (**Ernø-Kjølhede**; **Hansson**, 2011).
[b] A set of norms (known as *Place* norms) proposed by **Mitroff** (1974) as opposed to Merton's social norms. These norms include rationality and non rationality, emotional commitment, particularism, solitariness, interestedness, and organized dogmatism (**Ernø-Kjølhede**, 2000).
Source: **Ernø-Kjølhede** and **Hansson** (2011, p. 133).

2.1. Possible methods for measuring societal impact

Academic researchers and experts, mainly economists, are supposed to measure the impact of research using a variety of indicators. Many efforts have been carried out in this area, yet there is a lack of straightforward mechanisms to measure output and outcome. Since the 1950s, economists have begun investigating the impact of science on economic growth and productivity. Economic evaluations for research impact include research cost-benefit, cost-effectiveness, and cost-utility analyses. Economic assessments refer to whether investing on a research returns the dollars that have been spent on it. The assessments also include whether the research has public and private returns. For instance, economists studied the impact of research on international trades. Results showed that science can have many economic impacts on areas such as production, financing, investments, commercialization, and budget (**Godin**; **Dore**, 2005).

> This overview of the literature discusses whether altmetrics data can be used to measure the societal impact of research

A classic and highly-cited study in this area was conducted by **Mansfield** (1991), who measured the economic benefits of basic research using a sample of 76 firms in the USA. **Mansfield** (1991) asked the companies' research and development managers what percentage of the company products and processes could not have been developed without relying on academic research. The results of this study indicated that 11% of the new products and 9% of new processes could not have been developed without academic research. The study also found that 2.1% of sales for new products relied on substantial aid from research and 3% of sales for new products would have been lost without academic research. Some years later, **Mansfield** (1998) conducted a follow-up study with 77 firms and found similar results. 15% of new products and 11% of new processes could not have been developed without relying on recent academic research.

The economic approaches to research evaluation have their own shortcomings. The most important one is that they focus on only one dimension of possible impact (which is an important dimension but does not reveal the full impact picture). For instance, economic approaches may not consider the impact of research on improvements in people's quality of life (**Searles** *et al.*, 2016).

Langfeldt and **Scordato** (2015) have described the various methods for measuring societal impact in general. One method is to conduct surveys and interviews with the target group that is supposed to benefit from the research output. Surveys and interviews can be used to determine the perceived benefits and usefulness of research from the viewpoints of the beneficiaries. The authors pointed to some limitations of using surveys and interviews. One major issue within measuring the societal impact

> "is defining and identifying both the potential target group and research that they have benefited from, within a specific time-frame in which the survey results are still relevant for decision-makers" (**Langfeldt**; **Scordato**, 2015, p. 25).

A major challenge is whether the target group can recognize the potential benefits of the research. The other issue is that although we might be able to define a specific target group, it would be difficult to measure the long-term impact of research on these groups. Surveys are also limited in terms of the number of people researchers can recruit and study, thus may not cover all potential users that are representative of the target group (**Langfeldt**; **Scordato**, 2015).

Searles *et al.* (2016) have overviewed three methods to measure societal impact: "payback", "economic evaluations", and "case studies" (we will discuss case studies in section 2.3, because it is one of the main methods used). **Searles** *et al.* (2016) noted that the payback or return investment on research was first proposed by **Buxton** and **Hanney** (1998) in the UK, and that the payback framework is frequently used in the health area (**Raftery**; **Hanney**; **Greenhalgh**; **Glover**; **Blatch-Jones**, 2016). Through interviews with researchers, the impact of their research can be understood (**Searles** *et al.*, 2016). **Buxton** and **Hanney** (1998) identified five categories of possible research payback, including "knowledge impact", "impact on future research", "political impact", "economic impact", and "impact on different health sectors." A promising way to measure these paybacks is to look at similar past projects and compare their impact on society (**Buxton**; **Hanney**, 1998). Payback methods, however, might sometimes become tedious and require evaluating many documents and resources (**Searles** *et al.*, 2016).

In developing indicators for societal impact measurement, **Molas-Gallart**, **Salter**, **Patel**, **Scott**, and **Duran** (2002, p. iv) demand that they should be

> "simple, measurable, actionable, relevant, reliable and reproducible, and timely."

However, these requirements are difficult to fulfil, because societal impacts include a variety of ethical, safety, economical, legal, and political issues (**Spaapen**; **Dijstelbloem**; **Wamelink**, 2007). This is the reason why solutions such as the payback framework are expensive. **Ovseiko**, **Oancea**, and **Buchan** (2012) conducted a survey on 139 clinical faculty members in order to review and evaluate the validity of the 20 impact indicators which were proposed by the *Higher Education Funding Council for England* (*HEFCE*) to help *REF* in allocating public research funding to higher education institutions (**Ovseiko** *et al.*, 2012). This study indicated that most indicators had some validity; however, concerns still exist regarding the operationalization and measurement of these indicators in a reliable manner. This study indicated that more valid and reliable indicators are required for measuring societal impact.

Willis *et al.* (2017) identified indicators for societal impact measurements of *Applied Prevention Research Centres* (*APRCs*) using the Delphi method. They asked stakeholders to identify the most important indicators. They collected a variety of indicators from existing research impact literature and asked the stakeholders to rate the importance and feasibility of these indicators, which resulted in eight indicators rated as highly important and highly feasible, such as being cited in public policy documents (see Table 2 for an overview).

Table 2. High importance indicators with high and low feasibility ratings

Capacity building indicators	**DM[c] indicators**
Items with high importance and high feasibility to measure[a]	
Stability of center funding for indirect/overhead costs	Use of research in informing public health programs and policy: input from public health practitioners / policymakers about what research has been used to inform their work
Number or percentage of center projects driven by expressed policy / practice needs of engaged policy / practice organizations	Citations in public policy documents
Evidence that research and policy and practice perspectives have jointly informed center priorities and activities	Evidence of center contributions to supporting decision-making processes and groups (e.g. steering groups, ministerial working groups, and government committees)
Number and type of knowledge exchange activities undertaken by the center	
Number of center projects involve co-production of knowledge with knowledge users	
Items with high importance and low feasibility to measure[b]	
Reputation of the center for producing relevant, credible, high-quality, and timely research	Center contributions to policy development, implementation, and enforcement for population-based prevention
Center influence on changes over time in knowledge, skills, and commitment / intention to use research findings among knowledge users in policy, program implementation, and administrative positions	Evidence of sustained impact of center research over time
Evidence the center has contributed to building the field of prevention research and its application.	
Impact of a center's partnership output/products on advancing relevant prevention research and its application.	
Influence of center knowledge exchange activities on relevant audiences, including center staff, students, researchers, decision makers, practitioners, etc.	

Notes: [a] Identified using importance/feasibility means across all groups: indicators with highest five importance ratings (falling above the mean) with feasibility ratings falling above the mean.
[b] Identified using importance/feasibility means across all groups: indicators with highest five importance ratings (falling above the mean) with feasibility ratings falling below the mean.
[c] DM means decision-making.
Source: **Willis** *et al.* (2017, p. 87).

Wilsdon *et al.* (2015) and **Thelwall** and **Kousha** (2015) have pointed to two important metrics for quantitative measurement of the wider societal impact, "clinical guideline citations" and "Google patent citations." **Thelwall** and **Kousha** (2015, p. 615) emphasized that among all indicators,

> "only *Google Patents* citations and clinical guideline citations clearly reflect wider societal impact and no social media metrics do."

We would like to add systematic review citations, since they are related to clinical guideline citations: systematic reviews are extensively cited in clinical guidelines. One way to measure societal impact using clinical guidelines is to investigate the citations mentioned in clinical guidelines and identify the functions of those citations: for instance, having an impact on clinical practices, contributing to the diagnosis of diseases and medical disorders treatment (see **Jones**; **Hanney**, 2016; **Taylor**, 2013a).

> "Being cited in a clinical guideline is direct evidence that a study has had a societal impact by guiding medical practice" (**Thelwall**; **Maflahi**, 2015, p. 960).

> Three useful metrics for quantitative measurement of societal impact seem to be ‘clinical guideline citations’, ‘*Google* patent citations’, and ‘policy document citations’

Some studies have already used this approach by investigating references cited in clinical guidelines (**Nelhans**, 2016). For example, **Grant** (1999) analysed the funding bodies in the 235 references cited in three clinical guidelines. The median time lag between the reference publication date and the guideline publication date was 5 years. 34% of cited references in clinical guidelines were supported by industry, 22% by government, and 17% by the private non-profit sector. Using clinical guidelines for measuring impact is not without biases. Guidelines may be spatially biased in citing references: for instance, a study indicated that the references from Edinburgh and Glasgow had a high frequency in the UK clinical guidelines (**Lewison**; **Sullivan**, 2008a).

Systematic reviews in medical sciences have become very important due to their great potential of improving health services. One source for publishing systematic reviews is *Cochrane* (see *https://www.cochranelibrary.com*), which has been shown to play a major role in improving health services such as introducing new treatments.

Cochrane is a good example of a publication-based approach of how research results transfer from research to practice. *Cochrane* reviews can have economic benefits by improving clinical quality and reducing unnecessary procedures (**Bunn** *et al.*, 2015). However, it is difficult to assess whether *Cochrane* reviews have a direct impact on health services or an intermediate impact through clinical guidelines (**Lewison**; **Sullivan**, 2008b).

According to **Wilsdon** *et al.* (2015) and **Thelwall** and **Kousha** (2015), patent citations are an important metric for quantitative measurement of the wider societal impact besides “clinical guideline citations” (see above). Many citations in patents are journal articles. Bibliometric analysis of citations in patents can be used to evaluate the impact of publicly-funded (medical) research on innovations in different industry sections (**Ovseiko** *et al.*, 2012). **Narin**, **Hamilton**, and **Olivastro** (1997) investigated the flow of knowledge from publicly funded research into industries by analysing the proportion of publicly funded research cited in the US patents. They indicated that 73% of the references in the US patents were supported by publicly funded academic research. This shows that the US industry relies a lot on publicly funded research. **Narin** *et al.* (1997, p. 330) concluded that

> “the science that is contributing to high technology is mainstream; it is quite basic, quite recent, published in highly influential journals, authored at major universities and laboratories, and supported by *NSF*, *NIH*, the *Departments of Defence* and *Energy*, and by other public and charitable institutions.”

Callaert, **Van Looy**, **Verbeek**, **Debackere**, and **Thijs** (2006) found that approximately 50% to 55% of non-patent references in patent documents were research papers indexed in the *Web of Science* (*WoS*, *Clarivate Analytics*). However, the coverage of scientific references in patents varies across disciplines. In the most recent study, **Poege**, **Harhoff**, **Gaessler**, and **Baruffaldi** (2019) matched 4.8 million patent families and 43 million publication records. The authors found a strong positive correlation between the quality of publications cited in patents and the value of the respective inventions. They ranked

> “patents by the quality of the science they are linked to. Strikingly, high-rank patents are twice as valuable as low-rank patents, which in turn are about as valuable as patents without direct science link” (**Poege** *et al.*, 2019).

2.2. Problems in measuring societal impact

The *Higher Education Funding Council for England* (2009) has proposed several key challenges to measuring impact, including time lags, attribution and limitations of metrics. Other researchers have confirmed these challenges (e.g. **Langfeldt**; **Scordato**, 2015).

The time lag between when the research is carried out and when the research comes to have its impact on products, processes or social practices is a major issue in measuring societal impact **(Spaapen**; **Van-Drooge**, 2011). Research needs time to become measurable (*Higher Education Funding Council for England*, 2009; **Oancea**, 2013; **Spaapen**; **Van-Drooge**, 2011). It is not clear which time frame should be considered in order for the impact of the research to become evident (*Higher Education Funding Council for England*, 2009). According to the *Health Economics Research Group* (2008, p. 7),

> “the issue of lags has often been ignored in the past, but from a policy point of view may be crucial, especially in the context of the current agenda for translational research.”

Measuring impact seems achievable when considering longer time frames. One can expect long time lags between when research is adopted and embodied in society and when its impacts can be measured (**Feller**, 2017). As a rule, societal impact is longer-term impact, such as research that contributes to improve the quality of life, decreases unemployment or improves a nation’s health and safety (**Ruegg**; **Feller**, 2003). In the literature, many authors have pointed to the problem of (long) time lags in measuring societal impact:

> "sufficient time must have passed to capture a major part of eventual impact, but not so much that traceability to research projects becomes difficult" (**Van-der-Meulen**; **Rip**, 2000, p. 13).

> "It may take years before knowledge is applied and has impact" (**De-Jong**; **Van-Arensbergen**; **Daemen**; **Van-der-Meulen**; **Van-den-Besselaar**, 2011, p. 62).

According to **Kok** and **Schuit** (2012, p. 2)

> "pathways from research to 'impacts' are very diverse: sometimes short and traceable, but often long, through multiple reservoirs, and via utilization at untraceable times and places."

Which estimated time frames have been presented for the process from research to practice? The Dutch physicist Hendrik Casimir proposed 15-year time windows for the research results to have practical applications. Other studies have offered to use 10- or 20-year time windows; considerable impact from research projects within short time windows cannot be expected, unless for exceptional breakthroughs in science (**Eisenstein**, 2016). According to **Morris**, **Wooding**, and **Grant** (2011), in biomedical fields the time lag from the publication of research to the manifestation of its impacts is almost 17 years,

> "whether that impact represented formal adoption of a medical intervention or marketing of a new drug" (**Eisenstein**, 2016, p. s21).

However, **Morris** *et al.* (2011, p. 510) have emphasized that in order to understand time lags, we should first agree on "models, definitions and measures; which can be applied in practice." There might be field differences in the time lag between a piece of research and its practical impact, since

> "different kinds of research achieve impact over different time scales", according to **Raftery** *et al.* (2016, p. 50).

Delaying measuring research impact for several years after the completion of the research project might raise some concerns (**Langfeldt**; **Scordato**, 2015).

First,

> "the evaluation may no longer be a relevant basis for decision-making [about current research]" (**Langfeldt**; **Scordato**, 2015, p. 25).

Second, in the long term, the outputs of research projects might be combined to different extents far beyond the initial individual projects, so that their impact is almost impossible to capture and measure (**Langfeldt**; **Scordato**, 2015). This problem can apparently be avoided by focusing on the time shortly after finishing a project. However,

> "most often *ex post* evaluations of research projects and programmes take place shortly after the completion of the projects/programme, and before impacts can be substantially identified" (**Langfeldt**; **Scordato**, 2015, p. 25).

One solution to the dilemma that the societal impact of research right after its completion cannot be substantially measured and long time frames fail because of the relevance problem, is to focus on the potential (i.e. not attained) impact of research (**Langfeldt**; **Scordato**, 2015).

Attribution is another key challenge in measuring societal impact. Attribution is

> "the extent to which an impact can be attributed to a particular research project [which] is a matter of judgement" (**Raftery** *et al.*, 2016, p. 50).

It's difficult to "attribute" specific impacts to certain research, because impact can be influenced by many intervening factors (besides the focal research). Thus, it cannot be reliably said whether the impact has been the result of the research activity or other factors (e.g. other research; see **De-Jong** *et al.*, 2011; *Higher Education Funding Council for England*, 2009). Even if we are able to determine which research the society has benefited from, it would be challenging to determine "what benefits can be attributed to what cause", which is known as the "causality problem" (**Martin**, 2007). Another problem with the impact attribution of research is that impact might exist, but one is not aware of it. Interviews with people involved in certain research activities and target groups such as stakeholders may discover these covert instances of impact. For instance, a "change in behaviour" may not be considered as being an impact, although in fact, it is; or improvement in "quality of life" may be considered as a simple change in behaviour, while it is so important (*Siampi*, 2011).

There are also difficulties in developing indicators for third-stream activities, such as differences across disciplines (see section 2.1). Disciplines may require more or less time to have an impact in society, such as industry, economy, and people's lives. Therefore, it might not be a good and practical idea to compare the performance of third-stream activities across universities and different disciplines (**Oancea**, 2013). Which further difficulties and problems exist in developing these indicators?

- First, some universities are finding it challenging to measure, track, and demonstrate the impact of their research, because they have not been trained and prepared to do so. Some universities do not have the required knowledge, infrastructure, experts, capability, and explicit policy to implement these initiatives (**Oancea**, 2013).

- Second, there is a lack of straightforward methods for measuring societal impact (**Langfeldt**; **Scordato**, 2015). Since different fields have different societal impact, the notion of societal quality and its operationalization must be broad. Operationalizing societal quality, therefore, depends on the nature of the research field (**Van-der-Meulen**; **Rip**, 2000).
- Third, the success of research projects is scarcely predictable, and serendipity may play a (major) role in the development of new products.
- Fourth, the nature of university-industry interactions has frequently been informal, based on personal connections between individuals, which makes it difficult to find appropriate methods for measuring this kind of impact (**Molas-Gallart** *et al.*, 2002).

2.3. Case studies

> Case studies in which societal impact of certain pieces of research is explained seem to be appropriate resources for capturing and demonstrating the societal impact of research

Case studies provide examples of how research has impacted different aspects of (specific) end users' lives. These studies are narratives and success stories that universities and research institutes provide in order to demonstrate their societal impact. Case studies are used either for prospective societal impact realizations of public research investments, or for conducting retrospective assessments. Every case study is more or less unique in terms of its explanation of impact on society. In the UK, case studies are brief documents

> "assessed by two criteria:
>
> (1) Reach – 'the spread or breadth of influence or effect on the relevant constituencies'; and
> (2) Significance – 'the intensity or the influence or effect'" (**Van-den-Akker**; **Spaapen**, 2017, p. 21).

One advantage of using case studies for measuring societal impact is that –similar to editorial peer-review– expert judgement is used to determine research impact: experts assess the societal impact dimension based on case studies. *REF* has taken a new approach in this regard, going beyond experts, and employing external users of research as part of impact assessment processes. External users provide their perspective regarding the impacts claimed by academics and experts. Case studies use a variety of indicators to accompany the narratives demonstrating the impact of research (**Wilsdon** *et al.*, 2015). For instance, **Wilsdon** *et al.* (2015) noted that the authors of almost 7,000 case studies that were submitted to *REF 2014* had used a variety of indicators (with little consistency) for showing research impact. The missing consensus in indicator use might reflect the broad spectrum of research for which case studies have been written in the past (**Wilsdon** *et al.*, 2015).

Marcella, **Lockerbie**, **Bloice**, **Hood**, and **Barton** (2018) have overviewed some disadvantages of case studies. Case studies "rely on expert advisory panels to review qualitative impact statements" (**Searles** *et al.*, 2016, p. 4). However, similar to interviews and self-reports, they have their own biases such as exaggerating the impacts of research (**Searles** *et al.*, 2016). Another critique of case studies is that expert panels might fail to recognize the "real" impact of research projects that are not presented well in the narratives, and they may focus on the impact story that is well presented. In other words, the practical importance of the underlying research for society may take a back seat. Furthermore, the scores given to case studies might be influenced by factors which should not impact those scores (**Marcella** *et al.*, 2018). For instance, case studies of established senior researchers with external funding might be scored higher than those of other researchers (**Kellard**; **Śliwa**, 2016).

An important problem with case studies is that preparing them is expensive and requires a lot of resources (*Department for Business, Energy & Industrial Strategy*, 2016). For example, the

> "*University College London* alone wrote 300 case studies that took around 15 person-years of work, and hired four full-time staff members to help, says David Price, the university's vice-provost for research" (**Van-Noorden**, 2015, p. 150).

The semi-structured interviews by **Marcella** *et al.* (2018, p. 613) showed that writing case studies have been

> "time consuming, frustrating and iterative 'backwards and forwards, backwards and forwards'."

These efforts might decrease in the future, because universities and research institutes have taken actions to continuously capture the information required for case studies (*Department for Business, Energy & Industrial Strategy*, 2016). The fact remains, however, that great effort is required to write case studies.

What has research on case studies shown? The report by *King's College London* and *Digital Science* (2015) describes the results of an analysis on about 7,000 impact case studies submitted to the *REF* 2014. An example of such case studies is

> "research showing the importance of same-day diagnostic tests for tuberculosis led to improvements in access to care and reductions in costs incurred by patients in Malawi, Nigeria, Yemen, Ethiopia, Nepal and elsewhere" (*King's College London* and *Digital Science*, 2015, p. 12).

Results of the analysis of impact case studies revealed 3,709 unique research impacts; the UK research seems to have made a wide range of contributions to society (*King's College London* and *Digital Science*, 2015). **Terama**, **Smallman**, **Lock**, and **Johnson** (2017, p. 14) clustered the UK impact reports and found six general forms:

> "influence on education; public engagement; environmental technologies and solutions; enterprise; policy impact; and clinical applications."

Thus, case studies might result in very different reports on research, which makes their comparison difficult. In order to improve the future interpretation of case studies, it is important that case studies be written in a consistent manner (*King's College London and Digital Science*, 2015).

This recommendation is in line with **Heyeres**, **Tsey**, **Yang**, **Yan**, and **Jiang** (2019, p. 10), who emphasized

> "the need for more consistency in reporting through a case study approach, more systematic reporting of translation pathways and greater transparency concerning estimated costs and benefits of the research and its translation and impact assessment."

The authors analysed the characteristics of 25 impact case studies in order to identify their translation activities and quality of reporting. Results indicated that

> "24 papers reported intermediate impacts, such as advocacy, or the development of statements, tools, or technology. 4 reported on longer-term societal impacts, such as health outcomes and economic return on investment. 7 reported on translation activities" (**Heyeres** *et al.*, 2019, p. 10).

The reporting areas that obtained the weakest scores were

> "identification of stakeholder needs and stakeholder involvement, and ethics and conflict of interest" (**Heyeres** *et al.*, 2019, p. 10).

2.4. Societal impact measurements at funding organizations

Societal impact measurements are not only relevant after carrying out research, but also in the process of receiving research funds. The UK government-funded granting agencies, the *Swiss National Science Foundation* (*SNSF*), the *US National Science Foundation* (*NSF*) and other funding organizations require researchers to estimate the impact of proposed research in grant proposals (**Dance**, 2013). However, funding organizations ask for different kinds of impact to be included in grant proposals. For instance, the *National Institutes of Health* (*NIH*) cares more about the impact of research in one specific field rather than broad impact. Other organizations are interested in the economic implications of research. Judging the societal impact of research is something that scientific communities might be reluctant to do. A survey study in this regard, which investigated 428 people from funding agencies, suggested that such resistance in the scientific communities is possibly due to their unwillingness to conduct such activities, rather than a lack of confidence in their ability to judge the broader societal impacts (**Holbrook**; **Hrotic**, 2013).

Langfeldt and **Scordato** (2015) overviewed the impact measurements at funding agencies. They showed that funding agencies have different approaches to the broader impact measurement of research. For example, the *Research Council of Norway* rates impact criteria separately, *NSF* gives an overall rating, while at the *Natural Environment Research Council* (*NERC*) impact is specifically commented. The *EU Framework Program/Horizon 2020* uses an impact score threshold for research funding and gives weight to impact in the final decision. One criticism of impact measurements at funding organizations is that they do not let laypeople and potential users outside academia get involved in evaluating research proposals. Some organizations do get users involved (e.g. in project selection), but not in the assessment of the content of research (**Langfeldt**; **Scordato**, 2015).

2.5. What are the societal problems that should be solved by science?

Societal impact measurements should focus on societal needs. The measurements should be intended to show whether societal needs have or have not been (successfully) targeted by research efforts. Although it might be obvious that societal impact measurements start with societal needs, these measurements usually begin with the research that has been conducted at a research institution. In societal impact measurements, attempts are then made to capture the possible impact (e.g. using altmetrics, which are discussed in section 3). This process might not, however, be efficient in capturing and demonstrating pressing societal needs. The wide range of societal areas to which UK research can be assigned (see above), may be interpreted as a sign that the research is not (always) oriented towards pressing societal needs. In recent years, frameworks have been published that attempt to reveal these needs. These frameworks can be used to suggest which societal needs can (should) be addressed by science. **Hicks**, **Stahmer**, and **Smith** (2018) proposed a conceptual framework, based on the **Nussbaum** (2001, p. 78ff; 2009, p. 76ff) list of central capabilities, which can be used for categorizing (and focusing on) the societal goals of research. The list contains 10 items including "life", "bodily health", "bodily integrity", "sense, imagination and thoughts", "emotions", "practical reason", "affiliation", "other species", and "control over the environment."

Hicks *et al.* (2018) noted that many research activities are only useful for a particular scientific community. This type of research is known to have inward-facing goals. On the other hand, outward-facing goals of research focus on specific societal needs, such as solving agricultural issues. To evaluate the inward-facing value of academic research, traditional metrics such as citation counts can be applied. Although methods exist to evaluate outward-facing values of research (see above), they are not applicable in all disciplines, and it is not clear whether they measure what they intended to measure. The framework of **Hicks** *et al.* (2018, p. 5)

> "suggests that, because researchers typically have both inward- and outward-facing goals, both inward- and outward-facing metrics should be used. The list of central capabilities can help researchers communicate the goals of their research and identify areas where bibliometricians and evaluators need to develop new metrics."

Pollitt *et al.* (2016) proposed a similar list to **Hicks** *et al.* (2018), however, focusing on potential contributions of health research, outlining researchers' and the general public's preferences for different types of health research impact. For instance, the list included the suggestion that research should contribute to better care of patients. **Pollitt** *et al.* (2016, p. 1) indicated that

> "the general public and researchers provided similar valuations for research impacts such as improved life expectancy, job creation and reduced health costs, but there was less agreement between the groups on other impacts, including commercial capacity development, training and dissemination."

Although it is possible nowadays to acknowledge and measure the value of selected works of scientists who laid the groundwork for well-known technologies such as *Google* or certain communication technologies, it will not be possible for every research to foresee its usefulness for specific needs in the lists of **Hicks** *et al.* (2018) and **Pollitt** *et al.* (2016). The question is whether or not metrics (such as altmetrics) can help us measure the success and benefits of research projects (*National Research Council*, 2014). The conceptual frameworks proposed by **Hicks** *et al.* (2018) –based on the **Nussbaum** (2001, 2009) list of central capabilities– and **Pollitt** *et al.* (2016) might to some extent support the process of identifying the projects that would be beneficial to the society. High societal impact scores should point to research addressing listed needs by solving pressing societal problems.

A good example for a framework in which societal needs have been formulated, funds for reaching the goals provided, and research and indicators for evaluation proposed, are the *Millennium Development Goals* formulated by the *United Nations* in 2000 (see *https://www.un.org/millenniumgoals*).

Eight international development goals were established for the year 2015 (e.g. to eradicate poverty and hunger and to reduce child mortality). Detailed reports have been published which demonstrate –based on various sets of indicators– which goals have been reached, and which challenges are still faced (**Way**, 2015).

3. Altmetrics

Societal impact considerations in research evaluation can be seen as a scientific revolution in scientometrics, which have led to a broadening of the impact term (**Bornmann**, 2016; **Derrick**; **Samuel**, 2016): current impact measurements frequently include the whole society and are not restricted to science only. As the overview in section 2 reveals, no standard method has been established in scientometrics to measure societal impact; many methods, indicators, approaches, etc. have been proposed and used. In addition, frequently used methods have been targeted by fundamental critiques: for example, the case studies approach has the disadvantage that comparisons between institutions are scarcely possible and results are not generalizable. Against the backdrop of this situation in societal impact measurements, the so called "alternative metrics" or "altmetrics" came into play (**Priem**; **Taraborelli**; **Groth**; **Neylon**, 2010).

Altmetrics include new ways of measuring the impact of research (**Adie**, 2014) that consider non-traditional metrics such as number of page views, downloads, recommendations, shares on social media, social bookmarks, comments, ratings, and tweets (**Liu**; **Xu**; **Wu**; **Chen**; **Guo**, 2013; **Wilsdon** *et al.*, 2015). Altmetrics are expected to provide new insights into the impact of research, mainly the online impact of research (publications) via its appearance on *Facebook*, *Twitter*, blogs, and other web-based platforms (**Zahedi**; **Costas**; **Wouters**, 2014). The use of altmetrics assumes that impact can be measured beyond citation counts by demonstrating the overall usage of research (publications) on the web and social media platforms. Altmetrics seem to make broader interpretations of impact possible (**Waltman**; **Costas**, 2014), for instance by showing how many times an article has been downloaded, reflecting its usage (**Haustein**, 2014).

Many sources of altmetrics (e.g. *Twitter*) emerge faster than citations, often right after the research is published, and often come from open sources. Most sources seem to reveal other aspects of impact that differ from citation counts (**Robinson-García**; **Torres-Salinas**; **Zahedi**; **Costas**, 2014). According to **Konkiel**, **Madjarevic**, and **Lightfoot** (2016, p. 16),

> "citations are a useful indication of traditional scholarly influence, whereas altmetrics can tell us about public influence and non-traditional scholarly influence, which can occasionally predict later citations. You need both kinds of metrics to get the full picture of research's value."

The importance of altmetrics today is reflected by the fact that many publishers of scientific journals, such as *Elsevier*, *Springer*, *Wiley*, *BioMed Central*, *Nature* and *PLoS* report altmetrics for published papers (**Thelwall**; **Kousha**, 2015; **Wilsdon** *et al.*, 2015).

Several providers of altmetrics data exist which collect and process the data from social media such as *Altmetric* (see *https://www.altmetric.com*), *Plum Analytics* (see *http://plumanalytics.com*), and *Impact Story* (see *https://profiles.impactstory.org*) (**Sugimoto**; **Work**; **Larivière**; **Haustein**, 2017).

There are, however, inconsistencies and variations in altmetrics data received from these sources which make comparing datasets problematic and challenging (**Sugimoto** *et al.*, 2017). **Zahedi**, **Fenner**, and **Costas** (2014) and **Zahedi** and **Costas** (2018) found variations in the social media metrics for the same publications across different altmetrics sources.

Haustein, **Costas**, and **Larivière** (2015, p. 6) argued that

> "disciplines that have stronger ties to society (e.g. social sciences and humanities) or deal with specific concerns of people's everyday lives (health or environmental problems; i.e., biomedical and health sciences and life and earth sciences) have a higher probability of appearing on social media platforms than publications from more technical and applied disciplines (e.g. Natural Sciences and Engineering) or with a higher technical and complexity component (e.g. Mathematics and Computer Science)."

Wouters, **Zahedi**, and **Costas** (2019) classified available social media platforms used for impact measurements into the following categories (similar classifications have been proposed by **Moed**, 2017):

(1) Social bookmarking tools: Reference managers (e.g. *Mendeley*, see *http://www.mendeley.com*) can be used to count the number of times an item has been bookmarked or saved to a library (readership count) (**Wouters** *et al.*, 2019).

(2) Microblogging tools: *Twitter* is the main microblogging tool with the possibility of sharing and discussing scholarly documents online. *Twitter* indicators for altmetrics studies are the number of tweets and retweets, likes, and replies (**Wouters** *et al.*, 2019).

(3) Blogs: Blogs are a platform for disseminating scientific materials, often maintained by scientists or science journalists. Blog mentions (e.g. the mentioning of a researcher) and blog citations (of publications) are the two main data that can be obtained from blogs (**Wouters** *et al.*, 2019).

(4) Wikis: Wikis such as *Wikipedia* (an online encyclopaedia) are platforms for sharing information that can be edited by the general public. Citations of publications in wikis is a typical metric that can be obtained from *Wikipedia* (**Wouters** *et al.*, 2019).

These social media platforms cover a different amount of scientific papers. For example, the study by **Mas-Bleda** and **Thelwall** (2016) showed that among the altmetrics sources, *Mendeley* had the highest coverage of papers (80%), followed by *Twitter* (34%). Papers had received negligible mentions in other sources such as *Wikipedia* (2.6 %) and course syllabi (1.2 %) (**Mas-Bleda**; **Thelwall**, 2016).

After having presented some general information on altmetrics, we review the literature on specific altmetrics in the following sections.

3.1. Blogs

Blogs are one of the oldest social media platforms.

> "Blogs are websites that allow individuals to create personal webpages of text, pictures, graphics, videos, and other multimedia with the same ease as creating a word processing document. Unlike traditional websites, however, they provide a space where people can post comments and engage in online conversations" (**Boling**; **Castek**; **Zawilinski**; **Barton**; **Nierlich**, 2008, p. 504).

Some studies have noted that blog usage has declined over recent years, specifically among academics (**Fausto** *et al.*, 2012; **Shema**; **Bar-Ilan**; **Thelwall**, 2015). Blogs are used by a variety of groups such as journalists and activists for different purposes such reading about the most recent events (**Bonetta**, 2007) and seeking information (**Puschmann**; **Mahrt**, 2012). Bloggers might play an important role in the dissemination of scientific knowledge by simplifying and explaining complex scientific results to the general public (**Fausto** *et al.*, 2012). Bloggers are frequently scientists or people working in academia (**Shema**; **Bar-Ilan**; **Thelwall**, 2014) as evidenced in previous studies such as **Shema**, **Bar-Ilan**, and **Thelwall** (2012), who found that the majority of science bloggers (59%) were either students or researchers. **Puschmann** and **Mahrt** (2012) showed that 45% of the bloggers active on the German platform *scilogs.de* had a PhD degree. *SciLogs* is a website run by *Spektrum der Wissenschaft* which hosts over 60 scholarly blogs in total (**Puschmann**; **Mahrt**, 2012).

The efforts of scientific bloggers, besides eliminating the obstacles of gaining access to scientific knowledge (**Fausto** *et al.*, 2012), lead to another public service, i.e. giving advice and recommendations about public health and social issues and distributing rich information for practical use by the public (**Shema**, **Bar-Ilan**; **Thelwall**, 2015). Expert bloggers such as medical bloggers and skilled professionals use blogs to write about and discuss health issues. Medical bloggers are faithful to their audiences, and thus use valid resources to share information. One major motivation for medical blogging, besides providing people with health information, is to direct people's attention toward certain health issues (**Kovic**; **Lulic**; **Brumini**, 2008):

> "Medical blogs are frequently picked up by mainstream media; thus, blogs are an important vehicle to influence medical and health policy" (**Kovic** *et al.*, 2008, p. 1).

Most papers mentioned in blogs seem to be from prestigious journals (**Groth**; **Gurney**, 2010). **Fausto** *et al.* (2012) indicated that prestigious journals, such as *Science*, *Nature*, and *Proceedings of the National Academy of Sciences of the United States of America* (*PNAS*), were extensively covered in blogs in 2009 and 2010. Other studies have come up with similar findings. For instance, **Shema**, **Bar-Ilan**, and **Thelwall** (2015) showed that in 2009 21% of *Psychological Science* articles were mentioned in blogs followed by *Science* (18%), *Nature* (14%), and *PLoS Biology* (13%). In 2010, 31% of the papers published in *New England Journal of Medicine* were mentioned in blogs followed by *Psychological Science* (25%), *Nature* (23%), and *Science* (20%).

Shema, **Bar-Ilan**, and **Thelwall** (2014) investigated the correlation between being mentioned in blogs and being cited in papers later on. They found that blogged papers received more citations than other papers from the same journal. They noted that one possible reason is that bloggers opt to write about better papers which might receive more citations in the future, or because papers that are discussed in blogs receive more attention among the academic community which consequently results in obtaining more citations (**Shema**; **Bar-Ilan**; **Thelwall**, 2014).

3.2. *Mendeley*

Mendeley is both a tool for reference management and sharing research papers which functions as a scientific network platform in which scholars can connect to members with whom they share similar interests (**Rodgers**; **Barbrow**, 2013). An advantage of publication bookmarks in reference management as data source is that

> "as with citations and downloads, usage data are generated as a by-product of existing workflows. Unlike tweeting, for example, searching for and managing literature is an established part of the scholarly communication process" (**Haustein**, 2014, p. 335).

Mendeley has a great coverage of scientific fields and a large number of users and readers (**Hammarfelt**, 2014; **Haustein**, 2014; **Mas-Bleda**; **Thelwall**, 2016) –compared to other reference management software (e.g. *Zotero*). **Zahedi**, **Costas**, and **Wouters** (2014) reported that *Mendeley* had the highest coverage of articles (63% saved at least once) compared to other social medial platforms such as *Twitter* (13%), followed by *Facebook* (2.5%) and blogs (1.9%). **Priem**, **Piwowar**, and **Hemminger** (2012) found that 80% of *PLoS One* articles were bookmarked in *Mendeley*, followed by *Facebook* and *Twitter*.

It seems that *Mendeley* measures impact which deviates (moderately) from that which is measured by citations. According to **Mohammadi** and **Thelwall** (2014, p. 1627)

> "low and medium correlations between *Mendeley* bookmarks and citation counts in all the investigated disciplines suggest that these measures reflect different aspects of research impact."

In another study, **Mohammadi**, **Thelwall**, **Haustein**, and **Larivière** (2015, p. 1832) noted that *Mendeley* statistics might reveal

> "the hidden impact of some research articles, such as educational value for non-author users inside academia or the impact of research articles on practice for readers outside academia."

However, **Bar-Ilan** (2014) found fluctuations in the number of *Mendeley* readers for various publications to be a potential disadvantage of this data source. Her finding indicated that the number of readers for selected publications decreased over time. One possible reason is that *Mendeley* users have updated their publication lists, having removed publications already stored in the library (**Thelwall**, 2017b).

Bornmann and **Haunschild** (2015) investigated the interest of the various readership groups in certain scholarly papers. Their study was based on papers included in *F1000Prime* –a post-publication peer review system. In other words, they examined which *Mendeley* groups used or saved which type of documents in *F1000Prime*. Scholarly papers are tagged in *F1000Prime* by experts, as "good for teaching", "confirmation of previous results", "interesting hypothesis", etc. Almost all user groups (mainly PhDs, postdocs, professors, librarians, etc.) showed less interest in documents with the "confirmation" and "interesting hypothesis" tags. Almost all user groups (mainly postdocs, PhDs, and professors) were more interested in papers with the "new finding" tag than other papers. Papers with the "technical advance" tag were also popular among all user groups. **Bornmann** and **Haunschild** (2015) noted that the papers with the "good for teaching" tag were of interest to the people (lecturers and researchers outside academia) with less engagement with academic research.

In another study, **Bornmann** and **Haunschild** (2016c) proposed the use of overlay maps to demonstrate the impact of publications in terms of readership data. They visualized *Mendeley* reader counts of the 2012 publications from the *WoS*.

Their overlay maps can be used to see the disciplines in which publications of an institution have been read, and to what extent. They showed that, for example, for *TU Munich*

> "many papers have been read in the miscellaneous categories of biology, medicine, and chemistry and also the readership per paper is high in these categories compared to other subdisciplines" (**Bornmann**; **Haunschild**, 2016c, p. 3069).

Bornmann and **Haunschild** (2016c) also created overlay maps for some journals based on *Mendeley* reader count data. The map for the *Journal of the American Society for Information Science and Technology* (*JASIST*) indicated the scope of the articles published in this journal in 2012. As expected, library and information science have been a major focus of the articles published in *JASIST*.

3.3. *Wikipedia*

Wikipedia is an open access encyclopaedia that can be accessed and edited by anyone. Mentions of publications in *Wikipedia* are used as an altmetrics source. Since *Wikipedia* content can be manipulated by anyone, using the number of publication mentions in *Wikipedia* in research evaluation should be used with cautions (**Serrano-López**; **Ingwersen**; **Sanz-Casado**, 2017). Studies have indicated that the coverage of articles on *Wikipedia* (similar to blogs) is lower than their coverage on other platforms such as *Mendeley* and *Twitter* (**Priem** *et al.*, 2012). For instance, **Mas-Bleda** and **Thelwall** (2016) indicated that articles were rarely cited on *Wikipedia* (2.6%).

3.4. Policy documents

Daugbjerg *et al.* (2009, p. 806) defined policy documents

> "as written documents that contain strategies and priorities, define goals and objectives, and are issued by a part of the public administration."

Policy documents mentions (citations of publications in policy documents) are one of the most valuable altmetrics sources that can be used in target-oriented (the target is policies on different areas such as climate change or health) impact measurement. The references in policy documents can be analysed to determine which publications and to what extent have been cited in policy documents (**Bornmann**; **Haunschild**; **Marx**, 2016). For instance, **Bornmann** *et al.* (2016) showed that among the 191,276 climate change publications only 1.2% had been cited at least once in policy documents. This result shows that these 1.2% of publications have (possibly) had some impact on climate change policies. In other words, the majority of publications (98.8%) on climate change have had no impact on climate change policies. The authors discussed various reasons for this result. **Haunschild** and **Bornmann** (2017) also indicated that a low percentage (0.5%) of *WoS* publications in different subject categories were cited in policy documents.

Tattersall and **Carroll** (2018) analysed citations in policy documents and found that 1,463 papers from authors at the *University of Sheffield* (0.65% of *Sheffield* research) were cited by at least one policy document, most of which were journal articles (99%). The publications were cited in policy documents three months to 31 years after their appearance. The authors indicated that some topics were cited more frequently in policy documents such as medicine and dentistry than other topics such as social science and pure science. **Tattersall** and **Carroll** (2018) suggested several data problems with policy documents. For instance, they noted that it is not entirely clear how the company *Altmetric* identifies "policy documents", and that some of these documents might be journal articles and not policy documents (**Tattersall**; **Carroll**, 2018).

Vilkins and **Grant** (2017) investigated which papers were cited in policy documents. They analysed 4,649 references cited in 80 Australian policymakers' publications from 2010 to 2017. The most cited references in policymaking publications were journal articles (n = 1836), federal government reports (n = 1106), and Australian business information (n = 373). This is in contrast with previous studies which showed that policymakers were less willing to cite scholarly publications (**Vilkins**; **Grant**, 2017). **Vilkins** and **Grant** (2017) noted that references in policy documents can be used in research evaluation in order to obtain a better understanding of research utilization and impact in society.

Haunschild and **Bornmann** (2017) found that more than 100 sources of policy documents (e.g. the *European Food Safety Authority* and the *UK Government*) were tracked by *Altmetric*. There are, however, many other sources that are not tracked by *Altmetric* (**Bornmann** *et al.*, 2016). **Bornmann** *et al.* (2016) suggested that *Altmetric* should specify the types of policy making organizations and the name of organizations in each type. It is also mentioned that since *Altmetric* does not include all (or the majority of) policy-related sources, mentions in policy documents should be used with cautions for impact measurement (**Haunschild**; **Bornmann**, 2017).

3.5. *Twitter*

Twitter is a social networking site via which millions of people (including academics) are connected to each other worldwide. People can post 280-character tweets about different topics, respond to tweets, and retweet them. People can also post photos, videos, and links to other websites on *Twitter*. Academics and researchers (and the public) use *Twitter* to share scholarly contents (e.g. papers) and events (e.g. conferences) (**Mohammadi**; **Thelwall**; **Kwasny**; **Holmes**, 2018).

Twitter has been one of the most popular sources for altmetrics studies so far: many studies have been published based on tweets. Similar to *Mendeley*, *Twitter* seems to be the main source of sharing scientific papers. For instance, the study by **Haustein** *et al.* (2015) showed that the coverage of articles on *Twitter* was 21.5%, followed by other social media platforms such as *Facebook* (4.7%) and blogs (1.9%).

Robinson-García, **Costas**, **Isett**, **Melkers**, and **Hicks** (2017, p. 1) examined tweets linked to research papers from 47 dentistry journals

> "to assess the extent to which tweeting about scientific papers signifies engagement with, attention to, or consumption of scientific literature."

Three patterns were found in the top 10 most tweeted papers:

> "single issue tweeters, professional social media account management and broader tweeting, though with little original content. None of the patterns evidenced engagement with the journal article" (**Robinson-García** *et al.*, 2017, p. 4).

Only a few tweets reflected interest for the content of a paper. **Robinson-García** *et al.* (2017) suggested that the number of tweets about papers has little value for research evaluation. 74% of articles were automatically tweeted, possibly by bots mechanically retweeting, or humans who behave like bots, which means they tweet/retweet whatever they see without paying attention to the content of the tweet (**Robinson-García** *et al.*, 2017).

It has been mentioned that *Twitter* might not reflect the general public impact, because most tweets regarding scientific papers are often posted by researchers (**Sugimoto** *et al.*, 2017). Other studies have pointed out, however, that *Twitter* is widely popular outside academia and

> "thus seems to be a particularly promising source of evidence of public interest in science" (**Haustein**; **Larivière**; **Thelwall**; **Amyot**; **Peters**, 2014, p. 208).

Another study also suggests that most of the tweets are distributed by the public user (**Yu**, 2017). **Mohammadi** *et al.* (2018) showed that about 45% of tweets were posted by people who didn't work in academia. They investigated the demographic information and background of 1,912 users that had tweeted scholarly papers.

In the study by **Mohammadi** *et al.* (2018), many people had a social science or humanities background, and used *Twitter* to obtain and share information and develop professional networks. The study provides evidence that

> "*Twitter* plays a significant role in the discovery of scholarly information and cross-disciplinary knowledge spreading. Most importantly, the large numbers of non-academic users support the claims of those using tweet counts as evidence for the non-academic impacts of scholarly research" (**Mohammadi** *et al.*, 2018, p. 1).

3.6. Field-normalization

Altmetrics patterns –independently of the data source (e.g. *Twitter*, *Mendeley* or blogs)– might systematically vary depending on the publication time and discipline of the corresponding papers (**Taylor**, 2013a). Results show that general disciplines and topics related to a broader audience attract more social media attention than specialized disciplines such as physical sciences (**Haustein** *et al.*, 2014; **Ortega**, 2018). **Fausto** *et al.* (2012) investigated 19,000 blog posts that had cited 26,154 publications. The results indicated that 36% of the blog posts were in biology, followed by health (15%). Similarly, **Shema**, **Bar-Ilan**, and **Thelwall** (2014) showed that bloggers tended to post about the biological and medical disciplines in 2009 (67%) and 2010 (74%). **Mohammadi** and **Thelwall** (2014) indicated differences in *Mendeley* readership for disciplines: social sciences & humanities publications had the greatest number of readers among all disciplines, while mathematics & computer science had the lowest number of readers.

Based on these and similar findings, much evidence can be found in the altmetrics literature that points to the necessity of time- and field-normalizing altmetrics data, similar to citation data in bibliometrics. **Taylor** (2013b) recommended that field-specific differences of altmetrics should be taken into consideration. According to **Thelwall** (2017b, p. 10)

> "most indicators should not be compared between fields because of disciplinary differences. Most indicators should not be compared between years because of time differences."

Normalization can be achieved by benchmarking altmetrics

> "based on other articles within the same journal and from the same time period, as well as across the whole database" (**Liu**; **Adie**, 2013, p. 33).

Several researchers have attempted to propose the normalization of altmetrics data (**Bornmann**; **Haunschild**, 2016a, 2016b, 2017; **Haunschild**; **Bornmann**, 2016; **Noyons**, 2018; **Thelwall**, 2017a). We present some approaches in the following:

Bornmann and **Haunschild** (2016a) proposed a percentile-based indicator for normalizing *Twitter* counts for papers published in different disciplines and publication years. The authors mentioned that normalizing *Twitter* counts is essential, since papers from different disciplines receive a different number of tweets (see above). To normalize tweets, **Bornmann** and **Haunschild** (2016a) calculated percentiles based on tweet counts for a paper using a corresponding reference set. For example, a *Twitter* percentile of 90 for a focal paper means that 90% of the papers in the corresponding journal (or subject category) have received fewer tweets than the focal paper. *Twitter* percentiles can be used

> "for comparisons between units in science (researchers, research groups, institutions, or countries) which have published in different fields" (**Bornmann**; **Haunschild**, 2016a, p. 1410).

Bornmann and **Haunschild** (2016a) calculated *Twitter* percentiles for countries and showed that the most tweeted papers belonged to Denmark, Finland, and Norway.

Field- and time- normalization of *Mendeley* reader counts has been introduced by **Bornmann** and **Haunschild** (2016b, 2017) and **Haunschild** and **Bornmann** (2016). **Haunschild** and **Bornmann** (2016) proposed the Mean Normalized Reader Score (MNRS) which is based on the Mean Normalized Citation Score (MNCS) in bibliometrics (**Bornmann**, in press): the impact of a focal paper is divided by the mean impact of all papers in the corresponding journal (or subject category).

> "The MNRS enables us to compare the impact a paper has had on *Mendeley* across subject categories and publication years" (**Haunschild**; **Bornmann**, 2016, p. 62).

Haunschild and **Bornmann** (2016) found a high correlation (r = 0.70) between MNRS and MNCS for the studied journals. With the mean discipline normalized reader score (MDNRS), **Bornmann** and **Haunschild** (2016b) proposed a variant of the MNRS which normalizes impact on the receiving impact side (instead of the cited paper side). **Bornmann** and **Haunschild** (2016b, p. 776) tested the variants and came to the following conclusions:

> "(i) normalization of *Mendeley* reader counts is necessary,
>
> (ii) the MDNRS is able to normalize *Mendeley* reader counts in several disciplines, and
>
> (iii) the MNRS is able to normalize *Mendeley* reader counts in all disciplines."

Bornmann and **Haunschild** (2017, p. 230) extended MNRS to a target-oriented, field-normalized impact indicator which can be used

> "to measure the impact of scientific papers on certain groups –controlling for the field in which the papers have been published and their publication year."

For example, the extended MNRS can measure *Mendeley* reader impact of research papers on students, professors or journalists. The results of **Zahedi** and **Van-Eck** (2018) showed that the most active users in the social sciences & humanities are professors, students, and librarians, who are mainly interested in topics that are educational and theoretical. Researchers and professionals are the most active users in highly cited fields such as biomedical & health sciences, and tend to read more about practical, methodological, and technical topics. Thus, the results of **Zahedi** and **Van-Eck** (2018) demonstrated the necessity to normalize *Mendeley* data on the user-group level.

The most recent field- and time normalizing indicator for analysing altmetrics data (e.g. tweets and *Facebook* posts) was proposed by **Bornmann** and **Haunschild** (2018) and **Haunschild** and **Bornmann** (2018). This indicator is called the Mantel-Haenszel quotient (MHq).

> "The MHq is based on the MH analysis –an established method in statistics for the comparison of proportions" (**Bornmann**; **Haunschild**, 2018, p. 998).

MHq compares proportions of papers shared on social media (e.g. the number of times a paper has been shared on *Twitter* or *Facebook*) with proportions of non-mentioned papers (not shared on social media) (**Bornmann**; **Haunschild**, 2018). **Bornmann** and **Haunschild** (2018) examined the convergent validity of the indicator by studying whether MHq is able to distinguish between different quality levels (defined by the assessments by peers, i.e. *F1000Prime* recommendations, see above). If MHq gives us scores that are to a great extent similar to that of human judgements (assessments by peers), the indicator seems to measure what it is intended to measure. **Bornmann** and **Haunschild** (2018) demonstrated that MHq was able to distinguish between different quality levels. However, they noted that

> "the relationship between altmetrics (*Wikipedia*, *Facebook*, blogs, and news data) and assessments by peers is not as strong as the relationship between citations and assessments by peers. Actually, the relationship between citations and peer assessments is about two to three times stronger than the association between altmetrics and assessments by peers" (**Bornmann**; **Haunschild**, 2018, p. 998).

4. The meaning of altmetrics: do they measure societal impact?

Research can have both inward-facing and outward-facing objectives. Inward-facing goals of research include the benefits of research for the scientific community, such as the production of new methodologies, techniques or conceptual models. Outward-facing goals refer to the benefit of research for society outside the scientific community (**Hicks** *et al.*, 2018). In recent decades, there has been an increasing demand for outward-facing objectives, which is also reflected in popular concepts such as Mode 2 knowledge production or the triple helix, a model of university-industry-government relations (**De-Jong** *et al.*, 2011; **Etzkowitz**; **Leydesdorff**, 2000). There has been increasing pressure on universities that

> "research must cut across scientific disciplines and theories and focus on problem-solving and practical use-value. In brief, the research must be Mode 2" (**Ernø-Kjølhede**; **Hansson**, 2011, p. 132).

Many funding organizations demand that the societal benefits of proposed research should be estimated in grant applications (**De-Jong** *et al.*, 2011).

The trend towards emphasizing the societal relevance of research is part of a bigger movement towards carrying out more applied research that is beneficial to private and public sectors for the purpose of addressing societal issues (e.g. climate change, education, and health care) (*ERiC*, 2010). Researchers should justify the societal benefits of their proposed research project in situations where the private sector is being held responsible for investing in research, regardless of their increasingly scarce financial resources (**Lähteenmäki-Smith**; **Hyytinen**; **Kutinlahti**; **Konttinen**, 2006). However, there has often been a lack of motivation among researchers to get involved in such activities, because they do not expect to receive any reward for their engagement in public outreach activities (e.g. seminars and workshops for stakeholders) (**Kassab**, 2019).

According to the *National Research Council* (2014, p. 70)

> "no high-quality metrics for measuring societal impact currently exist that are adequate for evaluating the impacts of federally funded research on a national scale."

Many metrics fail to provide an accurate measure of the knowledge generated by research and a proper picture of the societal impact of research (*National Research Council*, 2014). For example, most

> "conventional metrics for social impacts focus on economics or wealth creation, such as patents or technology transfer. These kinds of metrics are less appropriate for many scholarly fields, and miss the specific social concerns or needs that researchers aim to address" (**Hicks** *et al.*, 2018, p. 1).

The popularity of qualitative case studies for capturing and demonstrating research impact is a response to the lack of appropriate metrics for measuring societal impact. However, case studies are biased in that they only report success stories, while failure stories learned from research can also be useful, at the very least for future research activities (**Raftery** *et al.*, 2016).

According to **Moed** (2017), the increasing focus of governments and public funders on measuring the societal impact of research is an important driver of the use of altmetrics. Significant attention to altmetrics for societal impact measurement has been evidenced since 2010 (**Blümel**; **Gauch**; **Beng**, 2017). Two main lines of research in altmetrics exist.

- The first line of research investigates the extent to which scholarly publications are shared and used on social media.
- The second type of research deals with the comparison of altmetrics data with traditional metrics such as citations (**Blümel** *et al.*, 2017).

Although many studies have dealt with the question of the meaning of altmetrics (by correlating them with traditional metrics), these studies do not clearly reveal what is being measured by altmetrics. It is

> "not clear what general conclusions can be drawn when an article is frequently mentioned within the social web" (**Barthel**; **Tönnies**; **Köhncke**; **Siehndel**; **Balke**, 2015).

For example, it is not evident what conclusions can be drawn from a publication that has been saved or bookmarked on *Mendeley* libraries (**Zahedi**; **Costas**; **Wouters**, 2014). Altmetrics might measure attention (**Konkiel** *et al.*, 2016; **Moed**, 2017), popularity (**Xia** *et al.*, 2016) or public engagement (**Khazragui**; **Hudson**, 2015) rather than societal impact or academic quality (**Konkiel** *et al.*, 2016).

> Conclusions in research evaluation based on altmetrics data should be drawn with caution

Altmetrics may provide some perspectives about research popularity and the relevance of research to a broader public (**Moed**; **Halevi**, 2015). **Pulido**, **Redondo-Sama**, **Sordé-Martí**, and **Flecha** (2018) indicated that measuring impact based on tweets and *Facebook* posts may show people's vague interest in certain pieces of research. **Pulido** *et al.* (2018) analysed the content of posts on *Twitter* and *Facebook* and showed that the number of posts on *Twitter* and *Facebook* are not good indications of societal impact. For example, no evidence of societal impact was observed for a research project with 403 tweets and 423 *Facebook* posts, but another project with fewer number of tweets (n = 62) and *Facebook* posts (n = 43) had two pieces of evidence of societal impact (**Pulido** *et al.*, 2018).

Buttliere and **Buder** (2017) conducted a study to understand what meaning altmetrics and bibliometrics might indicate (e.g. quality, impact, and attention). They analysed a sample of approximately 33,000 papers from *PLoS* in 2014. Their results indicated

> "that there are at least two important underlying factors, which could generally be described as Scientific Atten-

tion / Discussion (citations), General Attention / Discussion (views, tweets), and potentially Media Attention / Discussion (media mentions). The General Attention metric is correlated about 0.50 with both the Academic and Media factors, though the Academic and Media attention are only correlated with each other below 0.05. The overall best indicator of the dataset was the total lifetime views on the paper, which is also probably the easiest to game. The results indicate the need for funding bodies to decide what they value and how to measure it (e.g., types of attention, quality)" (**Buttliere**; **Buder**, 2017, p. 219).

The difficulties in assigning meanings to altmetrics might point to a missing underlying theoretical framework (**Taylor**, 2013b). For citations, the normative theoretical perspective (**Merton**, 1973) has been proposed on which evaluative bibliometrics is based; however, it is not clear what the theoretical roots of evaluative altmetrics are (**Taylor**, 2013b). An absence of construct validity of altmetrics is a related problem:

> "Construct validity refers to the degree to which a test measure (e.g. a reference count or an *Altmetric* score) measures what it claims or purports to be measuring (e.g. quality or social engagement)" (**Rowlands**, 2018, p. 4).

According to the results of **Bornmann**, **Haunschild**, and **Adams** (2019), altmetrics do not measure what reviewers assess as societal impact. Altmetrics may capture unknown attention rather than societal impact.

Bornmann, **Haunschild**, *et al.* (2019) used the MHq to investigate the convergent validity of altmetrics. The authors studied

> "the convergent validity of altmetrics by using two *REF* datasets: publications submitted as research output (PRO) to the *REF* and publications referenced in case studies (PCS)" (**Bornmann**; **Haunschild**; **Adams**, 2019, p. 325).

Case studies, which are intended to demonstrate societal impact, should cite the most relevant research papers. The results of **Bornmann**, **Haunschild**, and **Adams**, (2019, p. 325) demonstrated

> "that news media as well as mentions on *Facebook*, in blogs, in *Wikipedia*, and in policy-related documents have higher MHq' values for PCS than for PRO. Thus, the altmetrics indicators seem to have convergent validity for these data. In the second part of the analysis, altmetrics have been correlated with *REF* reviewers' average scores on PCS. The negative or close to zero correlations question the convergent validity of altmetrics in that context."

Thus, the results of the study by **Bornmann**, **Haunschild** and **Adams** (2019, p. 325) revealed that altmetrics

> "may capture a different aspect of societal impact (which can be called unknown attention) to that seen by reviewers (who are interested in the causal link between research and action in society)."

Two things might be concluded from the results:

(1) altmetrics measure public (online) discussions, but not the societal impact of research. It seems that other indicators (e.g. patent citations) or qualitative approaches such as case studies are necessary.

(2) Simple counts of data might not be the right way of analysing data from altmetrics sources for receiving meaningful results. Since the meta-data contain many information, other ways of analysing the data should be found.

Some researchers have pointed to the possibility of using network-based approaches for altmetrics (instead of simple counts) to indicate and visualize interactions with scholarly documents among the general public. **Wouters** *et al.* (2019, p. 702) have pointed to the importance of networks for showing

> "the relationships and interactions among the different actors."

The authors noted that hashtag coupling analysis can be used to see how scholarly articles on *Twitter* have been linked to specific and broader hashtags. Two hashtags (e.g. #openaccess and #OA) can make a couple when they are linked to a similar group of scholarly articles (**Wouters** *et al.*, 2019). **Hellsten** and **Leydesdorff** (2020) introduced a network-based approach for analysing *Twitter* data by mapping the co-occurrences of hashtags and *Twitter* users (@usernames). They presented a network with three nodes including authors, actors (*Twitter* users), and topics. This approach has

> "the advantage of making it possible to map which users were addressed in connection with which topics" (**Hellsten**; **Leydesdorff**, 2020, p. 12).

In a follow-up study, **Haunschild**, **Leydesdorff**, **Bornmann**, **Hellsten**, and **Marx** (2019) proposed that the network analysis of *Twitter* data linked to publications can be used to discover public discussions about specific research topics. They used network analysis to compare the hashtags of tweeted publications (on climate change) with the author keywords of all publications. **Haunschild** *et al.* (2019) were mainly interested in understanding whether the topics discussed by people on *Twitter* about publications differed from the topics targeted in publications by authors (researchers). This study found that the shared topic on *Twitter* was about the consequences of climate change for people.

> "*Twitter* users are interested in climate change publications which forecast effects of a changing climate on the environment and to adaptation, mitigation and management issues rather than in the methodology of climate-change research and causes of climate change" (**Haunschild** *et al.*, 2019, p. 695).

Noyons and **Ràfols** (2018) proposed the use of overlay maps in order to demonstrate the societal engagement of research fields. They investigated

> "whether and how mapping bibliometric methods combined with other data sources (e.g., mentions in news and policy) can also be useful for mapping potential societal engagement of research fields" (**Noyons**; **Ràfols**, 2018, p. 1050).

To demonstrate this approach, **Noyons** and **Ràfols** (2018) overlaid the proportion of agriculture research cited in policy documents and news by using the *VOSviewer* software (see *https://www.vosviewer.com*).
Noyons and **Ràfols** (2018, p. 1055) indicated that

> "policy engagement is primarily observed in the social and behavioural sciences and health areas of agriculture, but also in soil and climate related areas."

The results of this study also demonstrated that

> "news interest mainly is focused on (mental) health research and food within agriculture research" (**Noyons**; **Ràfols**, 2018, p. 1055).

Another approach was proposed by **Noyons** (2018) and **Noyons** (2019), called area-based connectedness (ABC). It depends on the network analysis of publications of a journal or a set of articles. This method investigates the connectedness of research to different dimensions (**Noyons**, 2019, p. 11):

- "News (papers being mentioned in news items).
- Policy (papers being mentioned in policy documents).
- Industry R&D (industry authorship).
- Technological or commercial application (papers cited in patents).
- Local scope (papers in local languages, not in English)."

According to this method, in order to measure the connectedness of a specific publication set (journal), the number of publications from the set is counted that exist in each of over 4,000 research areas of science. These 4,000 research areas have been identified by a classification approach developed by the *Centre for Science and Technology Studies* (*CWTS*, *Leiden University*). Using the *VOSviewer* software a map is created for the set (the journal) in order to demonstrate the distribution of its publications across those 4,000 areas. The output of a journal will then be characterized

> "by the connectedness of the areas in each dimension, which means that the connectedness of a journal is the average of the sum of the product of the number of publications in an area and the score on a dimension in an area (weighted average). The final connectedness on each dimension will then be compared to the overall average of connectedness of that dimension" (**Noyons**, 2019, p. 15).

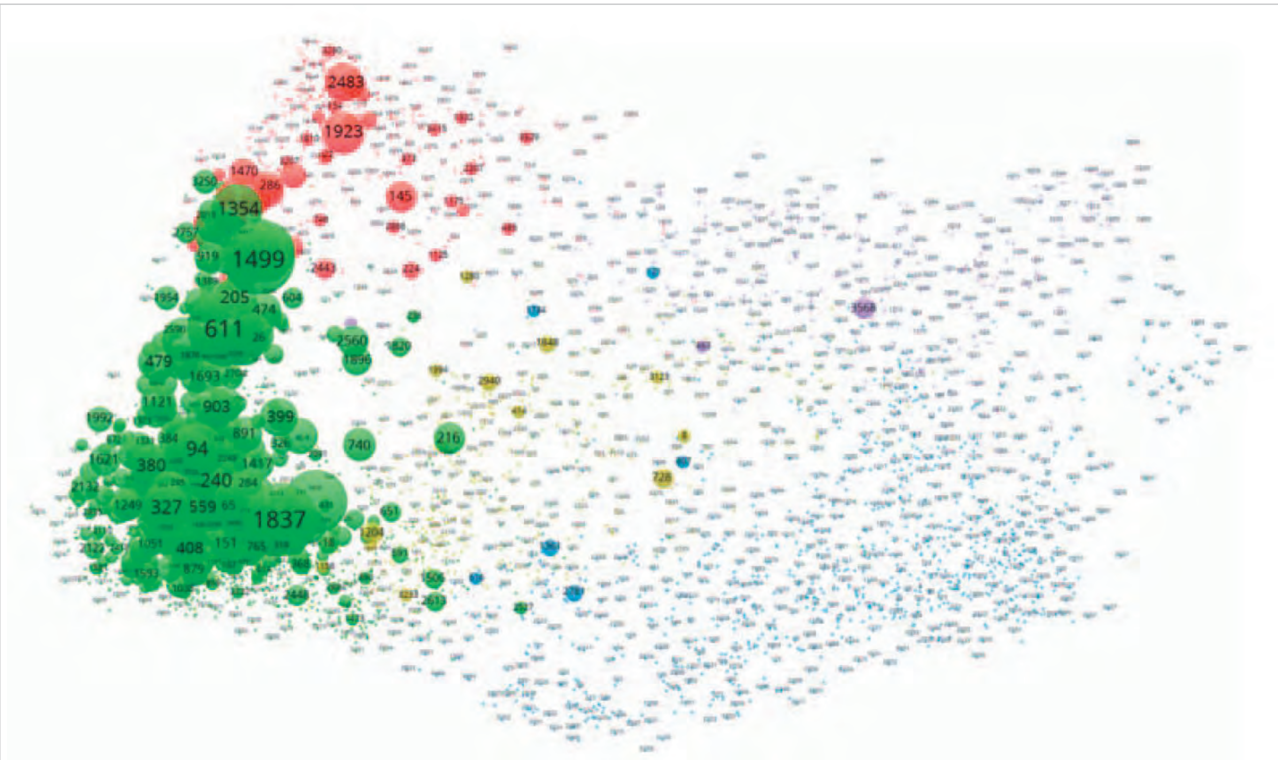

Figure 1. Landscape of science (data: *WoS* 2000-2017). The size of the nodes represents the number of publications in *The Lancet* (2014-2017). Source: **Noyons** (2019, p. 18).

For example, **Noyons** (2019) illustrated the distribution of *The Lancet* publications (n = 2815) across the 4,000 research areas (see Figure 1). In Figure 1, the colours represent four main science fields: Green: biomedical and health sciences; Yellow: life and earth sciences; Purple: mathematics and computer science; Blue: physical sciences and engineering, Red: social sciences and humanities (see *https://www.leidenranking.com/information/fields*)

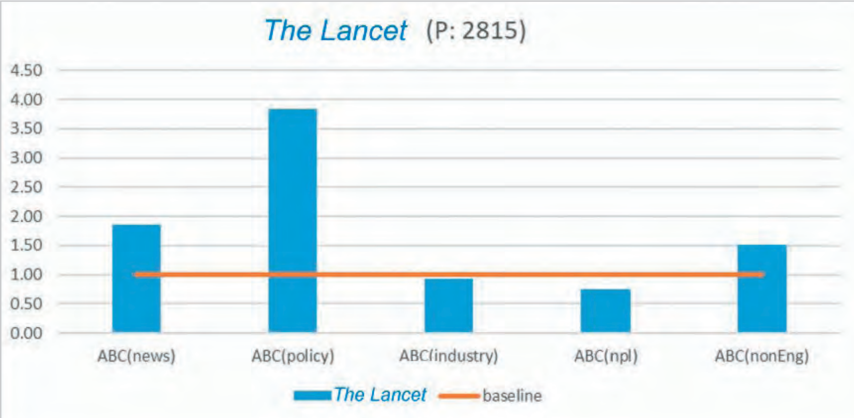

Figure 2. Area-based connectedness to society profile of *The Lancet* (2014-2017). Source: **Noyons** (2019, p. 19).

Noyons (2019) then showed the connectedness of *The Lancet* publications in five dimensions of news, policy, industry, technological and commercial application, and local scope (see Figure 2). Figure 2 shows a high connectedness of *The Lancet* publications on the policy dimension: it is approximately 4 times above the baseline (i.e. average). The news dimension and the local interest dimension are also above the average (**Noyons**, 2019).

5. Conclusions

This review began by presenting various efforts and developments during recent years with regard to societal impact measurements. We outlined that this area of research evaluation faces many problems (e.g. attribution and timeline), which differentiates it from the area of impact measurements on academia: for the latter, standard approaches have been established based on citation data, and new developments are more than welcome, such as indicators that measure the novelty (**Bornmann**; **Tekles**; **Zhang**; **Fred**, 2019) or disruptiveness of research (**Wu**; **Wang**; **Evans**, 2019). Since there is still a lack of standard methodologies, tools, metrics, and (data collection) processes for evaluating the societal impact of research, the use of case studies is the favoured approach in many research evaluation processes. Standard approaches in this area based on quantitative data, which might result in reliable and useful findings, refer to specific applications such as patent citations or citations in clinical guidelines.

> There is still a lack of standard methodologies, tools, metrics, and data collection processes for evaluating the societal impact of research

Case studies seem to be appropriate resources for capturing and demonstrating the societal impact of research. With case studies, research can be evaluated by panel experts and/or the target groups who are the intended beneficiaries of the research findings. It is an advantage of case studies that a specific outline is given as to the area of society in which research was (or will be) useful. In many quantitative societal impact measurements based on altmetrics data, however, this is not clear: the measurements usually start with past research and a calculation of its broad impact, e.g. based on *Twitter* data. In these measurements, the areas of usefulness of research are scarcely of interest, what counts is broad impact reflected in corresponding data. This review indicates that it should be relevant for societal impact measurements to be oriented towards pressing societal problems. Thus, we propose that societal impact measurements do not follow the premise

> "it's all right as long as any broad impact (reflected in altmetrics data) is right" (measured by altmetrics)

but that pressing societal problems are used as basis for assessing the usefulness of research. In recent years, many lists have been published with societal needs, which can be used as basis for impact measurements in research evaluation (see section 2.5).

Although in this review we recommend going beyond simple counting of tweets, mentions, etc., in research evaluation, some altmetrics sources, particularly *Mendeley* data, might be useful in this regard. These sources are suitable for calculating indicators based on counts, since it is possible to measure impact on certain status groups (e.g. students and professors). When using these altmetrics counts, however, field- and user-specific differences should be considered (since systematic field- and user-specific differences can be observed in the data). Similar to citations in bibliometrics, altmetrics data such as *Mendeley* reader counts can be field- and user-normalized using standard approaches from bibliometrics. Applying these approaches, it is possible to measure the impact of research in a target-specific way. For example, the field- and time-normalized impact

> Societal impact measurements should be oriented towards pressing societal problems

of papers published by researchers from a university can be measured on students, journalists or professors. The resulting indicator scores show whether the impact is below or above the worldwide average.

> Altmetrics data such as *Mendeley* reader counts should be field- and time-normalized for research evaluation purposes

The identification of the target group is of high importance in societal impact measurement studies. **Bornmann** and **Haunschild** (2017) stated that in bibliometrics, the target group is clearly defined (researchers who publish scholarly works) and thus, bibliometrics is successful in the measurement of research impact. In contrast, the metrics used to measure the societal impact are intended to broadly measure all areas in a society, such as environment, culture, politics, economics, and health. Similar to citations that are target-oriented (citations measure the impact on scholarly works), the target group (the people who benefit from the results of scholarly works) for altmetrics can (should) also be clearly determined and defined (**Bornmann**; **Haunschild**, 2017).

Altmetrics data such as social media data, although already extensively used for research evaluation, might mainly show public interest, attention, and discussion of scholarly works rather than their societal impact. In our view, the literature in recent years makes it clear that altmetrics data in general are not able to reveal impact of research on society which is observable in concrete activities in specific areas. This depth in the interpretation of the usefulness of research cannot be achieved by using altmetrics data in research evaluation. Today, the favoured approach for assessing the usefulness of research for society is the case studies approach. Recent altmetrics research revealed that measuring interest, attention, and discussion does not have to be restricted to simple counts, but can be widened to network (or overlay) approaches showing relationships and dependencies (see **Haunschild** *et al.*, 2019). Since these approaches have been introduced very recently, future research will show whether or not they will be fruitfully for research evaluation purposes.

In our view, scientometrics research on societal impact measurements is still at an early stage (although these measurements are already part of many research evaluation processes). The necessity of research is especially pressing in the altmetrics area. Here, the danger today is that huge pools of data are available that are waiting to be analysed and applied in research evaluation. However, in many cases, the usefulness of the results for assessing countries, institutions or researchers based on the data is questionable. Thus, we would like to follow **Robinson-García** *et al.* (2014, p. 364) who suggested

> Altmetrics data may reflect the public interest, attention, and discussion of scholarly works rather than their societal impact

> "that more research is needed for understanding the methodologies for retrieving valid and reliable altmetrics data. In the same line, the selection of social media sources must be rigorous and critical, attending to its use within the different communities and audiences and avoiding potential discipline or language biases."

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Altmetrics data providers: A meta-analysis review of the coverage of metrics and publication

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Abstract

The aim of this paper is to review the current and most relevant literature on the use of altmetric providers since 2012. This review is supported by a meta-analysis of the coverage and metric counts obtained by more than 100 publications that have used these bibliographic platforms for altmetric studies. The article is the most comprehensive analysis of altmetric data providers (*Lagotto*, *Altmetric.com*, *ImpactStory*, *Mendeley*, *PlumX*, *Crossref Event Data*) and explores the coverage of publications, social media and events from a longitudinal view. Disciplinary differences were also analysed. The results show that most of the studies are based on *Altmetric.com* data. This provider is the service that captures most mentions from social media sites, blogs and news outlets. *PlumX* has better coverage, counting more *Mendeley* readers, but capturing fewer events. *CED* has a special coverage of mentions from *Wikipedia*, while *Lagotto* and *ImpactStory* are becoming disused products because of their limited reach.

Keywords

Altmetrics; Coverage; Data providers; Social media; *Lagotto*; *Altmetric.com*; *ImpactStory*; *Mendeley*; *PlumX*; *Crossref Event Data*; *Wikipedia*; Review.

1. Introduction

Altmetric data providers play a key role in altmetric research, to the point that much of this research topic relies on these providers in order to carry out most of their studies. The importance of these platforms is not only due they are fundamental tools for altmetric research, but also that data from these services are increasingly being used to evaluate articles, authors and organisations. It is worth remembering that *Altmetric.com* has mainly based its business on supplying metrics and indicators to academic publishers. Similarly, *PlumX* has found in the institutions the way to develop its activity, offering a dashboard to track the social impact of their outputs. This commercial activity has inserted their altmetric counts into the scholarly publishing environment prior to being tested as reliable and significant research indicators, causing considerable misinterpretation about their meanings and importance (**Bornmann**, 2014).

In this sense, altmetrics is obliged to test the reliability of these services both to verify that the scientific results are based on trustworthy sources and to audit the authenticity of these services as data providers. This vigilant attitude is even more motivated because these platforms are not exactly scientific instruments for bibliometric studies, but commercial suites focused on providing visibility to academic journals and organisations. Altmetrics should therefore be undertaken as an independent and authoritative instrument that assesses the technical suitability of these tools for supplying and processing altmetric counts. The clearest expression of this inspection attitude is the *NISO Alternative assessment metrics (Altmetrics) initiative* which aims to standardise and ensure transparency of the way in which data aggregators obtain and process their information (*NISO*, 2016).

However, and despite all these platforms agreeing to report their sources and how they process their metrics, important points still need more clarification. For example, aggregators should improve their reporting of the complete list of sources covered, mainly blogs and news media; how they manage the intentional manipulation of metrics (i.e., bots on *Twitter*); and how the links to events are curated and updated when they are moved or eliminated (**Ortega**, 2019b). These limitations are evident when the resulting metrics are compared and the counts differ significantly, although many of them come from the same source such as *Twitter*, *Mendeley* or *Wikipedia*. These discrepancies raise doubts about the reliability of these platforms when they come to extract information and count metrics.

This instability in the metrics provided by each data aggregator justifies a meta-study to collect all the figures captured from these providers at different times and from different samples, enabling an accurate picture of how these services are evolving in time and a general overview of the coverage and working of each platform. It is interesting to note that this type of analysis is uncommon in bibliometric studies, even more when referring to a quantitative discipline. In altmetrics, we can highlight the study by **Bornmann** (2015a), who analysed the published correlations between tweets, blogs and readers. But, perhaps, the most exhaustive meta-analysis was performed by **Erdt** *et al.* (2016b). These authors reviewed the literature about altmetrics and performed a cross-metric validation of altmetric indicators. However, no meta-study has explored the evolution and coverage of altmetric data providers. This study attempts to fill this gap by reviewing the current altmetric literature and analysing the numbers obtained by these studies.

2. Objectives

The principal objective of this work is to review and analyse the scholarly literature that has used an altmetric provider to conduct its studies. The aim is to check and contrast the figures obtained to build a general picture of the coverage and metrics supplied by each altmetric provider. From this analysis, we aim to:

- describe the proportion of indexed publications (coverage) in each provider;
- present the proportion of documents in each provider by metric;
- depict the average counts of each metric; and
- display disciplinary differences by metric and provider.

3. Methods

3.1. Altmetric providers

Within the context of big data and its technological revolution, altmetric data providers or aggregators are platforms that capture, collect and quantify in a single venue different events about scholarly publications produced in distant places on the Web. According to commercial agreements or open endpoints, these secondary services are adding up events generated in social networks, specialised databases, citation indexes, blogs and news outlets. Using specific document identifiers (doi, isbn, uri, *Pubmed id*, etc.), these platforms track the footprint of a publication on each website that they monitor. In addition, these platforms sometimes produce indicators and reports from the information gathered, offering added value to the data provided. *Mendeley* is a special case because it is not strictly a data provider, but an online reference manager. However, this service is included because many studies have used this platform as a principal source for counting reader numbers.

Mendeley
https://www.mendeley.com

It was created by three PhD students in 2008 with the aim of exporting the *Last.fm* model to the scholarly world. That is, that each user could share their favourite publications with other members (**Ortega**, 2016). This became *Mendeley* the most important reference manager on the Web. In 2013, it was acquired by *Elsevier* for integration with its products. *Mendeley* is also a social network in which users "read" the publications. The number of readers of a publication is a measure used for altmetric studies to evaluate the academic impact of a publication (**Mohammadi**; **Thelwall**, 2014; **Mohammadi** *et al.*, 2015).

Lagotto
http://www.lagotto.io

Lagotto was the first altmetric data provider and was created in March 2009 by the publisher *Public Library of Science* (*PLoS*). Although it is an open tool that can be used by any publisher, this instrument is not widespread, and only three publishers (*PLoS*, *Copernicus* and *Public Knowledge Project*) have implemented this provider. The last API version (*Lagotto 4.0*) dates from April 2015, an indication of its brief development.

Altmetric.com
https://www.altmetric.com

Altmetric.com was launched in 2011 by Euan Adie, with the support of *Digital Science*. *Altmetric.com* is centred in the publishing world, signing agreements with publisher houses to monitor the altmetric impact of their publications. This information is accessible through a public API on the Web. Today, *Altmetric.com* captures over 60 million events and tracks the social impact of close to 9.5 million research papers (*Altmetric.com*, 2019).

ImpactStory
https://profiles.impactstory.org

This aggregator was developed by Jason Priem and Heather Piwowar in 2011. Unlike other providers, *ImpactStory* is focused on building personal profiles that illustrate the altmetric impact of a researcher. Using *Orcid* and a *Twitter* account, this tool enables the creation of a profile with the list of publications mentioned on the Web. Up to 2015, this tool offered a public API to retrieve data, but this endpoint is now closed. To date, around 18,000 profiles have been created (*ImpactStory*, 2019).

PlumX
https://plu.mx/plum/g/samples

PlumX is a provider of alternative metrics created in 2012 by Andrea Michalek and Michael Buschman from *Plum Analytics*. This product targets the institutional market, offering altmetric counts of publications for specific institutions. *PlumX* is the aggregator that offers more metrics, including usage metrics (i.e. views and downloads). It covers more than 52.6 million artefacts and is the largest altmetric aggregator (*Plum Analytics*, 2019). In 2017, *Plum Analytics* was acquired by *Elsevier* and now tracks the online presence of any article indexed in the *Scopus* database. *PlumX* also offers their customers an API to extract data.

***Crossref Event Data* (*CED*)**
https://www.crossref.org/services/event-data

CED is the youngest service. Created in 2016, it is still in beta. Unlike *Altmetric.com* and *PlumX*, *CED* is not a commercial site and provides free access to data through a public API. Another important difference is that it does not provide metrics, but only displays information about each altmetric event linked to a doi identifier. For instance, it shows information about an article mention on *Twitter* (date, user, tweet, etc.), but does not show a count of the number of tweets. For that reason, *CED*'s data would have to be processed to be comparable with the other services. This provider is only accessible via API.

3.2. Indicators

One of the most important challenges of a meta-study is the selection and standardisation of the various observations for comparison and analysis. The observation date, when available, was used instead of the publication date to fairly compare different observations over time. In certain cases, although some metrics are not available in the paper, it includes enough information for that metric (percentages and proportions) to be calculated. In these cases, metrics were calculated and added to the study. Three main indicators were defined:

Coverage (%): percentage of documents indexed in one provider. This percentage is available when an external sample was selected in the study and compared with the coverage of an altmetric service. This indicator reports the size of a data provider. Another way to refer to this metric are items with data scores (**Gorraiz** *et al.*, 2018), nonzero altmetric events (**Didegah** *et al.*, 2018) and nonzero scores (**Thelwall**, 2018).

Metrics proportion in each provider (%): percentage of publications with at least one event from one metric in relation to the publications included in the provider. In this case, this indicator shows the weight of a metric over all the metrics gathered by one provider. This indicator is also named Percent nonzero (**Thelwall**; **Nevill**, 2018).

Average of events per publication: ratio of the total count of events by the number of indexed publications. This metric reports the frequency of each metric and is also named Geometric mean (**Thelwall**; **Nevill**, 2018) or Density (**Zahedi** *et al.*, 2014b; **Costas** *et al.*, 2015a; **Gorraiz** *et al.*, 2018; 2019).

3.3. Search criteria

Google Scholar and *Scopus* were searched to obtain the sample of publications. The search criteria in both databases was a generic query "altmetric*" to obtain the largest number of results. After a first round, other precise queries were performed to identify papers that have used a data provider. For example, "altmetric" OR "altmetric.com" for *Altmetric.com*, "plumx" OR

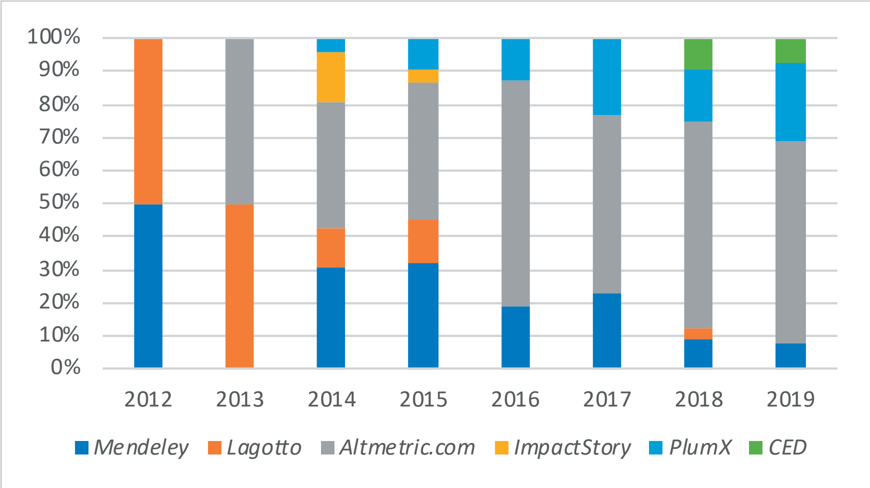
"Plum Analytics" for *PlumX*, "impactstory" for *ImpactStory*, "lagotto" OR "PLOS" for *Lagotto*, "crossref event data" OR "CED" for *Crossref Event Data* and "mendeley" for *Mendeley*. These results were filtered to search for papers that had used an altmetric data provider for their analysis, had calculated some of the previous indicators or had published any data that would allow us to compute them. A total of 107 articles published between 2012 and 2019 were selected for the study.

4. Results

First, the results describe the number of providers used, the coverage of publications and the percentage of papers mentioned in the most important metrics. Next, the number of counts of each metric in each provider will be presented, and lastly a disciplinary study will point out thematic differences among the aggregators.

4.1. Providers

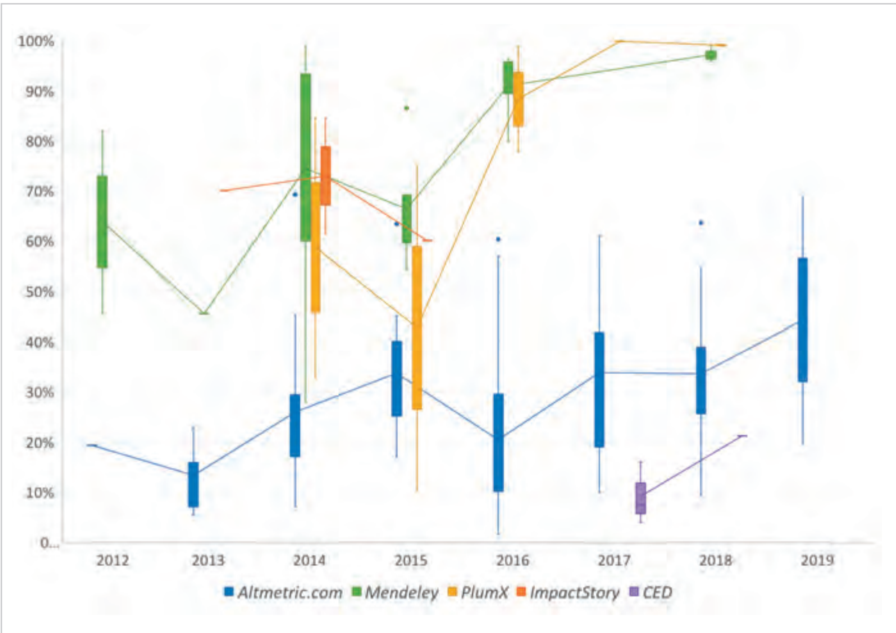
Graph 1 illustrates the proportion of altmetric data providers used in the academic literature since 2012. This picture allows us to visualise how different providers gain market share and others fall into disuse. For example, the initial studies were done with *Mendeley* (50%) and *Lagotto* (50%). The first gives the source of the readers and the second the first altmetric provider. In 2013, *Altmetric.com* appeared as an altmetric source and began dominating the market. 2014 and 2015 are the years with more providers used with the coming of *ImpactStory* and *PlumX*. However, from 2016 to 2017 only three services were used, *Mendeley*, *Altmetric.com* and *PlumX*. Because *Lagotto* is not implemented in important publishers other than *PLoS*, it became a limited tool for altmetric studies and was used only in one-time cases (**Zahedi**; **Costas**, 2018). *ImpactStory* stops provide a public API, making it hard to obtain random representative samples. In 2018, a new data provider, *Crossref Event Data*, began being used and was the first non-commercial open product. Overall, the three main data sources are *Altmetric.com* (54%), *Mendeley* (18%) and *PlumX* (13%), *Altmetric.com* being by far the most used service.



Graph 1. Proportion of data providers used in altmetric studies by year

4.2. Coverage

Graph 2 depicts the distribution of publications covered in each data provider grouped by year. *Lagotto* was excluded due to absence of data. This trend was displayed using the data collection date, instead of the publication year because this is the closest date to the observation. However, not all the articles include that information and, in those cases, the publication date was selected, which could distort the results to some extent. We must therefore understand the data in an illustrative way. Another problem is that not all the observations were taken in the same way. Many are limited to specific disciplines, publication windows or regions, thereby provoking a high dispersal in annual distributions.



Graph 2. Yearly evolution of the coverage of the providers analysed

Altmetric.com, the platform with most observations, shows a generalised, paused increase in the coverage of publications. Studies during the 2012-2013 period show a coverage between the 19.3% of **Knight** (2014) and the 15.1% of **Costas** *et al.* (2015a). In 2014, these percentages slightly increased to a mean coverage of 28%, where we can highlight the outlier 69.3% (**Bornmann**, 2014a) caused by a sample of recommended papers in Biomedicine from *F1000Prime*. From 2015 to date, the mean coverage has stabilised around the 31.5% of 2015, the 33.2% of 2017 and the 29.9% of 2018. There was a fall in 2016 to 16% caused by some local studies about Brazilian publications (**Eléspuru-Briceño**; **Huaroto**, 2016; **Maricato**; **Filho**, 2018) where the indexation and mention of local publications was clearly insufficient (**Alperin**, 2015). In 2018, **Orduña-Malea** and **Delgado-López-Cózar** (2019) found the outlier 9.4%. These authors used the full database of *Dimensions* to detect publications from *Altmetric.com*, with no time limit, including pre-2000 print documents that could not be mentioned in social networks. However, they reached 21.6% and 21.8% when they limited the sample to papers published in 2016 and 2017, respectively. Two recent studies (**Wooldridge**; **King**, 2019; **Wolcott** *et al.*, 2019) place the coverage of *Altmetric.com* at 44% in 2019. The limited coverage observed in the literature is caused mainly by the fact that *Altmetric.com* only indexes publications previously mentioned in some social networks (*Twitter*, *Facebook*, *Google+*, etc.) (**Haustein** *et al.*, 2015; **Bar-Ilan** *et al.*, 2019). This indexing strategy has resulted in the steady growth of coverage since 2014.

Mendeley, the second service by number of observations, describes a positive trend with continuous growth since 2013, reaching percentages of over 90% in 2016. This high coverage is explained because the *Mendeley Web Catalog* is fed by important sources such as *Pubmed*, *Scopus* and their own users (**Ortega**, 2016), which brings an extensive number of publications. Thus, in 2012, *Mendeley* collected a mean of 63.8% of publications, ranging from the 82% of **Bar-Ilan** *et al.* (2012) to the 45.6% of **Mohammadi** *et al.* (2015). This considerable difference could be because the first study used a reduced sample of bibliometricians, which could overrepresent the number of readers. **Mohammadi** *et al.* (2015), however, take articles from 2008, when *Mendeley* was created. This early date could indicate that many articles are still not indexed in the platform. Later studies found similar percentages. **Zahedi** *et al.* (2014a; 2014d) also detected a coverage of 45.5% and 47.4% in a multidisciplinary sample. **Mohammadi** and **Thelwall** (2014) yielded low percentages: 28% for Humanities and 58% for Social Sciences. **Haustein** and **Larivière** (2014), on the contrary, found 65.9% in Biomedicine papers, which points to disciplinary differences in favour of the natural sciences. However, in mid-2014 an important change occurred in *Mendeley*'s database because from that moment onwards the coverage percentages were always beyond 80%. The most likely reason is the effective integration of the *Scopus* index in the *Mendeley Web Catalog*, which led to increased coverage of *Mendeley* (**Bonasio**, 2014; *Scopus*, 2014). In August 2014, **Peters** *et al.* (2014b) already detected 84.2% of coverage, while **Bornmann** and **Haunschild** (2015) found 99% from *F1000* papers. Subsequent studies (**Thelwall**; **Wilson**, 2016; **Bornmann**; **Haunschild**, 2016b) reported percentages over 90%. In 2015, some disciplinary studies (**Pooladian**; **Borrego**, 2016; **Aduku** *et al.*, 2017) showed that this high coverage is not the same in Computer Sciences (63.5%), Engineering (54.3%) or Library Sciences (61.4%). From 2016, all the studies verified the elevated coverage of *Mendeley* with values higher than or around 90% (**Bornmann**; **Haunschild**, 2017; **Didegah** *et al.*, 2018; **Zahedi**; **Van-Eck**, 2018).

PlumX describes a growing trend motivated mainly by its integration into Elsevier's products such as *Scopus*, *Mendeley* and *ScienceDirect* from 2017. Until 2014, no studies used *PlumX* as a data source. The first was **Peters** *et al.* (2014b), who compared the coverage of several data providers using a sample of publications from *Leibniz Association*, finding 84.6% of publications indexed in *PlumX*. However, this same team (**Peters** *et al.*, 2016) observed 32.9% when only datasets were considered. This percentage descended (10.4%) when they repeated the same study one year later (**Peters** *et al.*, 2015). From 2016 to 2019, coverage increases considerably to nearly 100% (**Meschede**; **Siebenlist**, 2018; **Zahedi**; **Costas**, 2018; **Ortega**, 2018a; **Ortega**, 2019; **Gorraiz** *et al.*, 2019). The only exception is **Torres-Salinas** *et al.*, (2017a), who obtained a coverage of 77.7% because their sample was limited to books.

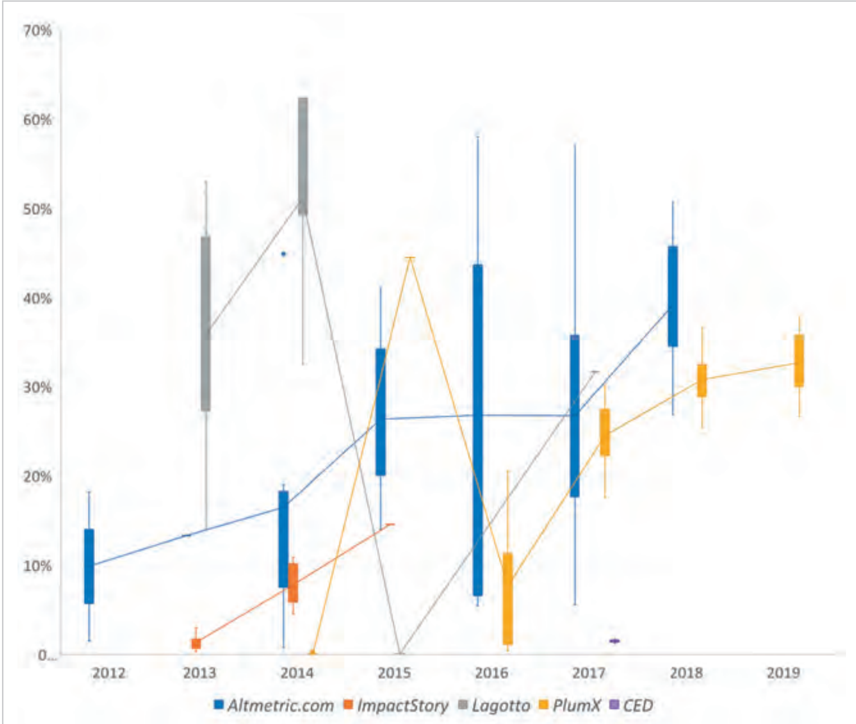
Studies on *ImpactStory* cover a short time-window (2013-2015). During this period, *ImpactStory* showed a mean coverage of between 70% in 2013 (**Zahedi** *et al.*, 2014b), 73% in 2014 (**Peters** *et al.*, 2014a; 2014b) and 60% (**Kraker** *et al.*, 2015) in 2015. *CED* also describes a short activity period (2017-2018), but with significant increases. Thus, in 2017, it showed an average coverage of 9.1% (**Ortega**, 2018a; 2018b; **Zahedi**; **Costas**, 2018), which rose to 21.2% in 2018 (**Ortega**, 2019).

4.3. Coverage of metrics

This section analyses the coverage of six of the most important metrics (tweets, readers, *Wikipedia* citations, *Facebook* mentions, blogs and news) according to each provider.

4.3.1. Tweets

Tweets are the most studied metric in the literature (62.3%) because *Twitter* is the principal source of analyses of the dissemination and social impact of scholarly publications. Overall, Graph 3 shows that *Altmetric.com* is the platform that has continued for longer and with better mean percentages of tweets. Next, *PlumX* also shows a constant rise in tweets since 2016 but under *Almetric.com* counts. Other services such as *Lagotto* and *ImpactStory* present specific observations in short time periods.



Graph 3. Yearly evolution of the percentage of tweets in each provider

Altmetric.com presents a better and growing coverage of tweets, ranging from 10-15% in 2012-2014 to 40% in 2018, on average. Coverage is better even though *Altmetric.com*'s definition of the metric is restricted (it only counts the number of different users that tweeted a publication to avoid intentional manipulations), which a priori would produce lower values. The first studies were performed by **Knight** (2014), who detected 18.2% of tweeters for articles on solid organ transplantation in 2012. However, **Adie** and **Roe** (2013), analysing the full *Altmetric.com* database, reported that the coverage of tweets was still low (1.6%). In 2013, **Costas** *et al.*, (2015a) observed 13.3% of tweeters in a random sample of 500,000 *WoS* journal articles. In 2014, average observation rose to 16.5%, highlighting the outliers of **Haustein** *et al.* (2014a) (44.9%) and **Alperin** (2015) (0.8%). The first was because the authors analysed 84,000 articles deposited in the online repository *arXiv*, which would favour the tweeting of these pre-prints. Contrary to this result, **Alperin** (2015) studied almost 400,000 articles from *SciELO*, a local database for Latin-American academic publications, evidencing the poor altmetric impact of Latin-American science or the incomplete coverage of *Altmetric.com* of local events in Spanish and Portuguese. In 2015, the coverage of tweets increased again (26.4%), from 14% of publications about History in **Htoo** and **Na** (2015) and 41% in **Scott** *et al.*, (2015) from *Pubmed* articles. 2016 presents a similar mean percentage (26.8%). Particularly noteworthy are the poor results of **Eléspuru-Briceño** and **Huaroto** (2016) (5.4%) about documents deposited in the local repository of the *Peruvian University of Applied Sciences* (*UPC*) and those of **Torres-Salinas** *et al.* (2018b) (5.6%) limited to publications from Spanish universities. Both studies based in local samples again provide evidence of the reduced impact on *Twitter* of local, non-English publications. At the other extreme, **Wang** *et al.* (2016) found 58% of tweeted articles in a sample of Biotechnology articles authored by Chinese authors outside of China. This result could be explained by a research area exposed to social networks and that Chinese abroad could be inserted in prestigious groups and institutions. In 2017, the average proportion of tweeted documents (25.4%) also caused by the presence of extreme values dropped slightly. **Htoo** and **Na** (2017) found low percentages for Business (5.6%) and Law (8.1%), confirming the low impact on *Twitter* of Humanistic disciplines. On the other hand, the highest values are for **Zahedi** and **Costas** (2018) (57%), who used sample *PLoS* articles, which could indicate a greater exposure of *PLoS* journals on *Twitter* than other publications. In 2018, *Altmetric.com* increased considerably with a mean coverage of 40.8% of publications in *Twitter*. This observation encompasses the 26.9% of Economics and the 50.7% of Communication captured by **De-Filippo** and **Sanz-Casado** (2018). This result demonstrates the important disparity within the Social Sciences.

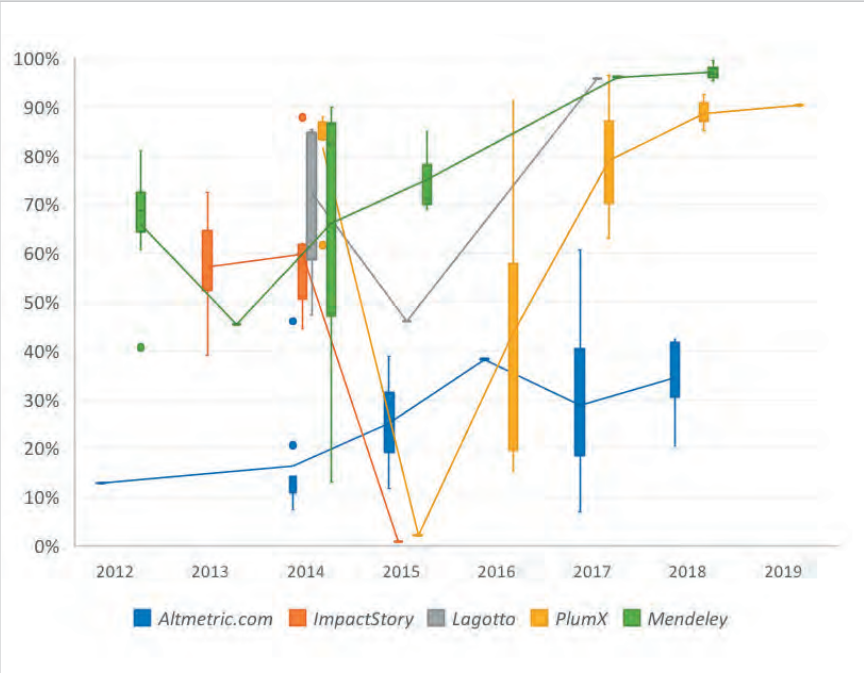
Next, *PlumX* also describes a positive evolution, starting from a mean of 6.6% in 2016 to 33.5% in 2019. The first observations about tweets on *PlumX* were done by **Peters** *et al.*, (2014b) when they compared the presence of the *Leibniz Association*'s publications in several aggregators. The results show insignificant percentages (<1%), which suggested that *PlumX* had technical problems to retrieve mentions from *Twitter*. However, one year later, **Kraker** *et al.* (2015), exploring the altmetric impact of datasets in *PlumX* and *ImpactStory*, uncovered a great proportion of files mentioned on *Twitter* (44.5%). This dramatic improvement could be due to the employment of *Gnip*, the official provider of *Twitter* (**Allen**, 2015). Even so, this figure seems excessive and could be caused by bias due to the small sample size (757 datasets). This perception is based on the following percentages from 2016 onwards, more continued in time and less variable. That year, the mean percentage was 7.7%, which fits with the 8.2% of **Ortega** (2016b), who studied the tweeting of articles from authors on *Twitter*. However, other studies showed different numbers. **Meschede** and **Siebenlist** (2018) detected 20.6% when they compared a random sample of *WoS* articles in *PlumX* and *Altmetric.com*, whereas **Torres-Salinas** *et al.* (2017a; 2017b) perceived a very low percentage in two samples of books (1.4% and 0.4%). This indicates that the mention of books on *Twitter* is scarcer than journal articles. In 2017, the mean percentage rose considerably (24.5%). That year, the lowest value was found by **Ortega** (2018b) when analysing 67,000 articles from *PlumX* (17.6%), while **Bar-Ilan** *et al.* (2019) noticed 30.2% in 2,700 articles from the *Journal of the Association for Information Science and Technology*.

This result suggests that Information Sciences could gain more attention on *Twitter* than the average. In 2018, the mean percentage was 30.8%, thanks to **Gorraiz** *et al.* (2018), who analysed the Austrian publications in *PlumX* and found 25.4% and 36.7% for publications mentioned on *Twitter* for 2014 and 2016, respectively. The last observation, in 2019, was repeated by these same authors (**Gorraiz** *et al.*, 2019), but only with regard to *University of Vienna* publications. The result (32.7%) is just slightly higher than the previous year.

ImpactStory shows observations only in the 2013-2015 period. The trend was steady and homogenous, starting from an average percentage of tweeted papers of 1.3% in 2013 (**Zahedi** *et al.*, 2014b) and 7.8% in 2014 (**Peters** *et al.*, 2014b) to 14.6% in 2015 (**Kraker** *et al.*, 2015). *Lagotto* also includes only a few observations, although it reached an average of 35.8% in 2015 and 51.1% in 2014. This elevated proportion is due to the fact that *Lagotto* is almost solely implemented in *PLoS* journals. *PLoS one*, the multidisciplinary journal, has considerable exposure on *Twitter*, thereby giving rise to these high percentages. For example, **Fenner** (2013), analysing only the journal *PLoS biology*, detected just 14% of tweeted articles. **Zahedi** *et al.* (2015a) detected the derisory 0.1% of tweeted articles in *Lagotto* using a random sample of *Crossref*. For *CED*, only the studies by **Ortega** (2018b) and **Zahedi** and **Costas** (2018), carried out in 2017, can be mentioned. Both found very low percentages: 1.3% for **Ortega** (2018b) and 1.7% for **Zahedi** and **Costas** (2018).

4.3.2. Readers

Another of the most studied metrics is the number of *Mendeley* readers with a publication (54.7%). The reason for this interest is the strong association of this metric with bibliographic citations (**Mohammadi**; **Thelwall**, 2014) and its possible utilisation as an indicator of early scientific impact (**Thelwall**; **Nevill**, 2018). Graph 4 depicts an increasing evolution in every provider, more defined from 2016 onwards. *Mendeley* is obviously the platform that has a better coverage of readers, with a continued rise in readers since 2014. Next, *PlumX* is the service with better percentages in relation to *Altmetric.com*, mainly from 2016.



Graph 4. Yearly evolution of the percentage of readers in each provider

Altmetric.com is the service that presents a less average proportion of readers in comparison to the other aggregators. The first observation came in 2012 from **Knight** (2014), who observed 12.9% of readers in Medicine papers from *Scopus*. But up to 2014, there is no study on the coverage of readers by *Altmetric.com*. In that year, the mean percentage of readers in *Altmetric.com* grew to 16.3%, although the observations vary considerably. **Hammarfelt** (2014) noticed that 7.4% of books have at least one *Mendeley* reader. **Robinson-García** *et al.* (2014) showed a little higher percentage (12%) in a very large random sample of 2.8 million papers from *WoS*. **Peters** *et al.* (2014b) detected a range of readers from 8.6% in Humanities to 20.6% in the Life Sciences. However, **Zahedi** *et al.* (2014c) observed a surprising 46% due, perhaps, to the sample being set up by *PLoS one* papers, which could indicate that multidisciplinary journals have more saves in *Mendeley* (**Zahedi** *et al.*, 2014b). In 2015, the number of readers covered by *Altmetric.com* rose to 25.1%. Observations are now more stable and the 38.9% of readers in Psychology and the 11.8% in History are worth mentioning (**Htoo**; **Na**, 2015). Other studies present similar percentages (**Alhoori** *et al.*, 2015; **Zahedi** *et al.*, 2015a; **Nuredini**; **Peters**, 2016; **Thelwall**; **Nevill**, 2018). In 2016, the articles by **Meschede** and **Siebenlist** (2018) and **Torres-Salinas** *et al.* (2018b) reached very similar percentages: 38% and 38.5%, respectively, which confirms the increasing coverage of readers by *Altmetric.com*. In 2017, the mean percentage fell to 28.8%, as a result of the study by **Htoo** and **Na** (2017) about the disciplinary differences in altmetrics for Social Sciences, when they verified the low number of readers in some disciplines such as Business (6.9%) and Law (8.3%). Excepting this study, the percentages uniformly increase again, from the 40.1% of **Ortega** (2018b) and 40.8% of **Bar-Ilan** *et al.* (2019) to the 60.6% of **Zahedi** and **Costas** (2018). This last high value is based on *PLoS* articles, which could pinpoint a bias in favour of *PLoS* articles in *Mendeley*, as was seen in **Zahedi** *et al.* (2014c; 2014b). In 2018, these values remain stable between the 40.8% of **Repiso** *et al.* (2019) and the 42.4% of **Bar-Ilan** *et al.* (2019). However, **Torres-Salinas** *et al.* (2018a) found 20.4% of readers in books, indicating the low coverage of books by *Mendeley*.

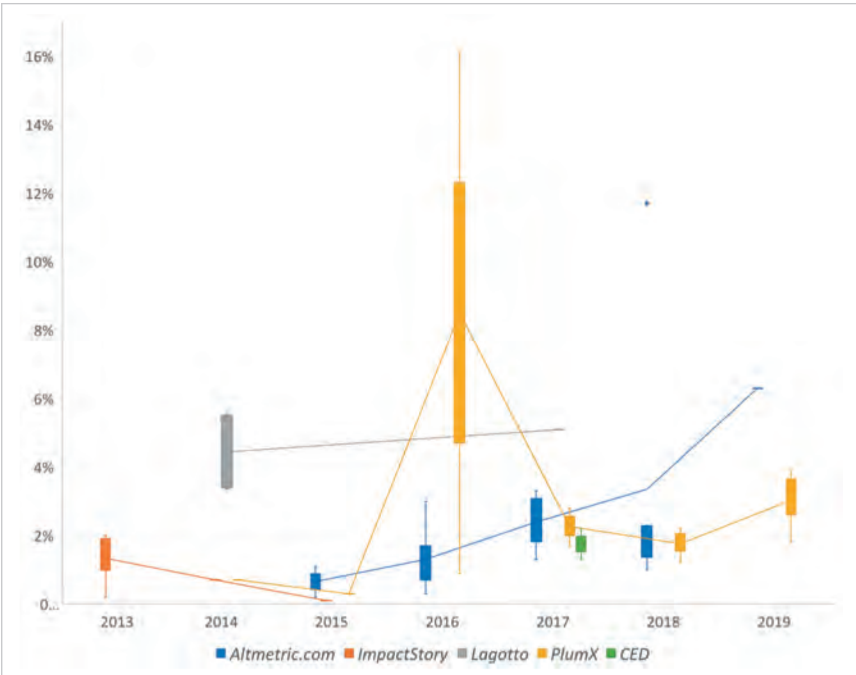
After *Mendeley*, *PlumX* is the aggregator with a better coverage of readers. In 2014, the first study with *PlumX* data (**Peters** *et al.*, 2014b) already noted an elevated coverage from the 61.7% in Humanities to the 88.1% in Life Sciences. However, the study by **Kraker** *et al.* (2015), limited to *Figshare* objects, brought an anecdotal 2.2% of readers. In 2016, there was great variability between the results of **Meschede** and **Siebenlist** (2018) (91.3%) and the outputs of **Torres-Salinas** *et al.* (2017a; 2017b) (15.2%; 24.2%). The latter studies were restricted to books, indicating poor coverage and reading of books in *Mendeley* as in *Altmetric.com* (**Torres-Salinas** *et al.*, 2018a). In 2017, the average number of readers grew dramatically (79.1%), thanks to studies by **Bar-Ilan** *et al.* (2019) (63.1%), **Ortega** (2018b) (77.7%) and **Zahedi** and **Costas** (2018) (96.6%). This trend was reinforced in 2018 (89.4%) and 2019 (88.7%) with the results of **Ortega** (2018b), **Zahedi**; **Costas** (2018), **Bar-Ilan** *et al.* (2019) and **Gorraiz** *et al.* (2018; 2019).

Mendeley is the service that produces the metric readers and, consequently, the coverage of papers in *Mendeley* (Graph 2) is similar to the trend of the number of papers with at least one reader (Graph 4). Even so, some studies have evidenced that not all the references included in *Mendeley* have readers, so these pictures would not match exactly (**Mohammadi** *et al.*, 2015; **Bornmann**; **Haunschild**, 2016b; 2017). As mentioned in the section on coverage, *Mendeley* presents a low proportion of readers between 2012 and 2014, the mean being 65.9% in 2012 (**Haustein** *et al.*, 2014b; **Mohammadi** *et al.*, 2015) and 45.5% in 2013 (**Zahedi** *et al.*, 2014a). As with coverage, the percentage of readers in *Mendeley* increases considerably in the middle of 2014, with values beyond 75% (**Peters** *et al.*, 2014b; **Bornmann**; **Haunschild**, 2016b; **Thelwall**; **Wilson**, 2016). In 2015, the average of readers reached 75.1% and in 2016, 96.1%. Finally, in 2018 it was near to 100% (98.15%) (**Didegah** *et al.*, 2018; **Bar-Ilan** *et al.*, 2019; **D'Angelo**; **Di-Russo**, 2019).

Studies that used *ImpactStory* show a good coverage of readers. In 2013, **Zahedi** *et al.* (2014b) uncovered an average of articles with 57.3% of readers, more than the 45.5% of **Zahedi** *et al.* (2014a), using *Mendeley*. This difference could be attributed to different samples and ways of matching the data (i.e. articles with/without doi). **Peters** *et al.* (2014b) maintained this percentage in 2015 (59.8%) and **Kraker** *et al.* (2015) fell to 1% when they studied the readers of *Figshare* datasets. *Lagotto* showed a high 72.2% average of readers in 2014 (**Zahedi** *et al.*, 2014c; **Bornmann**, 2014b; 2015). These elevated values are again due to *PLoS one*, which attracts more attention than average, distorting the coverage of this provider. In 2015, this percentage descended to 46% with the analysis by **Zahedi** *et al.* (2015a).

4.3.3. *Wikipedia*

Wikipedia's citations are an important metric that describes the educational impact of scientific research (**Kousha**; **Thelwall**, 2017). However, it is a metric with a low prevalence because it requires the writing of an entry and an important selection of the most relevant bibliography. Graph 5 presents the evolution of the percentage of articles with a *Wikipedia* citation included in each provider. Percentages do not exceed 7% in all the aggregators. *Altmetric.com* and *PlumX* describe a steady increase since 2015, caused by the growth of the online encyclopaedia and the addition of different language versions. Thus, the first study on the coverage of *Wikipedia* citations in *Altmetric.com* was performed in 2015 by **Nuredini** and **Peters** (2016), who observed a 1.1% of papers with mentions, and **Thelwall** and **Nevill** (2018) with 0.2%. These proportions increased by 1.3% in 2016 and 2.4% in 2017. In 2018, there is a slight descent (1.7%) caused by the low percentages found by **De-Filippo** and **Sanz-Casado** (2018) (1.6% and 1%) and **Repiso** *et al.* (2019) (1.3%). These results are due to the fact they are analysing Social Sciences disciplines, which would indicate fewer *Wikipedia* mentions to that research area than to others (**Zahedi** *et al.*, 2014b). In 2018, **Torres-Salinas** *et al.* (2018a) found a disproportionate 11.7% of *Wikipedia* mentions caused by a sample based on books from *Book Citation Index* (*WoS*). This result suggests that books are specially mentioned in *Wikipedia*, due perhaps to the educational orientation of the monographs.

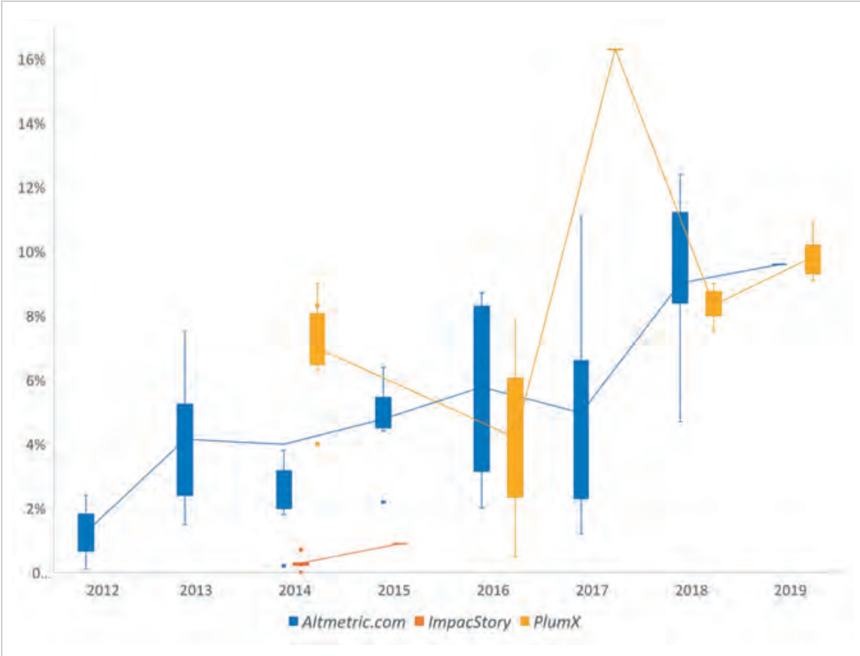


Graph 5. Yearly evolution of the percentage of *Wikipedia*'s citations in each provider

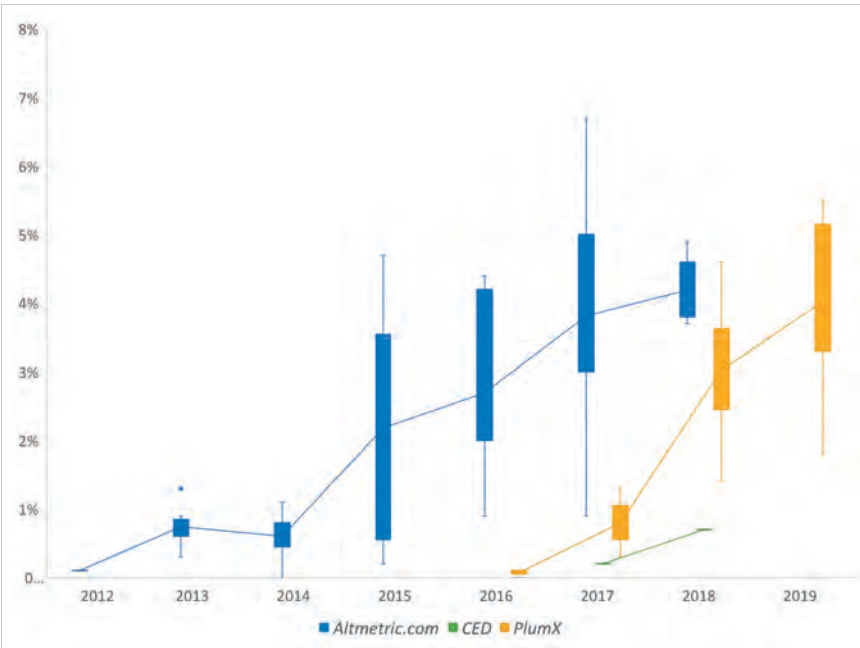
PlumX also describes a constant growth since the first observation by **Peters** *et al.* (2014b) (0.7%) in 2014 to the last by **Gorraiz** *et al.* (2019) (3%) in 2019. This significant increase could be due to the indexation of entries in languages other than English (**Allen**, 2018). It is important to notice that in 2016 **Torres-Salinas** *et al.* (2017b) found the astonishing proportion of 16% of *Wikipedia* citations in a sample of books, close to the 11.7% in *Altmetric.com* (**Torres-Salinas** *et al.*, 2018a), which would confirm that books are more cited in *Wikipedia* than research papers (**Kousha**; **Thelwall**, 2017). *ImpactStory* presents a downward trend, starting from a 1.3% of citations on average in 2013 to the 0.7% of **Peters** *et al.*, (2014b) in 2014 and the 0.1% of **Kraker** *et al.* (2015). *Lagotto* again shows a high main percentage (4.5%) because it is only representative of *PLoS* journals. Lastly, *CED* was used in 2017 (**Ortega**, 2018b; **Zahedi**; **Costas**, 2018), resulting in an average of 1.7%, similar to *PlumX* and *Altmetric.com* in that year.

4.3.4. *Facebook*

Facebook's mentions are other important metrics resulting from a generalist social network. It counts the number of mentions, shares and likes that a publication receives. However, when aggregators come to count *Facebook* mentions, there are differences between them, which could produce inconsistencies in the comparison. *Altmetric.com* only includes posts on a curated list of public pages, excluding likes and individual pages (*Altmetric Support*, 2019). *PlumX* and *Lagotto*, on the contrary, index and add likes, comments and shares in a single count (**Allen**, 2016; *PLoS*, 2019). Taking these facts into consideration, Graph 6 presents a constant increase of *Facebook* mentions, mainly in *Altmetric.com* and *PlumX*. *Altmetric.com* evolves positively from the average mentions of 1.3% in 2012 (**Adie**; **Roe**, 2013; **Knight**, 2014) to the 9.2% in 2018 (**De-Filippo**; **Sanz-Casado**, 2018; **Repiso** *et al.*, 2019; **Robinson-García** *et al.*, 2019) and 9.6% in 2019 (**Wooldridge**; **King**, 2019). *PlumX* follows a similar ascending pattern (on average, 7% in 2014 to 9.8% in 2018), but with more peaks and troughs. Thus, the highest outlier observation is the 16.3% found by **Zahedi** and **Costas** (2018), due to the use of a limited sample of *PLoS* articles. As we have seen before, articles from that publisher present higher than average values in social media metrics. It is interesting that despite *PlumX* counting more *Facebook* events, the percentage of articles mentioned is very similar to *Altmetric.com*. According to *ImpactStory* and *Lagotto*, the observations are anecdotal, with the 0.3% (**Peters** *et al.*, 2014b) in 2014 and the 0.9% (**Kraker** *et al.*, 2015) in 2015 of *ImpactStory* being the most noteworthy. *Lagotto* describes very high values (45.4% in 2014) arising from the fact that *PLoS* articles have a better presence in social networks. *Lagotto* figures are not depicted in the graph be-



Graph 6. Yearly evolution of the percentage of *Facebook*'s mentions in each provider



Graph 7. Yearly evolution of the percentage of news' mentions in each provider

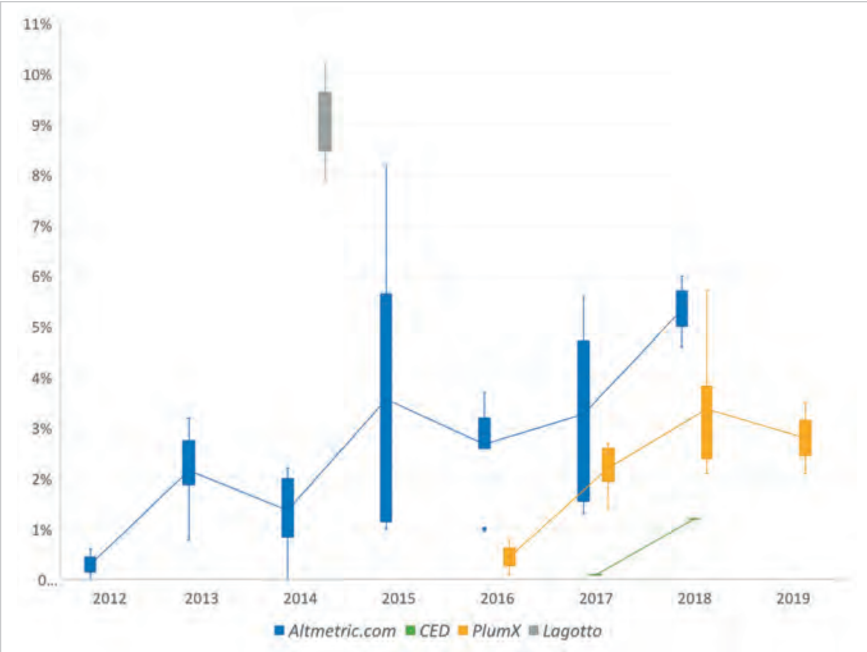
cause of the considerable distortion they cause.

4.3.5. News

News mentions measures the number of times that a research publication is mentioned in a news outlet. Unlike the other metrics, this one is not based on a single source. Rather, it depends on the coverage of news media that each provider gets indexing, which can give rise to important differences between services. Graph 7 describes a steady increase of news events in each provider, especially in the last three years. Only three services (*Altmetric.com*, *PlumX* and *CED*) were used in the literature to extract news mentions. *Altmetric.com* presents a paused growth up to 2017, starting from the 0.1% of **Knight** (2014) in 2012 to the mean 3.8% in 2017. Graph 7 shows a jump from 2015, motivated by the new partnership with *Moreover.com* (**Williams**, 2015), which doubles the proportion of mentioned articles on news media. In 2018, the coverage of news increased to the mean of 4.2% (**Repiso** *et al.*, 2019; **Dardas** *et al.*, 2018; **Torres-Salinas** *et al.*, 2018a; **Ortega**, 2019; **Robinson-García** *et al.*, 2019). *PlumX* showed more continued growth, ranging from 0.1% in 2016 (**Meschede**; **Siebenlist**, 2018; **Torres-Salinas** *et al.*, 2017a; 2017b) to 4% in 2019 (**Gorraiz** *et al.*, 2019). According to *CED*, Ortega's papers show a coverage of 0.2% in 2017 (**Ortega**, 2018b) and of 0.7% in 2018 (**Ortega**, 2019), considerably lower than *PlumX* and *Altmetric.com*, which have similar percentages.

4.3.6. Blogs

The last metric analysed is the number of references to scholarly outputs included in Blogs. In the manner of News, this indicator is also influenced by the list of sources managed by each provider. Graph 8 illustrates the evolution of the percentage of publications with that metric in each provider. Overall, the percentage of mentioned articles increased in every service during the period covered. *Altmetric.com* describes a constant rise in mentions, from 0.6% for **Knight** (2014) in 2012 to the 8.8% average mentions in 2018. Throughout this time span, worthy of notice is the 0% of Latin-American articles mentioned in 2014 by **Alperin** (2015), which illustrates the low presence of non-English literature in altmetric aggregators. Also interesting is the significant coverage of articles on Psychology (8.2%) reported by **Htoo** and **Na** (2015) and Business (6.4%) by **Nuredini** and **Peters** (2016) in 2015. This result could be due to the important presence of blogs specialising in Social Sciences subjects such as Psychology, Economics and Politics (**Ortega**, 2019c). The growth of the percentage of blog mentions in *PlumX* is also continuous. Since 2016, the mean percentage of blogs mentions has increased from 0.8% to close to 3% in 2019. In this period, the high value observed by **Ortega** (2019a) (5.8%) is noteworthy. According to other providers, *Lagotto* presents an elevated proportion (9%) due to the aforementioned high presence of *PLoS* journals on social media. *CED* describes an increasing coverage of publications from 0.1% in 2017 (**Ortega**, 2018b) to 1.2% in 2018 (**Ortega**, 2019a).

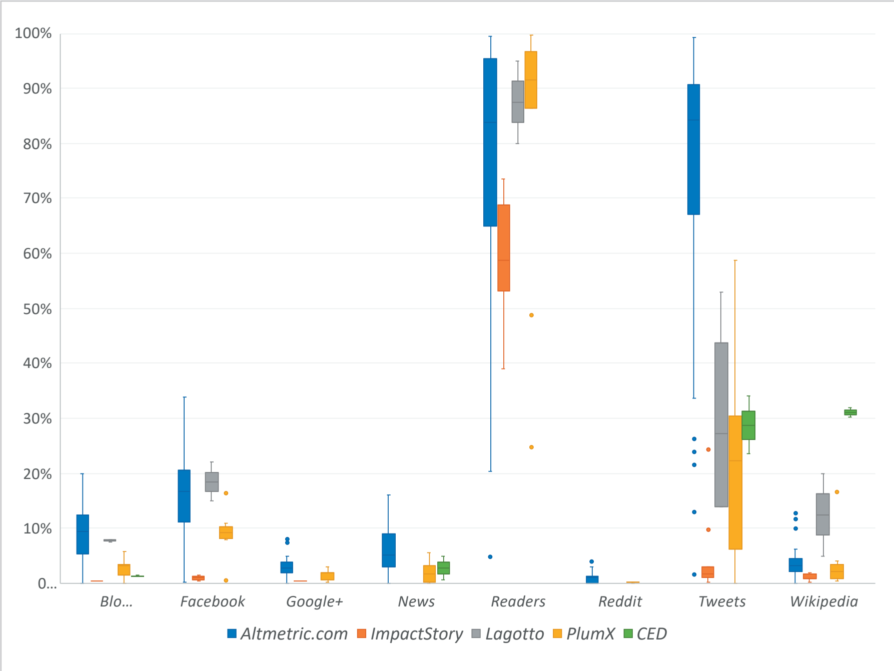


Graph 8. Yearly evolution of the percentage of blog mentions in each provider

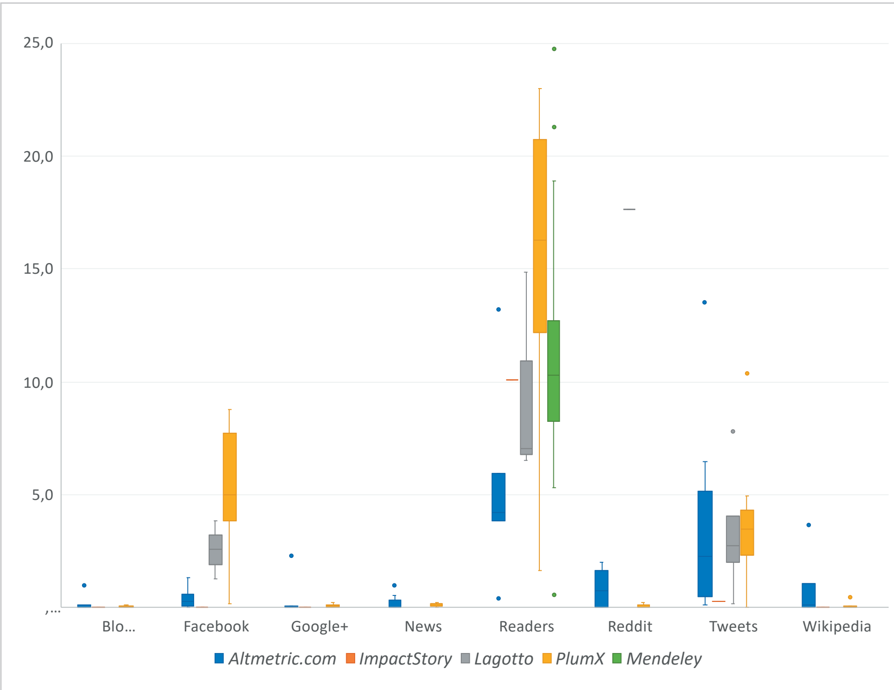
4.4. Metrics proportion in each provider

This section describes the coverage and weight of the different metrics in each provider. The aim is to observe differences between services when they come to capture each metric.

Graph 9 depicts the distribution of the percentages of the eight most important metrics observed in the literature by altmetric provider. In general, *Altmetric.com* presents higher coverage in every metric with the exception of *Facebook* mentions, *Mendeley* readers and *Wikipedia* citations. In the case of *Facebook*, *Lagotto* captures more mentions (18.5%) than *Altmetric.com* (15.6%) and *PlumX* (9%), caused mainly by the high coverage of *PLoS* articles in social networks (**Priem** *et al.*, 2012; **Fenner**, 2013; **Zahedi**; **Costas**, 2018). The distribution of *Mendeley* readers in each aggregator is skewed due to different sample size and type. This is especially significant in the study of books, where the proportion of readers is very low with regard to articles (**Torres-Salinas** *et al.*, 2017b; 2018a). These authors found between 20.4% (*Altmetric.com*) and 48.8% (*PlumX*) of readers. Leaving these counts aside, *PlumX* is the platform that captures a higher proportion of *Mendeley* readers (93.8%), followed by *Lagotto* (87.5%) and *Altmetric.com* (80.9%). Mentions on *Twitter* also follow a skewed distribution with many outliers. In the case of *Altmetric.com*, it is important to notice the first observation of **Adie** and **Roe** (2013) when the service had just started (1.5%); tweets to books (**Torres-Salinas** *et al.*, 2018a) (26.2%); geographical and language biases in Spanish (**Torres-Salinas** *et al.*, (2018b) (13%) and Latin-American articles (**Alperin**, 2015) (24.2%); and disciplinary differences in nursing (**Dardas** *et al.*, 2018) (23.8%) and dentistry (**Kolahi** *et al.*, 2017) (21.5%). In spite of these values, *Altmetric.com* is by far the aggregator that gathers the most *Twitter* mentions (72.5%), followed by *Lagotto* (30.4%). *PlumX* gathers 29.2% on average, excepting books (**Torres-Salinas** *et al.*, 2017a; 2017b) and the study of **Peters** *et al.* (2014b), when *PlumX* did not yet use *Gnip* to extract *Twitter* citations. *CED* includes an average of 28.7% of tweeted papers. Lastly, the coverage of *Wikipedia* citations by *CED* is especially relevant because it is the service that has a greater percentage of articles cited on *Wikipedia* (31.2%). This is mainly because it harvests entries from across *Wikipedia*, with no language limitation (**Ortega**, 2018b; **Zahedi**; **Costas**, 2018).



Graph 9. Box plot of the most important metrics by altmetric provider



Graph 10. Box plot of the frequency of events by paper according to provider

4.5. Average of events per publication

This indicator illustrates the frequency at which a paper is mentioned in different metrics. This measurement offers information on the prevalence of events in every metric. It is calculated as the number of total events divided by the number of publications in the sample.

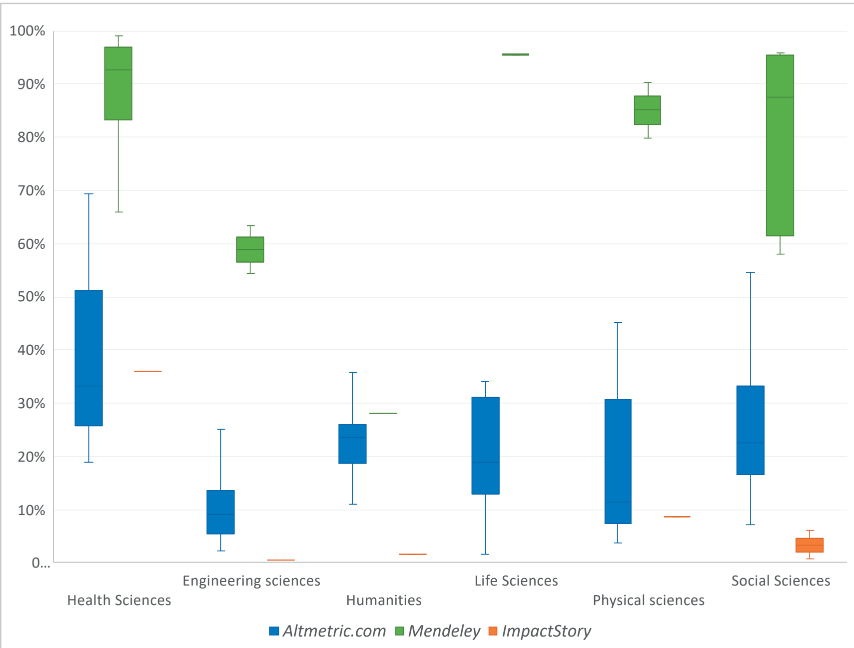
This indicator describes a high level of scattering resulting from both the heterogeneous nature of the samples and time and disciplinary differences. However, it is more stable when it comes to compare results across platforms. For this reason, only multidisciplinary samples were used to analyse this measure. Graph 10 presents a low proportion of events in almost every metric, with the exception of *Facebook* mentions, *Mendeley* readers and tweets. The remaining metrics do not amount to 10 mentions on average. *Altmetric.com* is the service that has a better proportion of events per publication across all metrics, excepting *Facebook* and readers. In the case of *Facebook* mentions, the average of events in *PlumX* (4.9) and *Lagotto* (2.6) is far greater than *ImpactStory* (0.03) and *Altmetric.com* (0.4). The reason for this discrepancy is that *PlumX* and *Lagotto* include likes and shares as *Facebook* mentions (**Peters** *et al.*, 2014b; **Allen**, 2016; *PLoS*, 2019), causing an increase in the proportion of events by publication. More variability and higher complexity are found in the proportion of readers by provider. The average of events per publication in *Mendeley* (10.3) is lower than that observed in *PlumX* (15.5) and very similar to *Lagotto* (10.7) and *ImpactStory* (9.47). The higher proportion in *PlumX* is paradoxically explained by the fact that *PlumX* groups duplicated articles, causing the average of readers by publication to be higher than with non-merged references. However, worth noting is the outlier in *Mendeley* of **Alperin** (2015), who detected 0.6 of readers per publication in a sample of Latin-American publications. This low proportion could again suggest a bias detrimental to non-English papers. On the contrary, the proportion of 21.5 readers found by **Bornmann** and **Haunschild** (2016b) refers to review articles, which explains why this type of publication attracts a high proportion of readers. According to tweets, *PlumX* (3.5), *Lagotto* (3.4) and *Altmetric.com* (3.3) depict similar averages of mentions by publication, which suggests that these providers do not present significant differences in counting tweets per article. These percentages change when the most recent articles are observed (2018-2019). In this case, *PlumX* has 4.5 and *Altmetric.com* has 4 tweets per article. Nevertheless, some outliers influence these figures. **Bornmann** (2015) observed an elevated proportion of tweets (7.8) to recommended articles on *F1000*, a fact that could influence the mention of these articles on *Twitter*. Also interesting to note is the recent study by **Gorraiz** *et al.* (2019), who found 10.3 tweets per article in publications from the *University of Vienna*. This study confirms the increase in the number of tweets per article in recent years.

4.6. Disciplines

This section examines disciplinary differences in the coverage of publications in each provider and explores how each metric is distributed in different disciplines. *All Science Journal Classification* (*ASJC*) was used to group the different disciplinary studies (*https://pg.edu.pl/documents/611754/75313317/asjc*).

From this classification, Social Science and Humanities and Physical Sciences and Engineering were broken up to observe the specific behaviour of these categories: 52 (49%) articles from the sample show some disciplinary information and only 18 (17%) include data from providers other than *Altmetric.com*. This lack of data means that most of the results are only based on one or two observations, which could lead to inaccurate results and cautious interpretation.

The disciplinary coverage of publications has been studied in only three providers, *Altmetric.com*, *Mendeley* and *ImpactStory*. The remaining were used to track the coverage of specific metrics but not the general coverage of these platforms. The reason is that some providers were limited to specific sources (*Lagotto*) or to particular institutions (*PlumX*). Graph 11 presents the distribution of each research area according to the three providers analysed. In general, only two research areas present significant differences: Health Science and Social Sciences. Health Sciences describes higher coverage levels in all three providers. In the case of *Altmetric.com*, this proportion goes from the 19.3% of **Knight** (2014) to the 69.3% of **Bornmann** (2014a), with an average of 38%. *Mendeley* has better coverage, reaching 87.5% of articles. Interesting to note is the outlier of **Haustein** and **Larivière** (2014) with a 65.9%, due mainly to the fact that this study is previous to *Mendeley*'s integration with *Scopus* (**Bonasio**, 2014; *Scopus*, 2014). In the case of *ImpactStory*, only one publication contained information about its disciplinary coverage (**Zahedi** *et al.*, 2014b). Thus, this platform captures 36% of Health Sciences papers. Interestingly, Social Sciences (25.7%) and Humanities (22.8%) have on average more publications included in *Altmetric.com* than the remaining areas. However, this pattern is not observed in *Mendeley*, where Life Sciences (95.7%) and Physical Sciences (85%) are the research areas that have more documents (**Zahedi**; **Van-Eck**, 2018). These differences between *Mendeley* and *Altmetric.com* could be because *Altmetric.com* only captures publications that have previously been mentioned in social



Graph 11. Box plot of the disciplinary coverage of publications by provider

Graph 12. Distribution of the disciplinary coverage of publications by altmetric provider according to four metrics: blogs, *Mendeley* readers, *Facebook* mentions and tweets

networks (**Haustein** *et al.*, 2015; **Bar-Ilan** *et al.*, 2019). Another reason could be that *Mendeley* readers could be distributed thematically as bibliometric indicators, owing to the strong correlation between these metrics (**Mohammadi**; **Thelwall**, 2014; **Mohammadi** *et al.*, 2015).

Graph 12 displays the distribution of the percentage of documents mentioned in four metrics: blogs, readers, *Facebook* mentions and tweets. The remaining metrics were not studied because of the absence of specific data on the coverage of these metrics from a disciplinary perspective. In fact, many of the observations in Graph 12 come from only one or two studies. This lack of data led us to carefully interpret and to limit the analysis to the most studied metrics. For example, the analysis of blogs shows a predominance of *Altmetric.com* data. In this sense, Physical Sciences (5.3%) and Social Sciences (3.6%) are the most mentioned disciplines in blogs according to *Altmetric.com*. This proportion coincides with the results of **Ortega** (2019c) about the disciplinary coverage of blog sites, which suggests a strong relation between the mention of articles by discipline and the thematic content of the sources.

Facebook mentions also depicts a majority of *Altmetric.com* observations, but now the disciplines with a greater mean proportion of mentioned publications are Health Sciences (6.2%) and Social Sciences (5%). This raised value for Social Sciences is due to the special presence of Sociology (12.4%) and Communication (11.2%) reported by **De-Filippo** and **Sanz-Casado** (2018). However, *PlumX* presents better percentages than *Altmetric.com* in every metric, particularly for Life Sciences (8.6%) and Social Sciences (7.3%) (**Peters** *et al.*, 2014b).

More data were found for readers. Obviously, *Mendeley* has a better mean percentage of publications than the other services, but *PlumX* presents very close percentages, which reveals that *PlumX* manages better duplicated records and that both services are now integrated into *Elsevier*'s products, sharing bibliographic information. However, data about *PlumX* are taken only from two works (**Peters** *et al.*, 2014b; **Bar-Ilan** *et al.*, 2019), so these results should be read with caution. In general, it is interesting to note that Social Sciences is the discipline with the best coverage in all providers, with the exception of *ImpactStory*. This important presence of the Social Sciences was previously reported by **Haustein** *et al.* (2014b) when they detected 81% of readers in Psychology; **Htoo** and **Na** (2015) notice more than double the number of readers in Psychology (39%) than in History (11.8%) or Linguistics (17.6%); and **Zahedi** *et al.* (2017) perceived that Social Sciences, Humanities (18.1%), along with Life and Earth Sciences (18.6%), were the disciplines with more readers.

Finally, the coverage of tweeted papers by discipline presents an unlikely behaviour. In *Altmetric.com*, Health Sciences (28%) and Social Sciences (24.5%) are the research categories that attract more tweets on average, whereas *ImpactStory*, Life Sciences (7.6%) and Physical Sciences (6%) are the most tweeted disciplines. *PlumX* depicts a strong collection of Social Sciences publications (21.7%), although this result is obtained at the expense of the absence of more disciplinary data.

4.7. Comparative

The existence of different services that provide similar metrics have led to the appearance of some studies that compare coverage and counts between services. However, the number of publications that address this issue is low: only seven studies comparing different providers were located in the literature. The first attempt was performed by **Zahedi** *et al.* (2014c) with data from February 2014. They randomly selected 1,000 articles from *PLoS one*. This sample allowed them to compare *Lagotto*, *Altmetric.com* and *Mendeley*. Their results showed that the data reported by these providers were not consistent and revealed important differences. *Mendeley* was the service that indexed more publications, *Altmetric.com* captured more tweets and *Lagotto* had a special coverage of *Facebook* mentions. A few months later, **Peters** *et al.* (2014b), with data from August 2014, analysed 1,740 publications from the *Leibniz Association*, a multidisciplinary research organisation from Germany. These publications were searched in four services: *Plum Analytics* (*PlumX*), *ImpactStory*, *Altmetric Explorer* (*Altmetric.com*) and *Mendeley* (through *Webometric Analyst*). Because the publications could be classified in research areas, they were also able to perform a disciplinary study. The principal result was the verification of the great discrepancy between services, even when using the same sources. In this sense, they evidenced that *PlumX* barely provided information about tweets, but displayed high scores for *Facebook* mentions and *Mendeley* readers. *Altmetric.com*, on the contrary, was the platform with the best coverage of tweets. From a disciplinary perspective, these authors observed that Science, Technology and Medicine (STM) articles attracted more attention than other disciplines. **Kraker** *et al.* (2015) compared two altmetric aggregators: *PlumX* and *ImpactStory*, using a small sample of datasets (1000 items) from *Figshare*. They perceived that *PlumX* detected considerably more items in social media and also found higher altmetric scores than *ImpactStory*. In July 2015, **Zahedi** *et al.* (2015a) used a random sample of 30,000 articles from *Crossref* and *WoS* to check the same providers as in 2014 (**Zahedi** *et al.*, 2014c). Their results confirmed previous outputs about coverage and metrics. However, this is the first work that explored the counting differences between providers according to the same metric. Thus, they reported that in general *Mendeley* had a higher number of readers than *Lagotto* and *Altmetric.com*, *Lagotto* counted more *Facebook* mentions than *Altmetric.com*, and *Altmetric.com* collected more tweet counts.

Not until 2018 were there more systematic comparisons between altmetric aggregators. **Meschede** and **Siebenlist** (2018), with data from September 2016, analysed 50,000 dois from *WoS* in *Altmetric.com* and *PlumX*. They found that *PlumX* almost covered 100% (91%), while *Altmetric.com* only collected 38% of the sample. According to the metrics, publications on *Altmetric.com* have better scores than *PlumX* in all the metrics, with the exception of *Mendeley* readers and *Wikipedia* citations. From these results, it is interesting to note that *Altmetric.com* has slightly more papers mentioned in *Facebook* than *PlumX*, a result that contradicts other studies (**Peters** *et al.*, 2014b). In the same year, but with data from May 2017, **Ortega** (2018b) compared the coverage and counts of 67,000 papers extracted from *PlumX* in three altmetric data services: *Altmetric.com*, *PlumX* and *CED*. Although the sample could be biased in favour of *PlumX*, the coverage of *Altmetric.com* was above 40%, while *CED* included only 4% of publications with at least one metric. According to metrics, *PlumX* (98.6%) captured more documents with readers than *Altmetric.com* (95.7%), but much fewer articles with mentions on *Twitter* (22.3%) than *Altmetric.com* (38%). This last percentage in *PlumX* is lower than previous studies (**Kraker** *et al.*, 2015) but in line with recent analyses (**Meschede**; **Siebenlist**, 2018, 21%; **Zahedi**; **Costas**, 2018; 23.9%). Doubtlessly, the most complete analysis of the coverage of altmetric providers was performed by **Zahedi** and **Costas** (2018), who tested 31,000 *PLoS one* articles in June 2017 on five data platforms: *Altmetric.com*, *CED*, *Lagotto*, *PlumX* and *Mendeley*. Despite the fact that using data about only one journal could not be representative, their results were consistent with previous studies, though with higher proportions. Thus, for example, *PlumX*, *Lagotto* and *Mendeley* reached a coverage above 90%, while *Altmetric.com* obtained 61% and *CED* 7% —a percentage much greater than previous studies (**Zahedi** *et al.*, 2015a; **Ortega**, 2018b; **Meschede**; **Siebenlist**, 2018). A similar interpretation could be made with the high number of tweeted papers (57%) in *Altmetric.com*, much higher than the 38% of **Ortega** (2018) and the 36% of **Meschede** and **Siebenlist** (2018). The last study now comparing altmetric aggregators was published by **Bar-Ilan** *et al.* (2019). These authors examined 2,700 articles from the *Journal of the Association for Information Science and Technology* at two different moments —June 2017 and April 2018— in *PlumX*, *Mendeley* and *Altmetric.com*. The results were very similar to previous studies, confirming that *PlumX* (87%) and *Mendeley* (98.6%) have almost full coverage of readers. However, it is interesting to note that the number of tweets captured by *PlumX* (30%) is close to that of *Altmetric.com* (35%), which suggests that *PlumX* is addressing their disadvantages by capturing tweets.

5. Limitations

The realisation of a meta-analysis about the coverage and counting of altmetric providers has evidenced that the reviewed literature presents very different results, showing an elevated variability between similar observations. For example, Graph 2, on the evolution of the different services, depicts wide annual margins in the percentage of covered publications. This instance is perceived in the evolution of the different metrics (reads, tweets, *Facebook* mentions, etc.). This inaccuracy is mainly caused by the different ways of selecting the sample, which could produce a wide range of biases. For example, the use of some specific sources such as recommended articles from *F1000* (**Bornmann**, 2014; 2015; **Bornmann**; **Haunschild**, 2015; 2018) or articles from specific journals such as *PLoS One* (**Zahedi** *et al.*, 2014c; **De-Winter**, 2015; **Zahedi**; **Costas**, 2018) and *Journal of the Association for Information Science and Technology* (**Bar-Ilan** *et al.*, 2019) produce specific results that can hardly be generalised. Another important bias is introduced when local studies are analysed, mainly from emergent regions such as Latin America (**Maricato**; **Filho**, 2018; **Alperin**, 2015) or from non-English-speaking countries such as Spain (**Torres-Salinas** *et al.*, 2016; **Torres-Salinas** *et al.*, 2018b), Peru (**Eléspuru-Briceño**; **Huaroto**, 2016) or China (**Wang** *et al.*, 2016). The selection of specific formats such as books (**Hammarfelt**, 2014; **Torres-Salinas** *et al.*, 2017a; 2017b; **Torres-Salinas** *et al.*, 2018a) and datasets (**Peters** *et al.*, 2015; **Peters** *et al.*, 2016; **Kraker** *et al.*, 2015) also limits the extrapolation of the results. This does not mean that these studies are biased; on the contrary, they contribute appreciated information about the limitation of altmetrics in specific regions, disciplines or formats. The problem with these results is that they increase variability when a general picture is drawn.

Perhaps, a possible solution would be to exclude those cases. However, this leads us to another significant limitation of this review: the absence of an important critical mass of results. Although this study is based on 107 outputs over seven years, a number far from negligible, many of them present partial analyses or limited information about the data. For example, the average events per publication (Graph 10) or the disciplinary analysis (Graphs 11-12) illustrate some distributions with barely one or two observations, which introduces great randomness and variability, causing the averages to be poorly representative and the trends to present peaks and troughs. Another factor is that many of the referenced studies lack systematic and standardised information on the sample. For instance, some publications do not provide a data extraction date, which hinders result grouping by year. In other cases, there is no clear information about the counts (for example, the percentage of the sample or percentage of the mentioned articles), or the indicators are not well explained or they use particular denominations (i.e. mean available, mean score, intensity). These inaccuracies make it difficult to understand the real meaning of these data, unfortunately leading to some results being discarded for meta-analysis. Finally, another important factor that hinders comparison is the time-window of the samples analysed, because there are important differences in the altmetric impact according to the publication date. This discretionary range of samples introduces more variability in the results.

6. Discussion

Despite the limitations mentioned above, this meta-analysis has reported important results about the use, coverage of publications and counting of metrics in the principal altmetric data providers. *Altmetric.com* is the most used platform for altmetric studies. Graph 1 illustrates how this service is gaining prominence in the scholarly community as an altmetric tool, being used in more than half the reviewed articles (54%). In fact, 43% of the articles use *Altmetric.com* as their only data source. This hegemony of *Altmetric.com* could be caused by its tendency to support altmetric research with a public API, research grants and a research data program (*Altmetric.com*, 2019b; 2019c). Another important advantage is that it is the service that captures more events from social networks, especially *Twitter* (Graph 3), news (Graph 7) and blogs (Graph 8), making this platform the favourite altmetric provider. However, these advantages do not exclude pointing out important limitations as an exclusive source. The most significant is the limitation of indexing only publications mentioned in social networks (**Haustein** *et al.*, 2015; **Bar-Ilan** *et al.*, 2019). As a result, only around 30-40% of the current scientific literature is included in *Altmetric.com* (**Torres-Salinas** *et al.*, 2018a; **Robinson-García** *et al.*, 2018; **Didegah** *et al.*, 2018; **Ortega**, 2019). According to the coverage of metrics, *Altmetric.com* shows the worst performance capturing *Mendeley* readers (Graph 4), motivated by the non-aggregation of duplicated records (**Ortega**, 2018b), and the average number of *Facebook* mentions (Graph 10) due to a restrictive definition of this metric, which only indexes posts on *Facebook*'s public pages (*Altmetric Support*, 2019).

Mendeley, though it could be considered an altmetric source, is not exactly a data aggregator because it only provides one metric produced by itself. Despite this, it is the second most used source for altmetric studies (18%). Its importance could be because, for readers, it is the metric that correlates better with citations and has been suggested as an early scientific impact indicator (**Mohammadi**; **Thelwall**, 2014; **Thelwall**; **Nevill**, 2018). Studies on this source have demonstrated that the coverage of scientific literature is close to 100%, mainly from mid-2014. This source is then widely representative and key to linking impact with the readership of scientific outputs. Its most serious limitation is that there is no integration of duplicated records.

PlumX is the second most used aggregator (17%) and is becoming the most serious competitor of *Altmetric.com*, mainly after being acquired by *Elsevier* (2017). Its principal advantage is the high coverage of publications, over 95% in recent years (**Meschede**; **Siebenlist**, 2018; **Zahedi**; **Costas**, 2018; **Ortega**, 2018a; **Ortega**, 2019; **Gorraiz** *et al.*, 2019). This makes *PlumX* a comprehensive tool that enables tracking the impact of a wide range of materials, especially the performance of books (**Torres-Salinas** *et al.*, 2017a; 2017b). However, *PlumX* has difficulties computing some metrics. The number of blogs and news mentions (Graphs 7 and 8), and the proportion of *Wikipedia* citations is lower than *Altmetric.com* (Graph 5). Nevertheless, *PlumX* is making up for these limitations and is improving their figures. A clear example is *Twitter* mentions. The literature has shown that *PlumX* initially captured a very low proportion of tweets (**Peters** *et al.*, 2014b). However, after 2016, when *Gnip* was used, the proportion increased to more than 20% (**Ortega**, 2018b; **Meschede**; **Siebenlist**, 2018; **Zahedi**; **Costas**, 2018), and today, the latest studies confirm that *PlumX* gathers as many tweets as *Altmetric.com* (30%) (**Bar-Ilan** *et al.*, 2019). This fact demonstrates the important growth of *PlumX* as an altmetric provider. In addition, coverage of readers is also noteworthy and is as good as *Mendeley* due to the integration of duplicated records (**Peters** *et al.*, 2014b; **Ortega**, 2018b; **Bar-Ilan** *et al.*, 2019).

Another important result is the decreasing use of *ImpactStory* and *Lagotto*. Several reasons explain this disuse. In the case of *ImpactStory*, this service presents an acceptable proportion of covered documents (60-70%) (**Zahedi** *et al.*, 2014b; **Peters** *et al.*, 2014a; 2014b; **Kraker** *et al.*, 2015) and a good percentage of *Mendeley* readers (50-60%) (**Zahedi** *et al.*, 2014a; 2014b; **Peters** *et al.*, 2014b). However, from 2015 their data were not easy to extract (there is no public API), leading to the disappearance of this service in altmetric studies. *Lagotto*, on the contrary, is scarcely used because it basically covers publications from *PLoS*. Due to the considerable differences between journals and publishers when they are present on social media (**Ortega**, 2017), the use of *Lagotto* introduces important biases. For example, the few studies that used this tool showed a disproportionate coverage of tweets (40-60%) (**Bornmann**, 2015; 2014b; **De-Winter**, 2015; **Barthel** *et al.*, 2015), *Wikipedia* citations (4.5%) (**Priem** *et al.*, 2012; **Bornmann**, 2015; **Zahedi**; **Costas**, 2018), *Facebook* mentions (45.4%) (**Zahedi** *et al.*, 2014c; **Bornmann**, 2015) and blogs (9%) (**Fenner**, 2013; **Bornmann**, 2014b). These extreme values are caused by *PLoS one*, a multidisciplinary journal. These types of journals tend to show very high altmetric scores (**Zahedi** *et al.*, 2014b).

Nowadays, new open and non-profit services are emerging as data providers that offer raw data about social events (*CED*, *Cobalmetrics*). *CED* is the most promising tool. Although the platform is new (created in 2016) and the coverage of publications is low (10-20%) (**Ortega**, 2018a; 2018b; **Zahedi**; **Costas**, 2018), it does collect a good proportion of tweets (28.7%) and *Wikipedia* citations (31.2%) (Graph 9). These results confirm the positive development of these open data providers.

7. Conclusions

In general, the main lesson that we can extract from this meta-analysis is that the results of using one altmetrics provider or another are very different. The coverage of publications, the selection of sources and the process of extraction and matching of events is so different that the information reported by each service is hardly comparable. The evidences compiled in this study warns of the individual use of only one tool for general altmetrics studies and suggests the use of different platforms to contrast and complement the results. For example, some formats (books and datasets) are unlikely to be covered and display different impact patterns. This limitation is greater with regard to local publications in non-English languages, whose impact is underrepresented by many altmetrics providers. The disparity of counts and sources provided by services reinforces the assumption that different data providers are necessary in order to display a comprehensive view of the altmetric impact of scholarly results.

Furthermore, the analysis performed has pinpointed the advantages and drawbacks of each service, making this study an initial guide to selecting the most appropriate tools for altmetric studies and for tracking the evolution of each platform. The results confirm that *Altmetric.com*, despite its limited coverage, is the service that captures most mentions from social networks, blogs and news outlets. *PlumX* has better coverage but captures fewer events than *Altmetric.com*. The strong point of *PlumX* is that it is the best service for counting *Mendeley* readers, in some cases, better than *Mendeley* itself. *CED* is a small but promising tool that has a special coverage of mentions from *Wikipedia*. *Lagotto* and *ImpactStory* are gradually falling into disuse because they have limited reach. *Lagotto* is limited to specific publishers (*PLoS*), and *ImpactStory* includes information from other providers (*Altmetric.com*).

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Software tools for conducting bibliometric analysis in science: An up-to-date review

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Abstract

Bibliometrics has become an essential tool for assessing and analyzing the output of scientists, cooperation between universities, the effect of state-owned science funding on national research and development performance and educational efficiency, among other applications. Therefore, professionals and scientists need a range of theoretical and practical tools to measure experimental data. This review aims to provide an up-to-date review of the various tools available for conducting bibliometric and scientometric analyses, including the sources of data acquisition, performance analysis and visualization tools. The included tools were divided into three categories: general bibliometric and performance analysis, science mapping analysis, and libraries; a description of all of them is provided. A comparative analysis of the database sources support, pre-processing capabilities, analysis and visualization options were also provided in order to facilitate its understanding. Although there are numerous bibliometric databases to obtain data for bibliometric and scientometric analysis, they have been developed for a different purpose. The number of exportable records is between 500 and 50,000 and the coverage of the different science fields is unequal in each database. Concerning the analyzed tools, *Bibliometrix* contains the more extensive set of techniques and suitable for practitioners through *Biblioshiny*. *VOSviewer* has a fantastic visualization and is capable of loading and exporting information from many sources. *SciMAT* is the tool with a powerful pre-processing and export capability. In views of the variability of features, the users need to decide the desired analysis output and chose the option that better fits into their aims.

Keywords

Bibliometrics; Scientometrics; Science mapping analysis; Tools; Bibliographic databases; Performance analysis; Software; Libraries; *R*-package; *Python*-package; Software review.

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1. Introduction

Science can be defined as a social activity oriented to characterize a field of knowledge through observation and measurement, being performed by research communities and influenced by societal conditions (communication media, Government policies and legal system). In accordance with **Asimov** (2010), modern science emerged when nature was considered under the watchful eye of measurement methods. Thus, professional and researchers require a body of theoretical and practical tools to quantify experimental data. In this sense, **Van-Raan** (2004a) also discussed this topic when recorded the sentence attributed to Onnes: "Measuring is knowing". To measure is, then, the basis for the building of science. However, how science itself can be measured?

> Researchers require a body of theoretical and practical tools to quantify experimental data

This view of the matter presides the methodical foundations of bibliometrics, that is, the quantitative study of production, growth, maturation and consumption of scientific publications. In this sense, the term "bibliometrics" was originally coined by **Pritchard** (1969), replacing so the classical "statistical bibliographies". Since then, bibliometrics has quickly evolved and technically perfected alongside with the exponential growth of science. Presently, the massive amount of data published on academic journals, books, patents, proceedings, etc. required to be stored and organized into bibliographic databases. The information contained on these platforms (i.e. citations, keywords, titles, journals, authors, institutions, etc.) provides a valuable sample to perform science evaluation research using bibliometric techniques (**Gutiérrez-Salcedo**; **Martínez**; **Moral-Muñoz**; **Herrera-Viedma**; **Cobo**, 2018).

As a result, bibliometrics has become in contemporary context an essential tool for assessing and analyzing researcher's production (**Ellegaard**; **Wallin**, 2015), collaboration between institutions (**Skute**; **Zalewska-Kurek**; **Hatak**; **de Weerd-Nederhof**, 2019), impact of state scientific investment in national R&D productivity (**Fabregat-Aibar**; **Barberà-Mariné**; **Terceño**; **Pié**, 2019) and academic quality (**Van-Raan**, 1999), among other possibilities (**Glänzel**, 2012). Concerning to bibliometrics, it can be divided in two major fields of study or subject areas: performance analysis and science mapping analysis (SMA) (**Noyons**; **Moed**; **Van-Raan**, 1999; **Cobo**; **López-Herrera**; **Herrera-Viedma**; **Herrera**, 2011a). On the one hand, performance analysis aims to evaluate different scientific actors (researchers, institutions, countries, etc.) through bibliographic indexes based on publications and citations data (**Narin**; **Hamilton**, 1996). On the other hand, SMA lies on the topological and temporal representation of the cognitive and social structure of a particular research field (**Small**, 1999; **Cobo**; **López-Herrera**; **Herrera-Viedma**; **Herrera**, 2011).

Concerning the current published documents, there are several reviews about the tools available to perform bibliometric analyses. **Moral-Muñoz**, **López-Herrera**, **Herrera-Viedma** & **Cobo** (2019) reviewed the freely available SMA software and allowing to perform the complete analysis, without using external software to preprocess or visualize the analysis. **Pan**, **Yan**, **Cui** & **Hua**, (2018) evaluated how the three SMA software (*CiteSpace*, *HistCite* and *VOSviewer*) is used, cited and diffused. **Gutiérrez-Salcedo**, **Martínez**, **Moral-Muñoz**, **Herrera-Viedma** & **Cobo**, 2018) introduced the essential techniques and software tools to analyze the impact of a research field and its scientific structure. **Chen** (2006; 2017; 2019) introduced *CiteSpace*, *VOSviewer* and *CitNetExplorer* to perform an applied analysis using SMA. **Pradhan** (2016) described some of the commonly used software tools to perform SMA analysis. **Sangam** & **Mogali** (2012) highlight the different capabilities of mapping and visualization software tools. Finally, **Cobo**,**López-Herrera**, **Herrera-Viedma** & **Herrera** (2011b) performed an in-depth analysis of the advantages, drawbacks and most important differenced among the SMA software tools. Nevertheless, those reviews are conditioned for temporal factors . These tools have been improved, and new features have been incorporated; furthermore, other described tools are no longer maintained, or there are powerful new options.

> The information contained on bibliographical platforms provides samples to perform science evaluation research

In this sense, the present review aims to offer an up-to-date review of the different tools available to perform bibliometric and scientometric studies; including the data acquisition sources, performance analysis, science mapping and visualization tools. For this purpose, the structure of the study is divided into three sections and organized as follows: Section 2) describes the method and selection criteria. Section 3) shows the different databases from which to get the information. Section 4) presents general bibliometric and performance analysis tools. Section 5) analyzes the main SMA software tools. Section 6) describes and analyzes the available libraries. Finally, in Section 7) some discussion and concluding remarks are highlighted.

2. Methods – Selection criteria

In order to provide an adequate state-of-art of the available tools to perform bibliometric and scientometric analyses, some inclusion criteria have been previously established:

- Database that allows downloading bibliographic data.
- General bibliometric software, or based on indexes and performance analysis.
- SMA tools.
- *R* and *Python* libraries.

All of these software and tools have to be in a final form and with an evident up-to-date status. Furthermore, we only include those that are focused explicitly on the bibliometrics, not general tools that could be employed in some of the processing stages.

> Bibliometrics has become an essential tool for assessing and analyzing the productivity and impact of academics and technology

3. Databases

In order to perform a bibliometric analysis, the first stage is to decide the best data source that fits with the scientific coverage of our research area. It is important to highlight that the number of bibliographic databases is high (e.g. *PubMed*, *EMbase*, *SpringerLink*, etc.), but not all of them provide information that allows easily performing bibliometric analyses. Thus, the present document shows the main bibliographic databases used in bibliometrics analysis: *Web of Science* (*WoS*), *Scopus*, *Google Scholar* (*GS*), *Microsoft Academic* (*MA*) and *Dimensions*. In what follows, a short description of each database is shown, and also, the main characteristics focusing on the bibliometric analyses are shown in Table 1.

Table 1. Characteristics of the databases

Database	Subscription	Data download	Records limit	API	Formats
WoS	Yes	Yes	500 records with a total of 100,000 per query	Yes	Plain text and tab-delimited
Scopus	Yes	Yes	First 2,000 records	Yes	RIS and CSV
GS	Free	No	n/a	No	n/a
MA	Free	Using the API	n/a	Yes	n/a
Dimensions	Free or under subscription	Yes	50,000	Yes	CSV or *Excel*

- *Web of Science*: It is a website that provides access to multiple databases and citation data for 256 disciplines (science, social science, arts and humanities). The access is under subscription. The *Institute for Scientific Information* (*ISI*) was the original producer, after that, its intellectual property passed to *Thomson Reuters*, and now the maintenance is in charge of *Clarivate Analytics*. It covers different formats, such as full-text articles, reviews, editorials, chronologies, abstracts, proceedings (journals and book-based) and technical papers. The total number of records is beyond 90 million. Its temporal coverage is from 1900 to the present.
- *Scopus*: It is a website that offers access to databases and citation data in life sciences, social sciences, physical sciences and health sciences. *Elsevier* provides access to *Scopus*, and a subscription is needed. It covers three types of sources: book series, journals and trade journals. Furthermore, the searches performed in *Scopus* also incorporate searches in patent databases. The number of records is around 69 million. The temporal coverage is from 2004 to present.
- *Google Scholar*: It is a freely available website, launched in 2004, that indexes the full text or metadata of the scientific literature from the most peer-reviewed online academic journals, books, conference papers, theses, preprints, abstracts, technical reports, court opinions and patents. *Google* does not provide the number of records, but (**Gusenbauer**, 2019) established an estimation of 389 million documents in 2018. It was launched in 2004. *GS* has been criticized for not ban the predatory journals (**Ibba**; **Pani**; **Stockton**; **Barabino**; **Marchesi**; **Tigano**, 2017; **Chapman**; **Ellinger**, 2019).

> The first stage is to decide the best data source that fits with our research area

- *Microsoft Academic*: It was previously called as *Microsoft Academic Search*, but it was relaunched as a new service in 2016, as *MA*. The supply and maintenance are in charge of *Microsoft*. It is offered as a free public web search engine. According to the information available on the webpage, it currently indexes over 230 million publications, 88 million are journal articles. The first studies suggest that it is a competitor of the main databases, *GS*, *WoS* and *Scopus* (**Harzing**; **Alakangas**, 2017; **Hug**; **Ochsner**; **Brändle**, 2017; **Haunschild**; **Hug**; **Brändle**; **Bornmann**, 2018).
- *Dimensions*: It is a new database that, according to its available information, its goal is to provide "a more open and comprehensive data infrastructure that empowered users to explore connections between a wide range of research data". It is supported by *Digital Science & Research Solutions Inc.* and has been considered as an alternative to *WoS* and *Scopus* (**Orduña-Malea**; **Delgado-López-Cózar**, 2018; **Thelwall**, 2018). Different products are available, with a free version option. It offers access to the traditional document types (articles, conference papers, books, etc.), but also includes links to grants, patents, clinical trials, datasets and policy papers. The number of records that contain *Dimensions* is higher than 102 million publications in 2019. It was launched in 2018. They follow the Open Access movement, arguing that the producers of the data should not develop the metrics.

4. Software tools for conducting performance bibliometric analysis

Once the data is obtained, the analyst could develop a performance analysis process. In this process, information about the production and impact of a specific research area is obtained. Several indicators could be extracted from the publication core, such as number of publications, number of citations, highly cited publications, number of non-cited publications, research field classification and normalized citations. In that way, the software tools could offer the indicators that the developer considers adequate to the scientific evaluation.

Recently, alternative metrics, also known as Altmetrics, have been developed to evaluate scientific impact at social media (**Bornmann**; **Haunschild**, 2018). This approach describes a web-based metric for the impact of publications and other scholarly material by using data from social media platforms (i.e. *Twitter*, *Facebook*, *Google+*, blogs, *Mendeley*, *CiteULike*, *Reddit* and *Wikipedia*, among others) (**Veeranjaneyulu**, 2017). The appearance of this type of measures is related to the social media revolution; there are now different groups of the population, non-author professionals, which read research articles and now also share them, and new types of academic outputs have appeared (**Bornmann**; **Williams**, 2013). Nonetheless, this kind of indicators is still under development and are not integrated into the existing software tools. Probably, these new metrics will be included in future software tools.

Thus, under this category, the most relevant software tools that still available have been included in this review. We should mention that in the past there were other important software tools focused on bibliometric performance analysis, but currently are unmaintained, such for example, the software *HisCite* which was used to visualize the results of the searches performed in the *WoS*, allowing to analyze and organize the results to obtain the topic's structure, history and relationships. Nevertheless, it was not included in the present reviews since *Clarivate* informed about no longer maintained.

In what follows, the description and main characteristics of these software tools are shown. Also, Table 1 shows the main details. In this software tool category, we will focus on the data sources used, the kind of indicators and analysis available.

Table 2. Characteristics of the performance software

Software	Analyzed version	Year	Developer	Operative System	Data source	User interface
CRExplorer	1.9	2018	*Hochschule für Telekommunikation Leipzig (HfTL)*	*Java*	*WoS*, *Scopus* and *Crossref*	Desktop
Publish or Perish	7	2019	*Melbourne-based Tarma Research Software Pty Ltd.*	*Win, Mac and Linux*	*WoS, Scopus, GS, Crossref, MA*	Desktop
ScientoPyUI	1.4.0	2019	*University of Cauca*	*Python*	*WoS* and *Scopus*	Web

The descriptions of the main performance analysis tools are here below:

- *CRExplorer*: It is indicated to the disambiguation and analysis of the cited references of a publication collection downloaded from *WoS* database, *Scopus* or *Crossref* (**Thor**; **Marx**; **Leydesdorff**; **Bornmann**, 2016). It was developed for applying the *Reference Publication Year Spectroscopy* (*RPYS*), which allows identifying the publications with most sig-

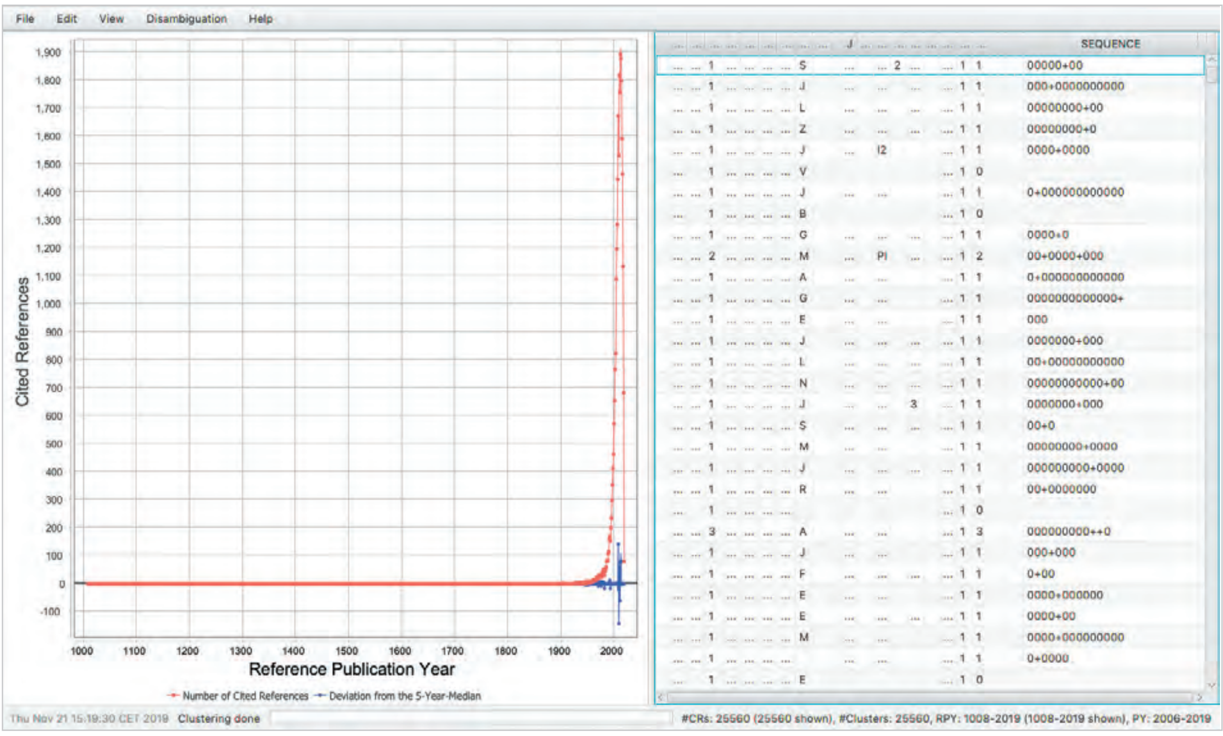

Figure 1. Analysis of the *EPI* journal with *CRExplorer*

nificant influence in a certain research area, topic, or in general, a set of documents. It is based on

> "the analysis of the frequency with which references are cited in the publications of a specific research field in terms of the publications years of these cited references" (**Marx**; **Bornmann**; **Barth**; **Leydesdorff**, 2014).

In short, *CRExplorer* shows the spectrogram of a topic, cleans the cited references (disambiguation) and uses a smoothing algorithm to correct the noise. Due to its development using Java programming, it runs on most hardware and operating system platforms. Furthermore, *CRExplorer* offers two options to run an analysis: Java Web Start and download a runnable JAR file. An interesting feature is the analysis of sequences over time, where the citations are considered on average, above average and below average for each year; it allows to identify sleeping beauty (**Van-Raan**, 2004b), constant performer, hot paper and life cycle publications. Data output could be exported to *WoS*, *Scopus* or CSV (graph, cited references and/or citing publications).

> Bibliometric libraries allow to develop a specific analysis and workflow, but programming skills are needed

- *Publish or Perish*: It was primarily developed to generate the h-index from *GS* search results and was Anne-Wil Harzing who initiated and guided the development of this software (**Harzing**, 2008; **Harzing**; **Van-der-Wal**, 2008). An interesting feature is that we can perform searches directly to *GS*, *WoS*, *Scopus*, *Crossref* and *MA*. Furthermore, it allows to import external data instead of performing the search. It provides a performance analysis of the core of documents obtained from the indicated source. In that sense, it interesting to highlight the possibility of obtaining the h-index average annual increase, age-weighted citation rate and authors per paper indicators. Furthermore, the output can be exported to *BibText*, CSV, *EndNote*, *ISI Export*, *JSON Export* and *RefMan*/RIS; it is interesting to perform further analyses in other tools, although it is limited to 1000 records.

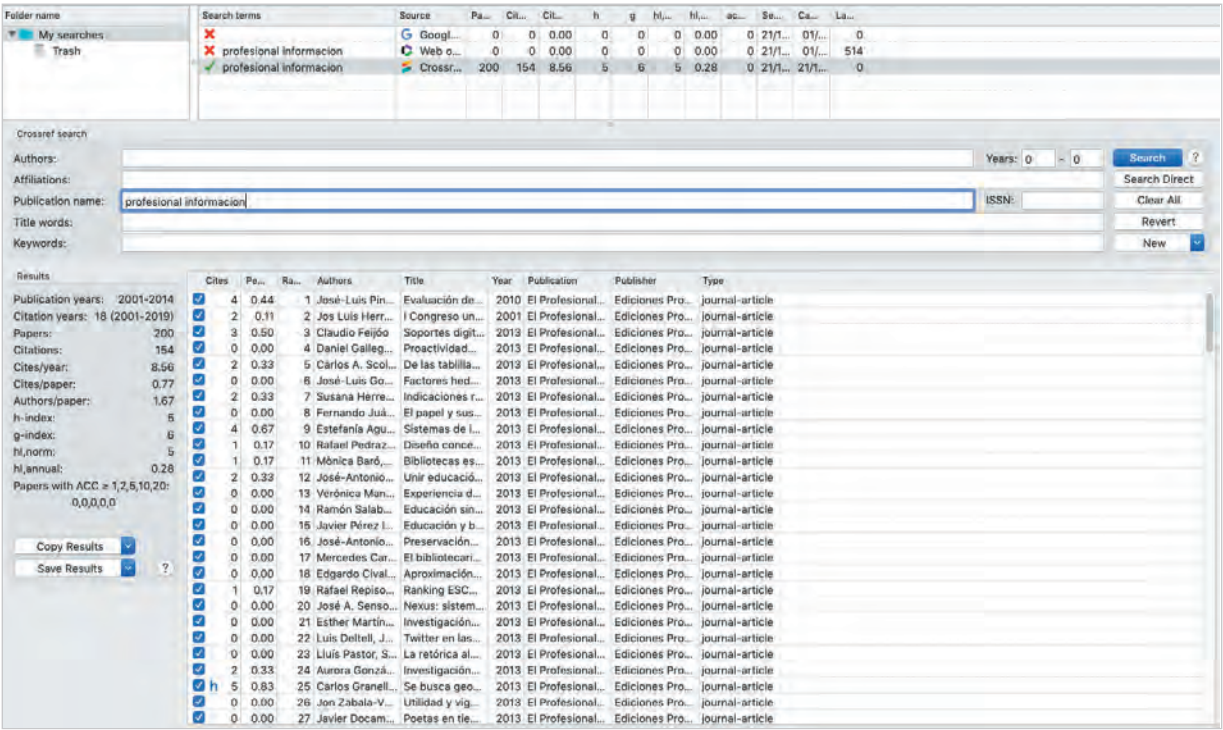

Figure 2. Analysis of the *EPI* journal with *Publish or Perish*

- *ScientoPyUI*: This is not a complete software, and it is needed to run it under *Python*. It is the graphical user interface (GUI) for the *ScientoPy* (described in Section 6) (**Ruiz-Rosero**; **Ramírez-González**; **Viveros-Delgado**, 2019). Although the characteristics of *ScientoPy* will be described below, some comments will be addressed. Thus, we can perform a preprocessing stage, consisting on document type filtering, author's name normalization, duplicate removal, times cited and document's country and institutions. Concerning the analysis options, it allows performing top and specific topics evaluation and wildcard search. Furthermore, *ScientoPy* adds some performance indicators to the topics analyzed, such as average growth rate, average document per years and percentage of documents in the last years. Although this tool does not provide sophisticated maps, the visualization options are: timeline, horizontal bars, horizontal bars trends, evolution and word cloud. Graphs can be exported to EPS, SVG and PNG.

> There are substantial differences among the exporting options of the databases

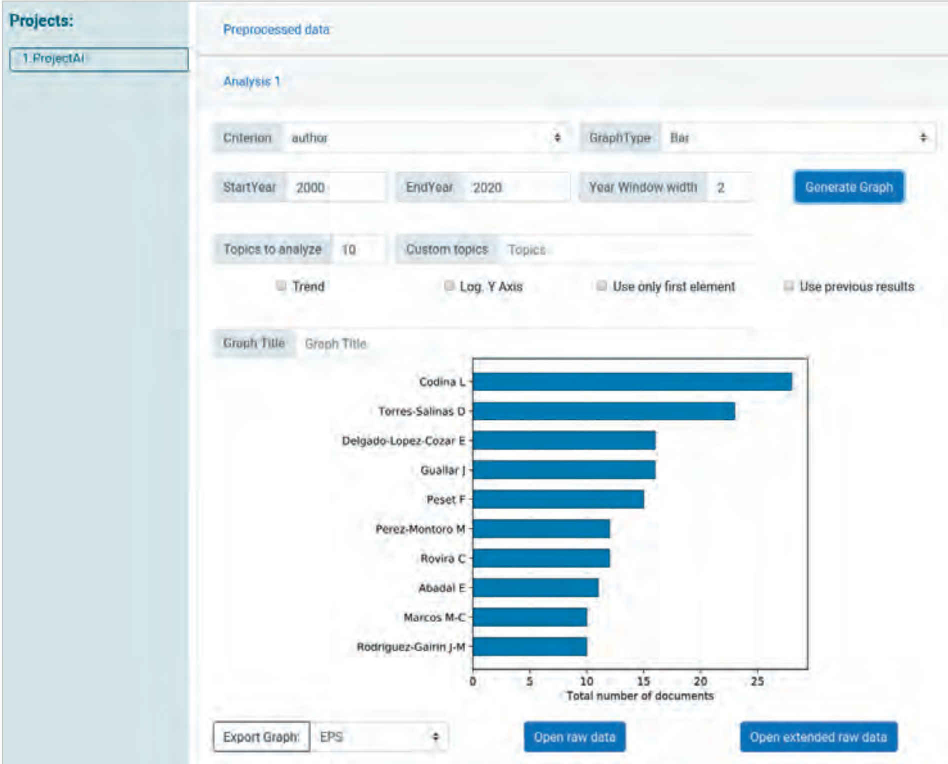

Figure 3. Analysis of the *EPI* journal with *ScientoPyUI*

5. Software tools for conducting science mapping bibliometric analysis

The bibliometrics analysis could be enhanced with scientific maps representing the relationship among the different actors (authors, institutions, countries, etc.). A map of science is, therefore, a spatial representation of how disciplines, fields, specialties and individual papers or authors are related to one another as shown by their physical proximity and relative locations (**Small**, 1999). In the last years, several reviews have analyzed the most relevant software (**Cobo**; **López-Herrera**; **Herrera-Viedma**; **Herrera**, 2011; **Sangam**; **Mogali**, 2012; **Pradhan**, 2016; **Chen**, 2017), nonetheless, they change over time, and some new appeared. Therefore, some updated characteristics of the main SMA software are shown in Table 3:

Table 3. Characteristics of the SMA tools

Tools	Analyzed version	Year	Developer	Operative System	User interface
Bibexcel	2017	2017	*University of Umeå* (Sweden)	*Win*	Desktop
Biblioshiny		2019	*University of Naples Federico II* (Italy)	*Runs in R*	Web
BiblioMaps	3.2	2018	*University of Lyon* (France)	*Runs* in *Python*	Web
CiteSpace	5.5.R2	2019	*Drexel University* (USA)	*Win*	Desktop
CitNetExplorer	1.0.0	2014	*Leiden University* (The Netherlands)	*Win, OSX, Linux*	Desktop
SciMAT	1.1.04	2016	*University of Granada* (Spain)	*Win, OSX, Linux*	Desktop
Sci² Tool	1.3	2018	*Cyberinfrastructure for Network Science Center* (USA)	*Win, OSX, Linux*	Desktop
VOSviewer	1.6.13	2019	*Leiden University* (The Netherlands)	*Win, OSX, Linux*	Desktop

In what follows, a summarized description of the main characteristics of each software tool is provided. Moreover, for each one, a small bibliometric analysis has been developed using a set of articles from *EPI* journal, showing an example of screenshot.

- *Bibexcel*: It is intended to create data files that can be imported to *Excel*, or any program that takes tabbed data records for further handling (**Persson**; **Danell**; **Wiborg Schneider**, 2009). It was developed by Olle Persson at *University of Umeä* (Sweden). This software incorporates various tools, some of them visible in the window and others hole up behind the menus. The main characteristic of this software is the flexibility, but for this reason, it could be initially perceived as challenging to use by new users. *BibExcel* can read information retrieved from various bibliographic sources, for example, *WoS*, *Scopus*, and the *ProCite* export format. Nevertheless, if the user learns the typical *Bibexcel* file structure, different types of document can be formatted in order to be analyzed. Different bibliometric networks

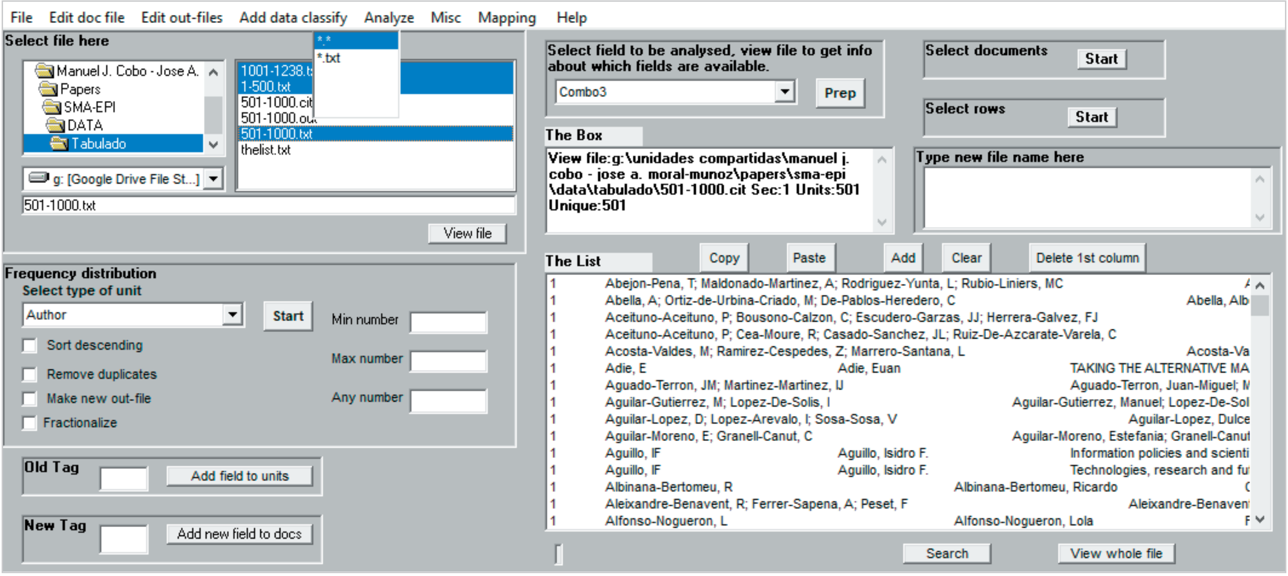

Figure 4. Analysis of the *EPI* journal with *Bibexcel*

can be obtained using the parameters offered by this tool. The main networks are: co-citation, bibliographic coupling, co-author, and co-word. Moreover, it is possible to create different co-occurrence matrices taking any document's field, or combining some of them. Once the data is normalized, the user can apply a clustering algorithm or prepare a matrix to perform a Multidimensional Scaling (MDS), using an external tool. On the other hand, it allows submitting the textual data to different preprocessing tasks, such as an English word stemmer, documents deduplication and text transformation (keep author's first initial, convert comma-delimited addresses, etc.). Besides, Bibexcel empowers the deletion of low recurrence items and keeps just the strongest links. Although it has not visualization option, it incorporates different export options that allow visualizing the data using external software like *Pajek* (**Batagelj**; **Mrvar**, 2004), *Ucinet* (**Borgatti**; **Everett**; **Freeman**, 2002), *SPSS* or *VOSviewer* (**Van-Eck**; **Waltman**, 2010). The type of visualization selection will depend on the nature of the unit of analysis.

- *Biblioshiny*: Paraphrasing the own tool slogan, *Biblioshiny* is "bibliometrix for no coders". It is powered by *Bibliometrix* (**Aria**; **Cuccurullo**, 2017) and is its web-based graphical interface. Although *Bibliometrix* will be described below, it was programmed in the *R* language in order to facilitate the interconnection with other *R* packages. It was developed by Massimo Aria and Corrado Cuccurullo from the *University of Naples* and *University of Campania*'s Luigi Vanvitelli (Italy). It mainly works with *WoS*, *Scopus* and *Dimensions* data. The interface is intuitive and well organized, and the

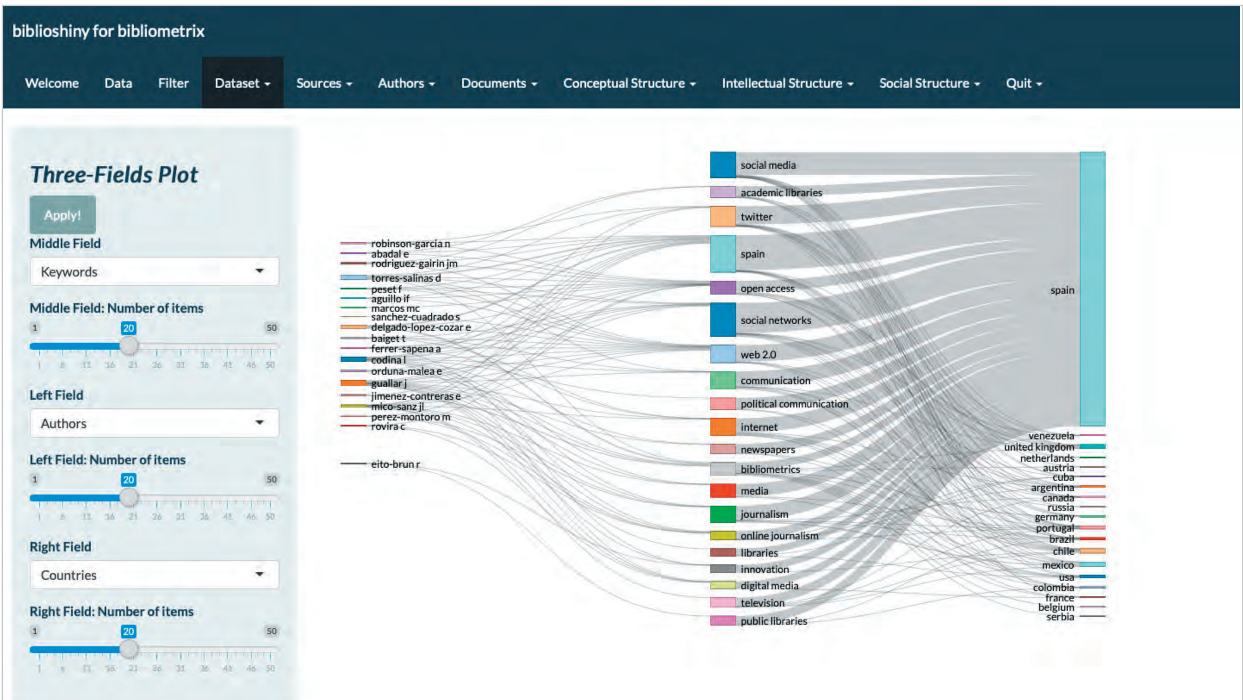

Figure 5. Analysis of the *EPI* journal with *Biblioshiny*

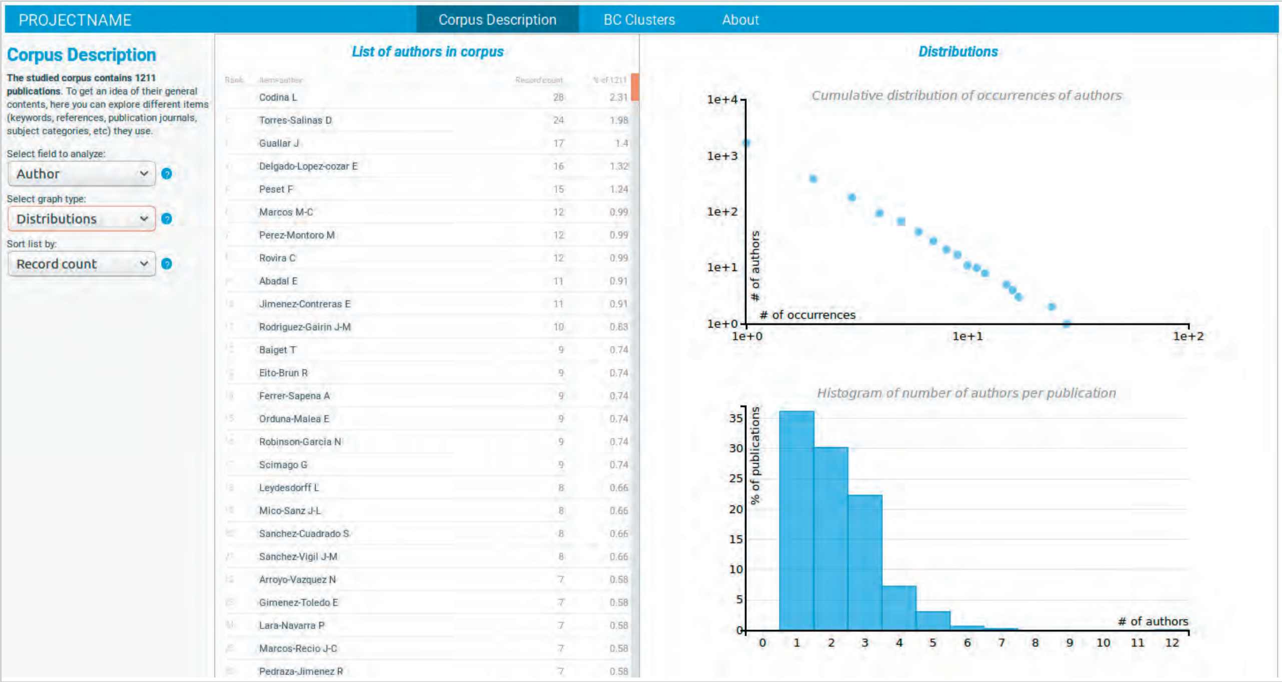

Figure 6. Analysis of the *EPI* journal with *BiblioMaps*

developers have divided the main menu according to the SMA workflow. This menu incorporates analytics and graphs for three-level metrics (source, author and document) and three structures of knowledge (conceptual, intellectual and social). The analysis options are diverse and are subdivided into 7 categories, divided in the analytics and graphs stated before: 1) Overview, 2) Sources, 3) Authors, 4) Documents, 5) Conceptual structures, 6) Intellectual structure, and 7) Social structure. The graphs and performance analyses generated can be exported to several kinds of file formats; maps can be exported to *Pajek* and html, and tables can be copied to the clipboard or saved as *Excel*, pdf or printed.

- *BiblioMaps*: *BiblioTools* is a set of scripts to perform SMA based on bibliographic data (**Grauwin**; **Jensen**, 2011). Although these scripts run under *Python*, in an update in 2016-2017, the author, Sébastian Grauwin developed the web interface so-called *BiblioMaps*. This software is designed to not require knowledge about *Python*, but *BiblioMaps* makes this issue more manageable. Furthermore, the user can change the code to get different outputs. It can work with *WoS* and *Scopus* data. This set of scripts perform the following tasks: i) Data acquisition, ii) Data preprocessing, applying to parse and filtering to the raw data, iii) Data analysis, obtaining co-occurrence networks, bibliographic coupling and clusters, iv) Data visualization, the output can be visualized in *BiblioMaps* or exported to other software, and v) Data report, the analysis obtained can be exported to LaTeX format. *BiblioMaps* only offer the network as a visualization option, to obtain different maps external software is needed. Although the user can perform the analysis controlling each stage of the process, this tool offers the “all_in_one” script, allowing to perform all the analyses at once.

> Almost all software tools and libraries can import data downloaded from *WoS* and *Scopus*

- *CiteSpace*: It allows the analysis and visualization of trends and patterns in a research area (**Chen**, 2006; **Chen**, 2019). The main goal of this tool is to facilitate the analysis of emerging trends in a knowledge domain. It was developed at *Drexel University* (USA). This tool offers several options to understand and interpret network and historical patterns, such as the growth of a topic area, the main citations in the knowledge base, the automatic labelling of the different clusters using terms from citing articles, geospatial collaboration network, and international collaboration. *CiteSpace* is able to work with different bibliographic databases, such as *WoS*, *Scopus*, and *Chinese Social Science Citation Index* (*Cssci*). Furthermore, it supports citation-based studies using open-access sources, such as *Dimensions* and *Crossref*. Other no citation-related platforms can be analyzed with a small set of visual analytics functions, such as *PubMed*, *China National Knowledge Infrastructure* (*CNKI*) and *ProQuest Dissertations and Theses*. Some other interesting features are incorporated, such as the direct download from *Crossref*. The *CiteSpace* workflow is briefly described in the following phases: i) Knowledge domain detection, ii) Data collection, iii) Extract research front terms, iv) Time slicing, v) Threshold selection, vi) Pruning and merging, vii) Visual inspection, and viii) Pivotal points verification. *CiteSpace* offers several possibilities to visualize and perform analysis from the built networks. The user obtains a visualization where the pivotal points are shown about their betweenness centrality. They are highlighted in the software window

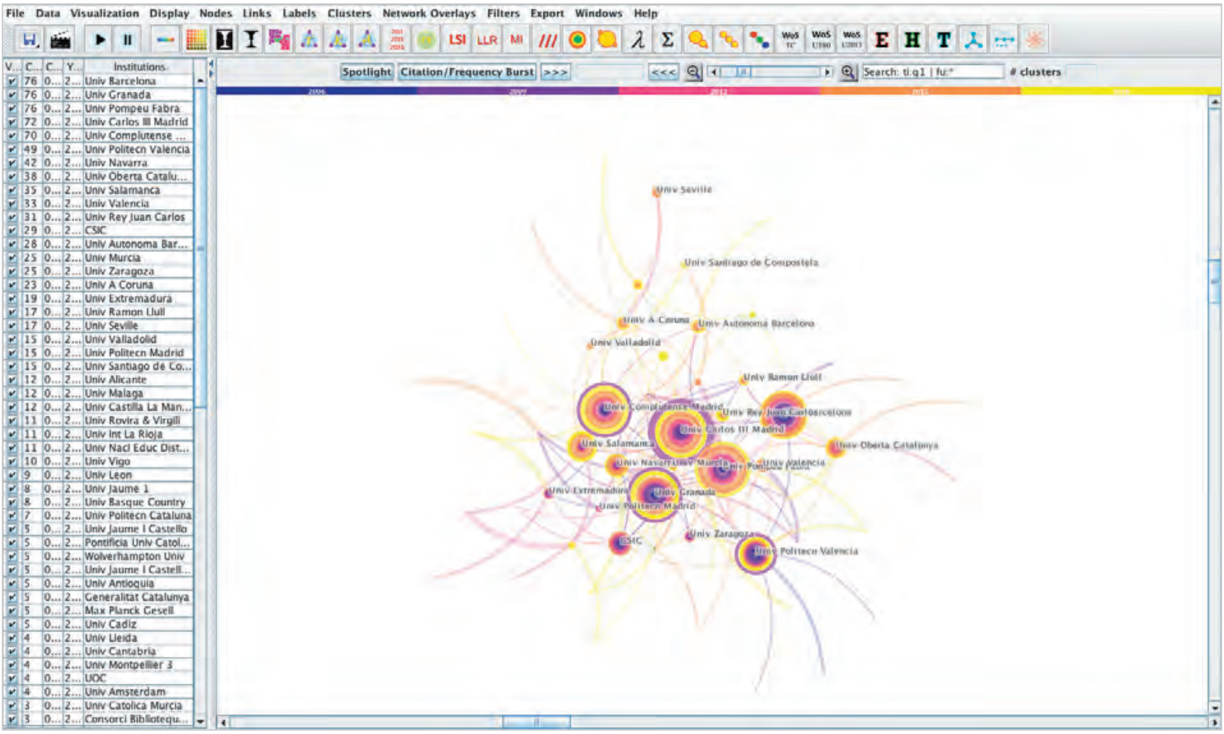

Figure 7. Analysis of the *EPI* journal with *CiteSpace*

with a purple ring surrounded by a tree ring. Finally, it is interesting to highlight the geographical visualization option. Authors' geographic locations can be mapped as a geospatial map in KML. To obtain this representation, the *Google Earth* interface can be used. Then, it is possible to explore the authors' locations and links to their collaborators, and also redirect to the original articles directly within *Google Earth*.

- *CitNetExplorer*: It is a software tool for visualizing and analyzing citation networks, based on the algorithmic historiography designed by Garfield (**Garfield**; **Pudovkin**; **Istomin**, 2003). In the networks obtained by *CitNetExplorer* (**Van-Eck**; **Waltman**, 2014), each node represents a publication. Each edge represents a citation relation between two publications. It was developed by the *Centre for Science and Technology Studies* (*CWTS*) at *Leiden University* (The Netherlands). The

Figure 8. Analysis of the *EPI* journal with *CitNetExplorer*

information to construct citation networks is collected uniquely from *WoS* data. Nevertheless, it is not restricted to this database; *Scopus* data could be analyzed equally. Once the citation network is formed, it can be exported into *Pajek* file format (**Batagelj**; **Mrvar**, 2004). *CitNetExplorer* uses two different approaches. One approach consists of providing both data from publications and data from citations relations among publications. The other approach is based on adding the data directly downloaded from *WoS*. It presents three remarkable functionalities: the capability of select publications, drill-down and expand functionalities and different algorithms to generate the network. Concerning the analysis options offered by *CitNetExplorer*, four different options are provided: extract connected components, cluster publications, identify core publications and find the shortest or the longest path from a publication to others. Furthermore, not only the direct citation relations are visible, the visualization can be set to show higher-order indirect citation relations. An additional feature is the possibility of launch *CitNetExplorer* directly from the web page.

> *Bibliometrix* and its *Shiny* platform contain the more extensive set of techniques implemented

- *SciMAT*: It is an open-source (GPLv3) SMA software tool designed to assist all the steps in SMA workflow, incorporating all the necessary elements (methods, algorithms and measures) to obtain the different analyses and visualizations (**Cobo**; **López-Herrera**; **Herrera-Viedma**; **Herrera**, 2012). *SciMAT* was developed by the *Secaba Lab* at *University of Granada* (Spain), and it is now updated and maintained by the *IntellSOK* group at *University of Cadiz* (Spain). It incorporates all modules to perform all the steps of the SMA workflow. It supports the analyst to carry out all the different steps, from the data loading to the visualization and interpretation of the output. The science maps obtained are enriched with bibliometric measures based on citations, such as the sum, maximum, minimum, and average citations. Moreover, it uses advanced bibliometric indexes such as the h-index (**Hirsch**, 2005; **Alonso**; **Cabrerizo**; **Herrera-Viedma**; **Herrera**, 2009), G-index (**Egghe**, 2006), HG-index (**Alonso**; **Cabrerizo**; **Herrera-Viedma**; **Herrera**, 2010) and q^2-index (**Cabrerizo**; **Alonso**; **Herrera-Viedma**; **Herrera**, 2010). *SciMAT* allows users to add files in *WoS* and RIS formats. Then, it incorporates a preprocessing module where de-duplicating (manual, by plural or by Levenshtein distance, or importing from an XML file), time-slicing, data reduction and network reduction can be performed. *SciMAT* divides the analysis process into four main stages: i) Dataset building, ii) Creation and normalization of the network, iii) Application of a clustering algorithm to get the map and its associated clusters or subnetworks, and iv) network, performance, and longitudinal analyses. Different visualization techniques are available in *SciMAT*, such as a strategic diagram, cluster network, evolution map, and overlapping map. Finally, it is interesting to remark that the visualization module can build a report in html or LaTeX format. The images (strategic diagrams, overlapping-items map, etc.) are exported in PNG and SVG formats so the user can easily edit them. Furthermore, the cluster networks and evolution maps are exported in *Pajek* format (**Batagelj**; **Mrvar**, 2004).

Figure 9. Analysis of the *EPI* journal with *SciMAT*

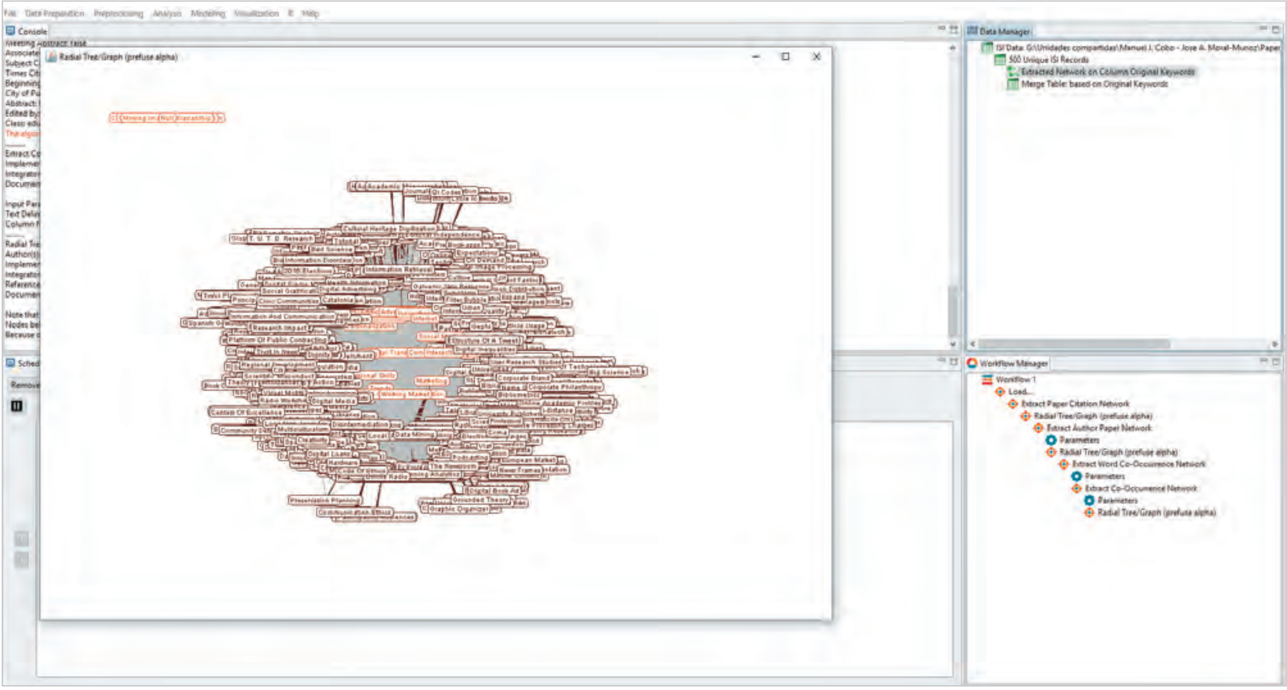

Figure 10. Analysis of the *EPI* journal with *Sci² Tool*

- *Sci² Tool*: It is a modular toolset particularly intended to play out the research of science (*Sci2 Team*, 2009). It supports temporal, geospatial, topical, and network analysis and the representation of datasets at the micro (individual), meso (local), and macro (global) levels. It was developed by *Cyberinfrastructure for Network Science Center* at *Indiana University* (USA). It read several bibliographic data formats, such as *WoS*, *Scopus*, *GS*, *Bitext* and the exportation data format of *EndNote*. Furthermore, it can analyze data information from social media like *Facebook*, research funding from the *National Science Foundation* and *National Institutes of Health*, as well as other academic data in CSV format. As can be observed, this tool supports a wide variety of information sources. The *Sci² Tool* workflow is based on the typical science study (**Börner**; **Chen**; **Boyack**, 2003): Data acquisition and processing, Data analysis, Modeling, and Layout. It allows extracting different types of networks, performing several analyses (temporal, geospatial, textual and networks). Mainly, this tool obtains the following bibliometric networks: co-author, co-PI (Principal Investigator), documents co-citation, journals co-citation, authors co-citation, bibliographic coupling, author bibliographic coupling and journals bibliographic coupling. Likewise, this tool allows building direct link networks, such as author-references, document-references, journals-references and author-documents networks. In order to represent the networks obtained, different visualization can be obtained: i) Temporal visualization, ii) Geospatial visualization, iii) Choropleth map, iv) Proportional symbol map, v) Topical visualization, and vi) Network visualization. This tool offers a great and adequate number of possibilities in order to represent the different aspects of science.
- *VOSviewer*: It is a software tool designed for constructing and visualizing bibliometric networks, with journals, researchers, or individual publications as actors, and based on co-citation, bibliographic coupling, or co-authorship relations (**Van-Eck**; **Waltman**, 2010). It also offers the possibility of building co-occurrence networks of important terms extracted from a corpus of scientific literature, using a text mining functionality. It was developed by the *Centre for Science and Technology Studies* (*CWTS*) at *Leiden University* (The Netherlands). It can extract bibliographic networks (co-authorship, co-occurrence and citation-based) from bibliographic data. This data is added from files downloaded from *WoS*, *Scopus*, *Dimensions*, *PubMed*, and RIS format. Moreover, the API of *Crossref*, *Europe PMC* and *MA* can be queried interactively in *VOSviewer*; if we have a set of DOIs, the data can be obtained from the APIs of *Semantic Scholar*, *Open Citations*, and *WikiData*. *VOSviewer* constructs the map based on a co-occurrence matrix in three steps (**Van-Eck**; **Waltman**, 2010): i) Similarity matrix, to apply the *VOS* mapping technique (**Waltman**; **Van-Eck**; **Noyons**, 2010), using the association strength (**Van-Eck**; **Waltman**, 2007); ii) *VOS* mapping technique, to construct a map reflecting the similarity measure between items; and iii) Translation, rotation, and reflection, to correct the optimization problem described in the literature (**O'Connell**; **Borg**; **Groenen**, 1999). About visualization capabilities, this software provides three visualization options: i) network, ii) overlay and iii) density. It is remarkable that the zoom and scroll functionality and smart labelling algorithm to prevent labels overlapping. *VOSviewer* incorporates the zoom and scroll option in order to facilitate a detailed examination of the map generated. Finally, all the visualizations generated can be saved in different graphical file formats,

> *VOSViewer* offers a great visualization and can load and import data from many sources

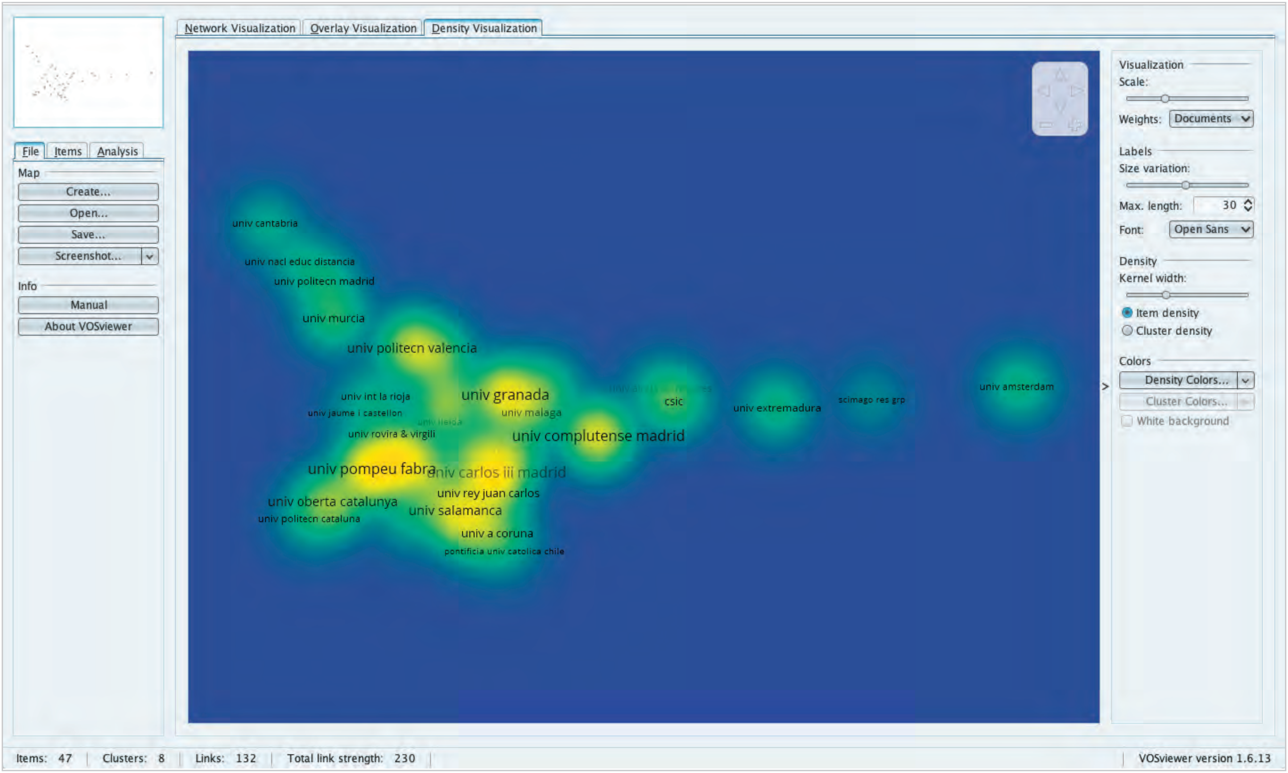

Figure 11. Analysis of the *EPI* journal with *VOSviewer*

such as bitmap or vectors. This option makes it easy to include the analysis output in any format, digital or printed. Furthermore, *VOSviewer* can be launched directly from the web page.

6. Libraries

The last category established as tools for bibliometric or scientometric analyses is composed of libraries. This is a concept well-known in the computing area. Computer programs are developed using code, but this code is organized to be used only within this specific software. Conversely, libraries are code that could be used by multiple programs that have no connections to each other. This characteristic makes this kind of tools an interesting option when the user is looking for flexibility and versatility. For example, the analysis of the co-occurrence network could be performed using a library and the visualization is obtained with a different one. Nonetheless, they generally need some knowledge about the language program of the environment that support this code, so it is not a good choice for amateur bibliometricians / scientometricians with any programming knowledge.

Table 4. Characteristics of the libraries

Software	Analyzed version	Year	Developer	Programming language
Bibliometrix	R-3.6.1	2019	*University of Naples Federico II*	*R*
BiblioTools	3.2	2018	*University of Lyon*	*Python*
Citan	2015.12-1	2015	*Deakin University*	*R*
Metaknowledge	-	2017	*University of Waterloo*	*Python*
ScientoPy	1.4.0	2019	*University of Cauca*	*Python*
scientoText	0.1	2016	*South Asian University*	*R*

In that way, a review of the main *R* and *Python* libraries is performed in the present manuscript:

- *Bibliometrix*: It is an open source *R* package for performing comprehensive SMA (**Aria**; **Cuccurullo**, 2017). The stages to perform the analysis are based on de SMA workflow (**Cobo**; **López-Herrera**; **Herrera-Viedma**; **Herrera**, 2011). As stated above, it empowers the Biblioshiny tool and was developed by Massimo Aria and *Corrado Cuccurullo* from the *University of Naples* (Italy). It mainly works with *WoS*, *Scopus* and *Dimensions* data. It incorporates several analysis options and they are subdivided in 7 categories: 1) Overview, 2) Sources, 3) Authors, 4) Documents, 5) Conceptual structures, 6) Intellectual structure, and 7) Social structure. It is a powerful library that can performs complete bibliometric and scientometric analysis. Furthermore, it allows to obtain multiple types of graphs; feature not common in other libraries.

> *SciMAT* has great preprocessing and exporting capabilities and its visualisations allow the analyst to focus deeply on the research topic

- *BiblioTools*: It is a *Python* library that contains a set of scripts to perform SMA through bibliographic data (**Grauwin**; **Jensen**, 2011). As stated in SMA tools section, *BiblioTools* is the base of the *BiblioMaps* tools. It is offered as a user-friendly *Python* tool, since no knowledge about previous programming skills are needed. *WoS* and *Scopus* files are used as dataset. The following tasks can be performed using *BiblioTools*: i) Data acquisition, ii) Data preprocessing, applying parsing and filtering to the raw data, iii) Data analysis, obtaining co-occurrence networks, bibliographic coupling and clusters, iv) Data visualization, the output can be visualized in *BiblioMaps* or exported to other software, and v) Data report, the analysis obtained can be exported to LaTeX format.
- *CITation Analysis* (*Citan*): This library is a tool pack that allows to perform performance analysis from *Scopus* data into a *SQLite* database (**Gagolewski**, 2011). It works under this kind of database since the user can execute codes to modify the information, such as merge documents or authors, delete duplicates or an specific document or author. Generally, *Citan* obtain performance analyses through the different actors; it can calculate the h-index, g-index, r_p-index, l_p-index and other general impact indicators. Furthermore, it provides descriptive graphs with the calculated indicators.
- *Metaknowledge*: It is a *Python* package for performing bibliometric/scientometric analyses based on performance analysis or SMA (**McLevey**; **McIlroy-Young**, 2017). It mainly works with *WoS*, *PubMed*, *Scopus* and *ProQuest Dissertation and Theses* data. Concerning the analysis options, it performs longitudinal analysis, standard and multi reference publication year spectroscopy, computational text analysis (such as topic modeling or burst analysis) and network analysis. An interesting feature is the estimating researcher gender; *Metaknowledge* downloads the *Global Name Dataset* from *Open Gender Tracker*'s *Github* repository and matches authors and coauthors' names with the possible gender. Nonetheless, it is not yet a worldwide dataset, so this function has several limitations in global analyses. Moreover, it uses *mkD3* package (**Bostock**; **Ogievetsky**; **Heer**, 2011) to visualize the performance and network outputs. Network data can be exported to be visualized in external software.
- *ScientoPy*: As stated in Section 4, *ScientoPy* is am open source *Python* script useful to perform temporal scientometric analysis (**Ruiz-Rosero**; **Ramírez-González**; **Viveros-Delgado**, 2019). It mainly works with *WoS* and *Scopus* data. Once the data is extracted, we can perform a preprocessing stage, consisting on document type filtering, author's name normalization, duplicate removal, times cited and document's country and institutions. It allows performing top and specific topics evaluation and wildcard search. Wildcard search is useful to find topics that come in plural and singular or start with an specific root. Furthermore, *ScientoPy* add some performance indicators to the topics analyzed, such as average growth rate, average document per years and percentage of documents in last years. Several visualization options are allowed, such as time line, horizontal bars, horizontal bars trends, evolution and wordcloud. The graphical oput can be exported to EPS, SVG and PNG formats.
- *scientoText*: It is a *R* package to perform some bibliometric/scientometric analysis from bibliographic data based on indicators (**Uddin**; **Bhoosreddy**; **Tiwari**; **Singh**, 2016). It works with *WoS* and *Scopus* data. It is able to obtain different analyses, such as co-authorship matrix, top authors/countries/institutions with their g and h indexes and citations, highly cited actors, international collaboration and term frequency. Generally, *scientoText* offers some bibliometric outputs to characterize an author, institution or country.

7. Comparative features

Once the description of the main bibliometric/scientometric tools was carried out, some information about the features of each tool will be addressed. In that way, the features have been subdivided in: a) database sources, b) pre-processing capabilities and c) analysis and visualization options. All the included tools are characterized in Tables 5-7 for a comprehensive understanding.

Table 5 shows the main bibliographic data sources supported by the analyzed tools. It is interesting to remark that all of them incorporate the analysis of *WoS* and *Scopus*. Others, such as *Bibliometrix* / *Biblioshiny*, *CiteSpace* and *VOSviewer* incorporate the analysis of *Dimensions*, that has expressed its willingness in facilitate the open science. Moreover, *Publish or Perish*, *CiteSpace* and *VOSviewer* include the promising database *MA*.

Table 5. Comparative of the databases supported by the reviewed tools

Tools	WoS	Scopus	Dimensions	MA	GS	PubMed	Crossref	Others
General bibliometric and performance analysis								
CRExplorer	X	X					X	
Publish or Perish	X	X		X	X		X	
ScientoPyUI	X	X						
Science mapping analysis tools								
Bibexcel	X	X						*ProCite*, *Bibexcel*
BiblioShiny	X	X	X					
BiblioMaps	X	X						
CiteSpace	X	X	X	X		X	X	*ADS*, *arXiv*, *CNKI*, *Cssci*, *Derwent Patents*, *NSF*, *ProQuest*, *Fulltext*, CSV
CitNetExplorer	X	X						
SciMAT	X	X						CSV
Sci² Tool	X	X			X			*BibText*, *EndNote*
VOSviewer	X	X	X	X			X	RIS, *PMC*, *Semantic Scholar*, *Open Citation*, *WikiData*
Libraries								
Bibliometrix	X	X	X					
BiblioTools	X	X						
Citan		X						
Metaknowledge	X	X				X		*ProQuest*
sciento-Text	X	X						
ScientoPy	X	X						

Table 6 presents the pre-processing options that the analysed tools incorporate. In that sense, *SciMAT* is the one offering the widest type of tasks. Almost all the tools include some filters and the second and third features most incorporated are the time slice and the duplicated documents removement. Generally, the pre-processing stage is the unfinished business of the bibliometric/scientometric tools.

Table 6. Comparative of the pre-processing option of the reviewed tools

Tools	Duplicate documents	Plurals / Singulars	String distance	De-duplica-tion*	Time slice	Stop words	Data edition**	Filters
General bibliometric and performance analysis								
CRExplorer								X
ScientoPyUI	X							X
Science mapping analysis tools								
Bibexcel	X							
BiblioShiny					X			X
BiblioMaps					X			X
CiteSpace					X			X
CitNetExplorer								X
SciMAT		X	X	X	X	X	X	X
Sci² Tool	X	X (stemming)			X	X		X
VOSviewer								X
Libraries								
Bibliometrix					X			X
BiblioTools					X			X
Citan	X			X			X	
Metaknowledge	X				X			X
ScientoPy	X							X

Some tools were excluded since they do not incorporate any feature.
Excluded: *Publish or Perish* and *scientoText*
* The tool allows joining several items (e.g. synonyms, acronyms with full form, authors, etc.)
** Data can be modified into the tool, so no external software is needed to perform this task.

Concerning Table 7, the different analysis options of the tools included are specified. Furthermore, a column with the visualization options was added to know how the analysis output can be displayed.

Table 7. Comparative of the analysis and visualization options of the reviewed tools

Tools	**Thematic network**	**Author network**	**Reference network**	**Other networks**	**Evolution**	**Performance**	**Burst detection**	**Spectrogram**	**Geospatial**	**Visualization**
General bibliometric and performance analysis										
CRExplorer								X		Spectrogram
ScientoPyUI					X	X				Timeline graph, bar graph, evolution graph and word cloud
Publish or Perish						X				
Science mapping analysis tools										
Bibexcel	X	X	X	X		X			X	External software
BiblioShiny	X	X	X	X	X	X	X	X	X	Network, three-fields plot, wordcloud, tree map, historiograph, strategic diagram, evolution map and world map
BiblioMaps	X	X	X	X		X			X	Network
CiteSpace	X	X	X	X		X	X		X	Tree ring, geospatial map
CitNetExplorer			X							Network
SciMAT	X	X	X	X	X	X				Strategic diagram, cluster network, overlapping map, evolution map
Sci^2 Tool	X	X	X	X			X		X	Temporal, geospatial map, topical, network
VOSviewer	X	X	X	X		X				Network, overlay, density
Libraries										
Bibliometrix	X	X	X	X	X	X	X	X	X	Network, three-fields plot, wordcloud, tree map, historiograph, strategic diagram, evolution map and world map
BiblioTools	X	X	X	X		X			X	Network
Citan						X				Bars, box plots and pie chart
Metaknowledge	X	X	X	X			X	X		Timeline graph, spectrogram and network
scientoText		X				X				
ScientoPy					X	X				Timeline graph, bar graph, evolution graph and word cloud
Some tools were excluded since they do not incorporate any feature. Excluded: *Publish or Perish*										

8. Discussion and conclusions

In this article, a thorough analysis of the most important bibliometric/scientometric tools and software has been developed, highlighting their most important characteristics, and making a global comparative analysis. To do that, the analysis has been focused on four main tools:

a) bibliometric databases (*WoS*, *Scopus*, *GS*, *MA* and *Dimensions*),

b) general bibliometric and performance analysis (*CRExplorer*, *ScientoPyUI* and *Publish or Perish*),

c) SMA (*Bibexcel*, *BiblioShiny*, *BiblioMaps*, *CiteSpace*, *CitNetExplorer*, *SciMAT*, *Sci2 Tool*, *VOSviewer*), and

d) *Python* and *R* libraries (*Bibliometrix*, *BiblioTools*, *Citan*, *Metaknowledge*, *scientoText*, *ScientoPy*).

Although there are different bibliometric databases able to be used as a data source for bibliometric analysis, they have different characteristics and have been developed with a different purpose. One of the most important aspects is the scientific coverage, which has been analyzed and discussed in several studies. **Mongeon** and **Paul-Hus** (2016) determined that the Social Sciences and Arts and Humanities are underrepresented in *WoS*, and the strong influence of English-language is high. Furthermore, although *Scopus* presents slightly more extensive coverage, it has similar biases than *WoS*. *MA* seems to be an alternative for citation analysis, but although it covers life sciences and sciences correctly, engineering, social sciences and humanities are underrepresented in comparison with *GS* (**Harzing**; **Alakangas**, 2017). In that way, according to recent publications (**Martín-Martín**; **Orduña-Malea**; **Harzing**; **Delgado-López-Cózar**, 2017; **Martín-Martín**; **Orduña-Malea**; **Delgado-López-Cózar**, 2018), *GS* seems to do a better coverage of some areas of research than *WoS* (Humanities, Literature & Arts, Social Sciences, Engineering & Computer Science, and Economics & Management) and *Scopus* (Humanities, Literature & Arts, and Social Sciences), but it has some drawbacks; such as lack of detailed metadata or difficulty to extract data. To our knowledge, there is no information about the coverage of *Dimensions*. Then, the data source should be chosen with caution and taking into account the research area where the bibliometric analysis will be performed.

Regarding the exporting options of the databases, there are substantially differences among them. *WoS* allows to export data in 500 records slots that could be concatenated (500 by 500) with a total limit of 100,000 records per query. It has different export formats, but the most suitable for the bibliometric purpose are plain text or tab-delimited. *Scopus* allows to download more data in a single petition, but the total records retrieved is limited to the first 2,000 records of the query. Although there are different format options for data exporting, the only one available for bibliometric purpose is the RIS or CSV formats. It is necessary to mention that *Scopus* allows to download the first 20,000 records of a query in CSV format but limiting the output to only citation data. *GS* does not bring the possibility of data download, so researcher should employ crawler method (**Martín-Martín**; **Orduña-Malea**; **Harzing**; **Delgado-López-Cózar**, 2017; **Martín-Martín**; **Orduña-Malea**; **Delgado-López-Cózar**, 2018), or use software tools that integrate the crawling method such as *Publish or Perish* (see Section 4). The *MA* search website does not allow data retrieval for bibliometric purpose. However, it offers his data through the *Academic Knowledge* API or indeed, it allows to access to the different snapshot of the whole dataset through the *Open Academic Graph*. It should be taken into account that the access to the API is limited to 10,000 requests per month in the free license option. Finally, *Dimensions* allow retrieving a maximum of 50,000 records per query using a CSV or excel formats. In fact, *Dimensions* provide a so-called "export for bibliometric mapping", but it is just a specific CSV file.

As was pointed in Section 6, the software tools and libraries were compared according to three groups of features: a) database sources, b) pre-processing options, and c) analysis and visualization options.

Regarding the data sources, almost all the software tools and libraries can import data downloaded from *WoS* and *Scopus*, since both databases are the most important and therefore, most of the analyses are based on them. Moreover, *Biblioshiny* / *Bibliometrix*, *CiteSpace* and *VOSviewer* allow importing data from *Dimensions*. *Publish or Perish*, *CiteSpace* and *VOSviewer* allow to retrieve data from *MA* directly from its API. Taking into account *GS*, *Publish or Perish* and *Sci*^{2} *Tool* are the only tools able to work with it. Finally, we should point out that some software tools stand out due to the great number of compatibilities with different data sources. In that sense, we should remark the general bibliometric software tool *Publish or Perish*, and the SMA software tools *CiteSpace* and *VOSviewer*, which are able to work with the most common databases, and also, they allow to work directly with open databases such as *Crossref*, among others, using their API.

In the bibliometric analysis, the data preprocessing and cleaning is an important and daunting task, that should be performed as the first step. In that sense, the compared software tools and libraries contain a great variety of preprocessing methods and algorithms. First, with the exception of *Bibexcel*, all the software tools can filter the data in different ways. Additionally, time slicing is allowed by the majority of them (*Bibliometrix* / *Biblioshiny*, *BiblioMaps* / *BiblioTool*, *CiteSpace*, *SciMAT*, *Sci*^{2} *Tool*). Duplicate documents removal is also allowed by *ScientoPyUI* / *ScienctoPy*, *Bibexcel*, *Sci*^{2} *Tool*, *Citan* and *Metaknowledge*. It is important to note that the *Publish or Perish* and the *R* library *scientoTex* do not incorporate any preprocessing method. Finally, regarding the preprocessing capabilities, *SciMAT* stands out as the most powerful software since it incorporates methods to apply a de-duplication process (manually or using plural / distance, or string distance), time slicing, stop words, and data edition.

We should remark that taking into account the analysis options, *Bibliometrix* and its user interface *Biblioshiny* stand out since they incorporate a great variety of different analyses. In practice, since it is recent, most of the analysis developed by the previous software tools have been incorporated in *Bibliometrix* / *Biblioshiby*. For instance, it allows to extract and analyze a bibliometric network (thematic, authors and references, among others), performs an evolution analysis, develops a performance analysis based on different indicators, applies a burst detection, draws a spectrogram, and show the geospatial component. On the other hand, taking into account the bibliometric networks, most of the SMA can work with the most common (thematic, authors, and references). Also, *Bibexcel*, *SciMAT* and *Biblioshiny* / *Bibliometrix* can work with another kind of bibliometric networks. Regarding the *R* and *Python* libraries, *Metaknowledge* can work with a great variety of networks, and also *scientoText* can work with authors networks. *CRExplorer*, *Bibliometrix* / *Biblioshiny* and metaknowledge can build a spectrogram. The development of an evolution analysis is only available on *Bibliometrix* / *Biblioshiny*, *SciMAT* and *ScientoPy* / *ScientoPyUI*. Also, performance analysis (using different measures and indicators) can be developed using the majority of the software tools with the exception of *CRExplorer*, *Sci2 Tool* and *Metaknowledge*. The burst detection is allowed by *CiteSpace*, *Sci2 Tool*, *Metaknowledge* and *Bibliometrix* / *Biblioshiny*. Finally, a geospatial analysis could be developed using *Bibexcel*, *Bibliometrix* / *Biblioshiny*, *BiblioTools* / *Bibliomaps*, *CiteSpace* and *Sci2 Tool*.

As a final conclusion, we should remark that each of the analyzed software tools have their advantages and drawbacks, and therefore the analyst should choose the adequate software for each specific analysis. At this moment, maybe *Bibliometrix* and its *Shiny* platform contain the more extensive set of techniques implemented, and together with the easiness of its interface, could be a great software for practitioners. *VOSviewer* contains a great visualization, and can load and import data with a great number of sources. *SciMAT* has great preprocessing and exporting capabilities, and also the visualization through the strategic diagram and thematic areas could allow the analyst to focus deeply on some specific research topics.

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Globalization and power: The consolidation of international communication as a discipline. Review article

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Abstract

This study presents an overview of the theoretical development and main lines of research regarding international communication. To this end, the emergence of communication in the structuring of power has been analysed with regard to four areas (hard, soft, sharp power, and the strategic narrative). The critical perspective has been reviewed as well as Anglo-Saxon dominance of the subject using evidence from France, Germany, and Latin America. Five main lines of future research have been forecast, the first of which involves strengthening the theoretical and methodological bases with interdisciplinary methods; the nature and characteristics of the international journalist (journalist versus fake news); the handling of populist communication when confronting political globalisation with leaders who challenge the conventional journalistic ethos; the analysis of structures and global information systems in the face of a multifaceted scenario with less "*CNN* effect" than expected, along with a dynamic situation of constant propagandistic innovation.

Keywords

International communication; Power; Hard power; Soft power; Sharp power; Strategic narrative; Public diplomacy; Propaganda; Leadership; Social movements; Activism; Mediated diplomacy; The *CNN* effect; Review article.

1. Introduction

Writing a review article on international communication on behalf of the journal's board of directors has been an intellectual challenge.

I wanted to address the academic literature and its referring authors, analyse the research agenda, and review the successive organisations and multitudinous congresses that have dotted the landscape in order to understand the dynamics and scope of international communication.

Before starting, I reviewed the writings that had appeared in the sources of interest in order to undertake a systemised review of the state of the art (**Vanc**; **Fitzpatrick**, 2016), examine the methodologies in use, and propose new paths of

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research for the discipline. The aim of this paper is to identify the sources and main authors involved in the issue in order to gain knowledge regarding the epistemological and theoretical approaches that exist for the purpose of reaching a reasonable level of agreement regarding definitions and concepts; to organise the theories and interrelationships between the doctrine and disciplines that are part of international communication; to point out how knowledge based on cumulative science is structured and organised; and finally, to identify unresolved problems (**Codina**, 2018).

As such, the present work fulfils the task entrusted therein, although it poses certain limitations due to the very nature of the research subject. This is not a standard discipline, but rather a multidisciplinary object of study, which derives theory from practice. International communication draws on diverse sources. The discipline includes several factors, among which are the following: the structure and policy of communication (the role played by the State in the information system involved, the law or professional culture, and European information policies); history (relationships with events and important milestones in the shaping of a global society); sociology (cultural consumption, audiences, professional routines, environmental values and culture, as well as social behaviour when faced with news, muckraking, and disinformation); economics (business models, market globalization, press subsidies, global media moguls); international relations (borders, nation states, nationalism, idealism or realism); finally, the hybridisation of the media and political systems (the role of the professional journalist, the rise and fall of correspondents, treatment of sources, and institutional publicity). All of these aspects are part of the review, although each of them could be the subject of an independent monograph. Furthermore, this research trend is continuing to grow. For these reasons, there is no short answer to the question of what international communication is, or how it is defined in an environment of globalisation that has multiplied the sources and promoters of information, as well as transversal agendas of international political action.

During the last decade, the number of actors and issues has multiplied, and the consequence has been an expansion in the use of communication as a tool to influence the agenda, evaluate causes (**Pamment**, 2016b), attract the interest of the public, and exercise power. At the normative level, this manifests itself in the tension between secrecy (diplomatic, military) and information (journalistic, public) as well as between freedom of expression (censorship, humour, satire) and hate speech (harassment, denialism). Sociological analysis investigates the way in which journalistic and audio-visual products are produced and consumed. Moreover, the audiences of these products share the instruments of distribution and acquisition, but not the same cultural or informational patterns. Thus, we are witnessing either the structuring of a global audience or the sum of local audiences who consume global products with more content that is similar, but with less distribution channels, as well as the perception of global problems and foreign culture (**Noya**, 2012). This issue of the sociological aspect of information and audio-visual consumption could lead either to standardised messages or to new national information structures that are isolated from the globalisation process (**Cheng**; **Golan**; **Kiousis**, 2016). From a comparative perspective, international communication facilitates a myriad of theoretical approaches that combine local as well global features, whether in the study of gaps between North and South, informational and audio-visual plurality (**Valcke**; **Sukosd**; **Picard**, 2015), the rise of digital diasporas, or the redefinition of the journalistic profession (**Hanitzsch** *et al.*, 2019).

Analysis of the divisions of the *International Communication Association* (*ICA*) confirms the difficulty in approaching this object of study:
https://www.icahdq.org/page/div_igs

Following the tenets of the *ICA*, study of the production, distribution and reception of content with an agenda to transform reality are grouped under the heading of social and global change. Intercultural communication is the field that offers an intuitive approach to internationalisation. Political economy studies power relations, business ownership, the impact of corporations, the working conditions of journalists, and other common aspects of the information structure. The environmental section addresses issues of health, risk and science, which are global and transversal matters.

> International communication is the process of creating, producing, distributing and receiving messages in the international arena

It should be noted that a specialised interest group appears, focusing on public diplomacy, which is an emerging discipline halfway between international relations and strategic communication. The semantic umbrella never ends, as each of the sections offers possibilities for comparative study.

Given this inter-disciplinary and increasingly complex panorama, international communication in this paper refers to the process of creating, producing, distributing and receiving messages in the international arena. Interest in this area has grown exponentially in importance during the process of globalisation, which has imposed social values, a political system, and a dominant economic order on the communication industry. **Thussu** (2000) analysed the great changes in the information and entertainment model with relevant case studies, such as those of *MTV*, Rupert Murdoch's empire, *TV Globo*, and *ESPN*. The "*CNN* effect" has also been addressed. This is defined as the impact of global television on international policy decisions, which have effects that are uneven and dependent on the national political context, public opinion, and the causes of military or humanitarian intervention. The researcher **Gilboa** (2005) concludes that there is no unanimous agreement.

This approach is essential in understanding international communication during the first wave of globalisation (**Baylis**; **Smith**; **Owens**, 2014). However, the great recession of 2008 initiated a new period referred to as "political globalisation", which consists of the rise of emerging countries on the international scene (**Mishra**, 2017) and their isolationist discourse, as well as other issues including management of the economic crisis, the rise of conflicts involving new-style warfare, the popularity and spread of social networks, acceptance of the discourse of nation and borders (Trump, Boris Johnson, Marine Le Pen, Viktor Orban...), populist movements (**Müller**, 2016), disinvestment, artificial trade barriers, corporate deglobalisation (*The economist*, 2017; 2019; **Tanveer**, 2019), and other new features in the scenario that have been subjecting globalisation to discernment (*La vanguardia*, 2017). For this reason, it seems necessary to review the state of communication and international studies in relation to these new elements.

> The "*CNN* effect" has been described as the impact of global television on international policy decisions

2. Communication and international studies: the strategic dimension

The growth of international communication is linked to the process of economic interdependence, as well as to the heterogeneity and complexity of the sources of influence that challenge the traditional concept of power and sovereignty (**Price**, 2002). In international studies, essential elements are subject to change: Intermediate powers gain influence in the power structure (**Paris**, 2019; **Fernández-de-Losada**, 2019; **Rachman**, 2018; **Fels**, 2012), hybrid wars combine military tradition with the intensive use of new technologies such as robots and drones in conflicts within an environment of climate change that affects the design of such operations (**Freedman**, 2019), and global commerce is increasing as a result of improvements in transportation, technology and communications (**Baldwin**, 2016). Since 1989, there has been an expansion of multilateralism, free trade agreements, the free flow of ideas, audio-visual content and messages through international communication channels, as well as actors capable of influencing global public opinion. Given this phenomenon, often ignored in the manuals of international relations, it becomes necessary to create a global ethos through international information, whether through television and global media, or through social networks (**Gilboa**, 2005).

The globalisation of communication affects the values and norms that establish institutionalised procedures and routines for the production of paradigms related to normative standards and knowledge (**Sobrino**, 2004; **Bauman**, 1998). It affects the production, distribution and study of audiences to the extent that the construction of what is "international" is linked to delimited journalistic and academic sources. Anglo-Saxon leadership in international epistemology is evident, which is in line with the very construction of the discipline of international relations in the tradition of American social science (**Hoffman**, 1977), and naturally, of Western social science as well (**Van-der-Pijl**, 2014). To see an example of this situation, one only has to review the list of references that accompanies this paper. Even with the commitment to expand sources and languages, the authors cited have preferred to write their findings in English in order for their ideas and research to have global reach, whether or not they are Anglo-Saxon. **Wiedemann** and **Meyen** (2016), who warn of the confusion between internationalisation and "Americanisation" in academic institutions, and in the development of communication theories, have studied this situation. **Agbobli** (2015) points out that methodological innovation in international communication requires a rupture with the paradigm of "Americanisation" in order to address the complexity of other regions of the planet.

> The global market creates value by standardising products and consumer goods, whether they are journals, news information, or audio-visual products

In the French language, there are several influential authors in international communication, such as **Mattelart** (1992), **Neveu** (2001), **Benhamou** (1996), and **Cabedoche** (2016). Cultural diversity is one of the recurring issues in the non-Anglo-Saxon academic literature. **Rasse** (2013) compiles a set of essays to defend the need for public policy on international communication in order to defend diversity and identity, a clear response to the trend toward Americanisation of the language, as well as its cultural and linguistic uses (**Jean**, 2016). In addition, French-speaking authors have helped to introduce trends and analyses of sub-Saharan Africa (**Agbobli**, 2014). These approaches, like those in Latin America, are under-represented in the major journals. **Enghel** and **Becerra** (2018) reproach the fact that the development of theory has taken too much from Anglo-Saxon sources and has added a scant amount of innovative and significant ideas to the general corpus of communication coming from Latin American countries. This question is somewhat surprising with regard to the German language, in which case the main authors prefer to conduct their research in English, as shown in the bibliography. The scarce number of authors found during the intense bibliographic review has lead me to select fewer works than expected. **Hartig** (2019) publishes a didactic handbook, while **Berghofer** (2017) links international communication to theoretical and analytical aspects of communication policy.

At the journalistic level, factors such as the ownership of news agencies, which even today convey messages and agendas, as well as the predominance of audio-visual information through the major channels, and the predominance of the English language in social networks, all point to a specific model of the communication industry (**Chalaby**, 2016). Thus, the global market creates value through the standardisation of products and objects of consumption, whether they are journals, news information, or audio-visual products (**Chalaby**; **Esser**, 2017; **Surm**, 2019). Information and audio-visual globalization are based on standardization, which is limited in a universe of oligopolistic producers and distributors. The reader or viewer chooses from an extensive catalogue, though it is not infinite.

In the journalistic field, the ethos of this paradigm is based on the idea of objectivity and precision (**Dahlgren**, 2009), as well as on its contribution to the construction of democratic societies (**Schudson**, 2018). **Esser** and **Neuberger** (2019) reflect on the democratic function of the press in a context of increasing digitisation. They identify an agenda of challenges for the profession, such as the arrival of new actors in the surveillance of political activity (e.g. *WikiLeaks*), the communicative use of social movements, or the general acceptance of mass surveillance through the use of social networks and mobile devices. This change may alter the journalistic ethos.

The epistemological dimension of this ethos supports the legal basis of freedom of information and expression, which seems to be well adapted to the multilateral system. This appears in the *Universal Declaration of Human Rights*, the *Community Acquis*, *Unesco*'s extensive documentation, the texts of the *Inter-American Court of Human Rights*, media literacy policies, the campaigns of *Reporters without Borders*, and in many other international institutions. This is where the ideal of the international journalist, correspondent and special envoy is established, one who is open to the world and explains to local audiences the cause and effect of events. This mental image in the collective imagination depicts a professional traveller and good chronicle writer. Some recurrent names in this journalistic Olympus include the following: Manuel Chaves Nogales, Sofía Casanova, Gerda Taro, Ilya Ehrenburg, George Orwell, Martha Philby, Indro Montanelli, Manuel Leguineche, Ryszard Kapucinski, Marie Colvin, James Nachtwey, Seymour Hersh, James W. Foley, Anna Politkovskaya, Christiane Amanpour, and Svetlana Aleksievich.

> Communication is not present in the doctrine and conventional study of international relations

In the field of entertainment and advertising, economies of scale in the international trade of audio-visual goods and services promote barrier-free circulation of film releases, musical hits, advertising formats, and sports stars. Audio-visual culture is a vehicle for the envisioned global community, which now has a universal nature as a result of platforms, new media, and other technological devices. Supply and demand have converged thanks to recommendations, popular content, advertising campaigns, meme culture, and a certain filter bubble of preferences on how quality audio-visual production is defined. The massive increase in the consumption of TV series is in line with this phenomenon of global consumption and popular culture (**Carpenter**, 2019).

Despite these milestones, communication is not present in the doctrine and conventional study of international relations. This discipline examines the conduct of affairs and relations among actors in the international scenario. Studies are based on the analysis of theory and external action, and on the set of behaviours, contacts and interactions that the actors have with each other.

When decisions are organized and prioritized, one can speak of a foreign policy based on the capabilities, desires, needs and motivations of the actors involved. The institutionalisation of foreign policy goes hand in hand with the consolidation of the State as a rational unitary actor that deploys a catalogue of instruments to achieve its objectives. Specifically, these include military force, economic relations, international cooperation, and multilateralism, just to mention the most common. Each of these actions requires the use of international communication to achieve its objectives. Therefore, this is not a minor element in the implementation of external action, although its study has not been one of the main areas of research in communication or political science. The first references are from the 1960s and 1970s, when international communication was institutionalized as a sub-field of international relations (*The American University*, 1989).

In theory, the State is the legitimate institution of foreign action, although in practice the number of actors involved in the design, production and implementation of international decisions has multiplied (**Melissen**, 2005). Thus, ministries of foreign affairs have conveyed messages with a certain undisputed authority. However, the crisis (**Cassidy**; **Manor**, 2016) and uncertainty (**Boulton**; **Allen**; **Bowman**, 2015) have transformed the public communication sphere.

Cities, corporations, sub-state entities, international organizations, civic associations and social movements regularly participate in the global arena with or without specific powers, and they do so according to international law. A brief analysis of the international activities on this list shows that they use communication to achieve their objectives given the scarcity of legal instruments to enable other types of action. Public diplomacy, conferences and digital activism are examples of this affirmation.

The communicative perspective of international studies changes when the concept of power is broadened and its strategic aspect is understood. According to **Hirschman** (1945; 2006), communication contributes to the creation of power and influence as part of a strategy to protect national interests, which is equally as important as foreign trade or defence. The strategic aspect is achieved when governments decide how resources will be used (time, money and personnel), how mechanisms and working procedures will be created and arranged (tribunals, plans, trade agreements), and most importantly, how political values will be promoted (participation in international organizations such as *NATO* or projects like the Silk Road), economics (country bran-

> The crisis and uncertainty have transformed the public communication sphere

ding), and internal aspects (actions directed at the internal public carried out by State-less leaders of nations in order to internationalize their causes). Thus, communication guides politics and international trade, underpins identity, promotes national interests, and aligns itself with the objectives of power. For **Krugman** (1986), the strategic condition means gaining a competitive advantage in the global sphere that generates benefits in political or economic terms.

Outside of this framework, a systematic review of the bibliography reveals that communication seems to be digressive or linked to particular phenomena, more as an anecdote (see Schabowski's error[2] in **Großman**, 2013) than as a central concept through which messages are conveyed to shape public opinion. Few authors have assessed the impact of the media transformation in shaping the international scene. There are notable exceptions: **Nicholson** (1935) began studying the effects of the emerging public opinion on British diplomacy. **Carr** (1939) pointed out that international power has military, economic and public opinion features. **Deutsch** (1953; 1978) was the first to systematically integrate communication into his analyses of the structuring of nationalism and the political community, and the international reality. For **Strange** (1988), communication is the mechanism for exercising relational power and the cornerstone of structural power. For **Krasner** (1991), international public communication serves the interests of those who can determine the rules and actors, or in other words, it provides a legitimizing interpretation of external action. Krasner explains four aspects of communicative power:

> Communication contributes to the creation of power and influence as part of a strategy to protect national interests, which is equally as important as foreign trade or defence

> "Sets of implicit or explicit principles, norms, rules and decision-making procedures around which the expectations of the actors involved converge in a given area of international relations. Principles are long-held beliefs, causality and rectitude. Norms are standards of behaviour defined in terms of rights and obligations. Rules are specific prescriptions or proscriptions for action. Decision-making procedures are prevailing practices for making and implementing collective choice (**Krasner**, 1983, p. 185).

This approach is similar to the one developed by Keohane and Nye, who define political regimes as follows:

> "Networks of rules, norms, and procedures that standardize behaviour and control its effects" (**Keohane**; **Nye**, 1977, p. 19).

Political ideas shape different regimens of knowledge and expression, which facilitate the way foreign policy is organized, the relations between journalists and diplomats, and the capability of influence by other actors (**Campbell**; **Pedersen**, 2014).

International communication is important for cultural relations, (**Ardnt**, 2006; **Rivera**, 2015), the transformation of global values and norms of "cosmopolitan democracy" (**Norris**; **Inglehart**, 2009), the structuring of international information (**Jarren**; **Künzler**; **Puppis**, 2019), freedom of expression and censorship (**Molnar**, 2015), activities of non-governmental organizations (**Powers**, 2016), the audio visualization of events (**Dayan**; **Katz**, 1994), major sporting contests (**Xifra**, 2009; **Samuel-Azran**, 2013), and the globalization of political publicity (**Strömbäck**; **Kiousis**, 2011), brands and consumption patterns (**Manfredi**, 2019). Thus, international communication is not just *CNN* or Hollywood, even though these two brands established the principles of journalistic information and audio-visual entertainment in the 20th century.

International communication is the cornerstone of power building and influence management when faced with an international audience. The seduction or attraction toward a country's interests combines true facts (trade flows, policies with neighbouring countries, diplomatic relations) with the desires or aspirations of the audience (a better life, a country with freedom, more security on the streets, fewer foreigners in social services, and so on). The emotional or pre-political aspect of this attraction influences the audience's interpretation of the foreign policy of a country. This power of ideas is clearly set out by Alleyne as follows:

> *CNN* and Hollywood established the principles of journalistic information and audiovisual entertainment in the 20th century

> "It is the power of certain types of information, and is distinct from the power of communication which refers to the media through which these ideas and other information are disseminated" (**Alleyne**, 1995, p. 15).

In summary, academic and professional interest in international communication is reflected in a broad analysis of power structures, or in other words, the relational capability to influence the knowledge, judgment and behaviour of individuals and institutions. Communication policies, the design and legal framework of institutions, promotion of the free exchange of ideas and opinions, use of force, the very definition of propaganda, interference in electoral communications, or the future of a neutral network, are aspects that now appear on the horizon.

3. International communication and the shaping of power

Power is a polysemous concept, defined as the ability to influence and modify the environment through actions or decisions. In the field of politics, it relates to the thematic agenda, framing and priming, or to the spiral of silence. Entman summarizes the key aspects in his authoritative definition:

"The organized attempts by a president and his foreign policy apparatus to exert as much control as possible over the framing of U.S. policy in the foreign media" (**Entman**, 2008, p. 89).

In companies, different names are used: institutional relations, public affairs, political capital, social responsibility, social marketing, and corporate diplomacy, just to mention the most commonly known. Communication at the international level is justified by the political nature of the management of global companies- reputation and legitimacy are sources of competitive advantage (**Scherer**; **Palazzo**, 2011; **Den-Hond** *et al.*, 2014). Thus, each discipline tries to delimit the way in which influence is exercised, how the legitimacy of power is created, how counter-force acts, and what role is played by public and private authorities. Today, these decisions have an international scale.

Communication is the cornerstone, as its goal is to have an impact on the receiver. It encompasses symbolic, formal or graphic expression, so it transforms abstract information into specific expressions adjusted to common cultural criteria. By action or omission, this only happens when there is an "other" who is affected by the circulation of informative messages. It organizes the dissemination of messages, establishes a type of relationship between public and private actors, limits or extends individual rights related to information, and promotes propagandistic models, among other features.

In this situation, propaganda is defined as the process that aims to change and influence political behaviour. Outside the journalistic field, fiction promotes entertainment, experience and participation. Cinema, literature (Salman Rushdie or Houellebecq), theatre, video games (**Wills**, 2019), television programmes, or content for mobile devices are reliable instruments for international action. "Geopolitical television" creates fiction linked to international issues and scenarios, constructs plausible political worlds, and raises the question of the identity of "them" against "us" (**Saunders**, 2019). This framework of analysis is relevant because popular audio-visual culture has become one of the defining instruments of reality. Nowadays with programmes like Homeland, Narcos, Okkupert, Years and Years, or Marseille, and even earlier with the political cinema of Polanski, Pilar Miró or Costa-Gavras, the audience has been consuming ideas and political proposals that explain through fiction the relations of power and the tensions between national and individual interests. Such fiction is true to life, even though it may be set in the territory where the idea was invented, so the audience ends up affirming their assumptions as interpretations that are close to what happens in the real world.

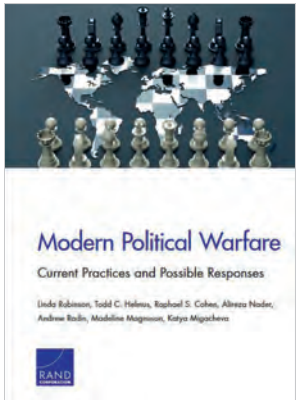
Communication accomplishes organized coexistence, norms of conduct and institutions, with different models according to tradition and political geography (**Hallin**; **Mancini**, 2004). It builds the political, legal and administrative system by defining the scope of individual rights (e.g. freedom of expression) and international order (e.g. agreements for the protection of rights). Messages are disseminated through structured and established channels (official bulletins, interviews, press releases, and institutional websites) as well as those that are unstructured (unofficial statements, propaganda, social networks, and conferences), both of which influence the development of international affairs. In particular, diplomacy is an area that has institutionalized the intensive use of information to achieve its objectives as a result of *pacta sunt servanda* (agreements must be kept). The value of the written word lies in establishing points of agreement or disagreement. The instruments are diverse: treaties, agreements, international signatures, but also declarations, systems for making consultations, non-regulatory agreements, and more recently, tweets or videos for the digital universe. Whatever the media, the importance of establishing the foundations of commitments in documents that are transmitted and shared has been recognized.

However, discord among today's realities (globalization, digitization, sovereignty crises, other key situations) and the course of international public law points to the need to examine these communication strategies, as well as information activity and relations between states and the media as part of the very process of redefining the sovereignty and capability of action by international actors, the social production of knowledge, and the management of conflicts- in other words, the very essence of power. Thus, four interpretations of the relationship between communication and power have been presented, and have allowed this review article to explain the epistemological foundations of the discipline and organize the main theories therein. As such, we propose the four following central concepts of analysis: hard, soft, sharp power, and the strategic narrative. We would now like to examine each of them one by one.

3.1. Hard power: communicative realism

Realism is the dominant doctrine in international relations. It affirms that the State is the only institution that can guarantee stability and order in an environment of anarchy. Therefore, sovereignty is an unyielding value, the result of an independent political community acting as the sole authority over its territory. The viewpoint of power, force or domination justifies the decisions taken within the State, which competes in a rational way with other States to stabilize the system. It corresponds to a static vision of international reality based on political geography that rejects the real capabilities for action by other actors or through institutional cooperation.

This type of international system is based on the management and use of hard power, which is the expression of communicative realism. It consists of using military force and economic assets with the intention of affecting the behaviour of a given actor on the international stage. This is in line with the realist doctrine and the defence of national interests in an environment of structural anarchy. Thus, communication is the continuation of other tools of power, such as trade, sanctions or coercion. It is used to impose frameworks for understanding reality and its meaning (**Qin**, 2015; **Drezner**, 2017), to legitimize causes through the organisation of information and propaganda campaigns (**Audinet**, 2017), and to



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attract segments of the population through the use of celebrities and entertainment (**Quessard-Salvaing**, 2018). Other post-1945 nomenclatures such as psychological operations or manufactured consent (**Herman**; **Chomsky**, 1988) have been left behind, but not their objectives (**Chesney**; **Citron**, 2019).

The rhetoric of war has employed communication as an instrument of influence in line with the hard interpretation of power. The idea of the "weaponization of everything" (**Mousavizadeh**, 2015) and "political warfare" has taken root in literature and political action. A report by the *Rand Corporation* (**Robinson** *et al.*, 2018) has revived the expressions of diplomat George F. Kennan when he referred to broadening the range of activities involving the use of power and influence that occur in international intervention. Diplomacy, economic relations and military strategy are based on information, propaganda, support for resistance movements, and public diplomacy. International communication is part of the control structure with specific initiatives to change behaviour and states of public opinion. Therefore, communication is no longer an instrument, but instead becomes a strategic, differentiating element in international operations in times of peace (e.g. Russian interference in the US elections), as well as those of a warlike nature (*Islamic State*, *Al Qaeda*, *Boko Haram*).

Secondly, political power influences the structure and organization of technology, with regulatory production adapted to the distinctive features of each country or system. It is exercised for State defence against external attacks, real or simulated, which justify control over forms of expression and information. The weakening of borders also makes it difficult to address the problem with guarantees:

> "Disinformation is not a threat that comes from outside. It has now become an internal reality. It is not the cause, but rather the consequence of the transformation of the European public sphere; of increasingly blurred borders between fact and opinion; between the disruptive capacity of the outside and the increasing power of internal actors" (**Colomina**, 2019, p. 44).

Non-liberal systems put pressure on Internet freedom and persecute digital dissent (**Mackinnon**, 2013). On the other hand, in open societies pressure is exerted through regulation, limits on business pluralism, blocking the right of access to public information, or defending an idea as "good taste" or "blasphemy" for the purpose of interfering with professional activity. The study by **Bennett** and **Naim** (2015) identifies numerous censorship practices present in both dictatorial and democratic countries (**Garton-Ash**, 2016; **Parcu**, 2019).

What remains to be seen is how hard power practices will shape the digital information system, as well as platforms, artificial intelligence or database control, among other elements of public communication policy (**Picard**; **Pickard**, 2017). Faced with an historical model of data collection for public ownership issues, the number and range of private actors who capture, organize and market data to third parties has skyrocketed. This issue affects the protection of free expression, because highly sensitive aspects such as privacy, censorship or hate speech are subject to private interests (**Toscano-Méndez**, 2017). On another level, hard power can use this information to influence behaviour, preferences, sexual orientation and practices, or the expression of political emotions (**Arias-Maldonado**, 2016). The use of data for political publicity to promote a cause or undermine the legitimacy of opposing ideas is the order of the day (**Pasquale**, 2015). The very act of capturing and systemizing the collection process is a response to a predefined political pattern specified in the definition of what is public and what is private, as well as what can be marketed or exploited in business practice. The political nature of data is a reaction to social practices, political decisions, and resource allocation in accordance with political priorities (**Green**, 2018). With public or private ownership, monopoly or duopoly, the institutionalization of big data shows an unavoidable relationship, so we can speak of a type of "data politics" (**Ruppert**; **Isin**; **Bigo**, 2017). Policy, data, privacy and communication represent a continuum in the use of power.

Ultimately, it will be interesting to see how hard power utilizes platforms and intermediaries in the process of controlling communication to the extent to which it restructures the environment (**Nielsen**; **Ganter**, 2018). The European system stands for extensive protection of individual rights and a model of incumbent operators in the form of local giants, or 'European champions', so to speak. The American proposal is based on market logic and the strength of ideas. Rights are protected *a posteriori*, should an infringement occur. The Chinese ideal uses public exposure of data to control public behaviour and attitudes, drives innovation from the state, and places international communication within the framework of security and the promotion of social welfare (**Kostka**, 2019). At this point, two questions arise: As a superpower, will a country be able to lead in the protection of fundamental rights on the Internet in a scenario of growing multipolarity? Moreover, will a country be able to lead the information and audio-visual industry, as in the golden age of Hollywood and news agencies, in an environment of fragmented audiences and disaggregated distribution channels?

In the audio-visual world, the proliferation of messages, tools, communication industries, and audiences are contributing to the contemporary problem of national identity. Nationalist and populist governments are attempting to gain ground in the audio-visual industry, both in fiction and in news services. The passive attitude of receiving content at a low cost defines markets, channels and audience consumption. The domestic market of each State has been weakened due to the fact that regulations and the consumers themselves have been organised on another level, either that of the European Union or that of American influence, which seeks to be the global standard and finances its international production (**Murschetz**; **Teichmann**; **Karmassin**, 2018). China is committed to the globalisation of its audio-visual products through the intense promotion of films, authors and directors, both in cinemas and on platforms. This explains the commitment by *Amazon Prime* to bring to Liu Cixin's eponymous novel, "The three-body problem", to the screen. It will be the most expensive production in history. With a budget of $1 billion, it doubles that of its immediate predecessor, the "Lord of the rings" TV series. "The wandering earth", by the same author, is available on *Netflix*. This is a science fiction film that explains China's role in the threatened future of humanity. Hollywood or European films are no longer alone in the race for the audio-visual industry, which has a value chain that can be described as follows:

> "Since the 1990s, the industry has been characterised by the rapid, synchronised growth of networks and television formats, and audio-visual entertainment concepts that are licensed or adapted for local audiences" (**Chalaby**, 2016, p. 35).

The rest of the emerging countries have copied this second strategy, and consequently, the new borders are not established based on political geography, but on ideologically oriented information blocks with their own controls, barriers and rules. The most obvious example is the *Organic law of personal data protection and guarantee of digital rights* (*LOPD-GDD*), which implements the *General data protection regulations* (*RGPD*) against the technological giants financed by US capital. Debate on the impact of *Facebook* and other corporations on the Brexit referendum, the campaigns for the *European Parliament* in 2019, and other political activities have helped raise awareness among European citizens regarding the phenomenon of control and surveillance by social networks.

Fiction and entertainment are also used to consolidate new audio-visual markets in order to fight against an understanding of the world. Thus, "our truth" is raised to the category of audio-visual information against fake news coming from international journalistic actors (Yablokov, 2015). This separation promotes the expansion of audio-visual products in markets that are large, yet short of Anglo-Saxon information production, such as the *Commonwealth of Independent States* in Russia's sphere of influence. In other cases, populism feeds a kind of "informational authoritarianism" (Guriev; Triesman, 2018) that controls messages, company owners and professional quality standards. The economic bias of information reduces interest in political issues as well as matters of openness and democracy, and consequently, this authoritarianism reflects strong leadership that delivers economic results (growth, exports, employment) without other shades of political liberalism.

In short, communicative realism aims to control messages and channels in such a way as to reward an interpretation of globalization in accordance with the interests of the promoting State. This reality is related to communicative intervention in line with other national interests, so the usual tools (content, television stations, audio-visual markets, journalistic information, subscriptions) are all used to achieve the declared strategic objective.

3.2. Soft power: attraction, seduction and legitimacy

The story of the global society, of Westphalian origin, which organizes the international system and favours the creation of long periods of stability, works within a framework of stable borders and internal control. However, this myth (**Osiander**, 2001) has encountered successive impediments that have led to its collapse (**Ikenberry**, 2011; **Duncombe**; **Dunne**, 2018) or mass failure (**Strange**, 1999). Communication has contributed to the blurring of borders through the expansion of content that standardizes the consumption of information and entertainment, so that biographies are globalized and values are shared on a worldwide scale. Steensen and Ahva explain the dismantling of borders, not only geographically, but also with regard to the information structures themselves:

> "Between nation states; national markets; local and global; public and private; mass communication and interactive communication; professionals and amateurs; production and consumption; and professions –just to name a few" (**Steensen**; **Ahva**, 2015, p. 4).

For Aznar-Fernández-Montesinos, the current international context is complex:

> "It is a grey area between war and peace, between internal and external, business and politics, civil and military, or national and multinational. Furthermore, borders are conveniently moved between what is public and private, privacy and surveillance, freedom and control, national and transnational, and so on, with all of the instability and insecurity that it brings" (**Aznar-Fernández-Montesinos**, 2019, p. 132).

From a theoretical perspective, the thesis of complex interdependence has been consolidated (**Orsini** *et al.*, 2019). A country is simultaneously an energy supplier, a weapons buyer, a defender of practices contrary to human rights, a trade adversary, and a partner in the fight against global terrorism. This contradiction generates dysfunctional management of walls and borders. In international communication, it contains many elements: telecommunications, networks and platforms; the protection of intellectual property, and now intangibles such as algorithms and brands; the demarcation of markets; the audio-visual and culture industry; the media system and journalistic profession; and the regulation of data protection and advertising. For this reason, new theoretical reasoning has been sought that will allow power and influence to be exercised without the use of coercive instruments. Hence, the emergence of the theory developed by **Nye** (1990; 2004), who points out that the capacity to build alliances, attract the interest of international audiences, share agendas and promote mutual understanding is a successful strategy for the exercise of power. Exchanges occur in the areas of media, education and culture, as well as trade and business relations. Haass points out that the aim of this instrument is global leadership through ideas and culture:

> "US influence would reflect the appeal of American culture, the strength of the American economy, and the attractiveness of the norms being promoted. Coercion and the use of force would normally be a secondary option" (**Haass**, 1999, p. 41).

Soft power emerges within this context. It consists of the ability to organize the political agenda according to political preferences in a way that influences individuals, civil society, various levels of government, and international organizations. This interpretation of power is based on values, culture and intangibles that strengthen a position and foster the implementation of international projects.

This new approach to power occurred after the fall of the Berlin Wall and the gradual reduction of armed conflicts. Without the need to impose (nuclear) force, the United States revised its foreign policy and intervention strategy with an emphasis on the creation of capabilities adapted to a world in which it remained the hegemonic force (**Cull**, 2012). Culture, values and public policy have been used for external action intended to persuade, influence, shape behaviour, or put pressure on foreign governments. The inventory of instruments is large: the intensification of cultural relations, student exchange agreements, international broadcasting of audio-visual content, cultural events, global sports contests, development cooperation**,** tourism, and the human rights doctrine itself (**Rieff**, 2003; **Ignatieff**, 2001), all of which offer new ways of carrying out external influence without the need to violate the political order. It is based on the classic theory of **Keoahne** and **Nye** (1977) regarding interdependence in the exercise of power. Such theses are a further development of the ideas of **Putnam** (1988) and his work on the logic of the two-level game theory between national and international events, revised by **Bjola** and **Manor** (2018) in order to study the case of the nuclear agreement with Iran. The orientation toward audiences rather than governments runs parallel to the widespread adoption of Internet as a source of global information (**Servaes**, 2013).

The utilization of soft power occurs through public diplomacy. It can be defined as the management of international political communication in accordance with certain interests related to foreign policy activities. Its objective is the exercise of influence by an entity over a foreign public by developing communication strategies that include educational, informative and entertainment programs (**Manfredi**, 2011). The original notion focuses on State activity (**Gilboa**, 2016), yet reality has shown it to be a common practice among all actors in the global sphere (**Melissen**, 2005).

This broad definition makes it possible to analyse the management of the external image, the use of intangibles, and the use of communication and cultural instruments to promote a political project on an international scale. **Cull** (2019) divides the repertory of actions into five categories: active listening, promotion of interests, cultural diplomacy, educational exchanges and programmes, and international audio-visual broadcasts. There are many examples in the academic literature (**Grincheva**, 2019) and in the press. Saudi Arabia has established "Jeddah Season", an international music and theatre festival. Qatar has promoted its National Museum, designed by architect Jean Nouvel, as an architectonic endeavour that houses first class works. Abu Dhabi has opened a satellite museum linked to the Louvre in Paris. The City of Malaga has created an attractive hub surrounded by exhibitions and museums, thereby allowing it to diversify its tourist offering. The *Hermitage* collection of the Russian State has opened exhibition halls in Amsterdam, and plans to do so in Barcelona in 2022. Catalonia is striving to strengthen the international character of its culture as well (**De-San-Eugenio-Vela**; **Xifra**, 2014). In recent years, leadership by politicians regarding public issues has recaptured the interest of the academic community (**Aznar-Fernández-Montesinos**, 2018). President Barack Obama's rhetoric, Michel Barnier's speeches to the *European Parliament*, Angela Merkel's gestures, and the charisma of Cristina Fernández de Kichner and Pepe Múgica, are all used to persuade, move or lead causes. The use of *Twitter* has boosted this trend of public diplomacy and international power in real time (**Seib**, 2012b). The example has spread, and other political leaders have used the same techniques to achieve their goals, with Donald Trump being the epitome of populism in this period of globalisation (**Bødker**; **Anderson,** 2019).

However, the very development of public diplomatic activity generates a certain degree of theoretical, conceptual and methodological uncertainty (**Ingenhoff** *et al.*, 2018; **Labarca**, 2017). This lack of order has led to management of the country brand as a succession of empty slogans (**Pamment**, 2016a). This obsessive management model can lead to the following:

> "The focus on a country's reputation is an obstacle to other instruments of diplomacy" (**Cull**, 2019, p. 139).

Public diplomacy as an expression of soft power is characterized by conveying the interests of different actors through public-private partnerships, international non-profit organisations, Diasporas, educational programmes, and other instruments open to third parties. Cull concludes that these global communication operations identify common objectives, such as Agenda 2030, or the fight against climate change, and consequently, this "obsession with national brands" (**Cull**, 2019, p. 161) distorts many of the current publicity management models of the external image of countries. This understanding of the common good is dynamic and characteristic of international challenges that involve the participation of sub-state governments, companies or cities with instruments involving journalists, publicists and politicians (**Barber**, 2017; **McNamara**, 2014; **La-Porte**, 2012; **Zeraoui**; **Castillo-Villar**, 2016). This explains why other initiatives are shared: the *Hay Festival*, offices to promote filming (film commissions), the *Camino de Santiago*, *Municipal Alliance for Peace in the Middle East*, *United Cities and Local Governments*, and many other projects and actions.

The theoretical structuring of soft power does not mean an end to the use of military force or economic pressure, but instead signifies the development of other instruments, among which communication stands out as a motor for change in the perception, judgement and behaviour of international audiences.

This combination is called smart power:

> "Smart power means developing an integrated strategy, resource base, and tool kit to achieve American objectives, drawing on both hard and soft power" (**Armitage**; **Nye**, 2007, p. 7),

Because

> "soft power is rarely enough on its own" (**Nye**, 2018).

Nye concludes the following:

> "Smart power combines the hard power of coercion and payment with the soft power of persuasion and attraction" (**Nye**, 2011, p. xiii).

The interest in this inclusive trend is aligned with the crisis of the State as a priority unit of analysis in international relations (**Jordan**, 2018). **Curtis** and **Acuto** (2018), **Bjola** and **Holmes** (2015), **Manor** (2019), and above all **Slaughter** (2004; 2017), theorise about the redistribution of power and its epistemological consequences. Owen emphasizes the role of the digital transformation in the State crisis:

> "The State as the primary unit of the international system is being challenged, both for power as well as legitimacy, by a wide range of new individuals, groups, and ad hoc networks, all empowered by digital technology" (**Owen**, 2015, pp. 209-210).

In the words of Slaughter, the new order can be described as follows:

> "It is not a map of separation, of marking off boundaries of sovereign power, but of connection, of density and intensity of ties across boundaries" (**Slaughter**, 2017, p. 7).

Der-Derian proclaimed the radical transformation that lies behind it:

> "Unlike previous developments in transport, communication and information, virtual innovation is driven more by software than by hardware. It is carried out through networks before it is handled by agents, which translates into adaptation (and mutation) that is easier and faster" (**Der-Derian**, 2000, p. 772).

To the extent to which networks make it difficult for hegemonic actors to become consolidated, smart power requires innovation in international governance. In diplomatic affairs, **Cornago** (2013) considers that the plurality of actors and interests requires open instruments and agreements resulting from soft and hard mechanisms.

In summary, the role of public communication in the implementation of soft power strategies has become one of the most dynamic elements of the external action of international actors and academic studies. Its flexibility, speed and prestige converge in an attractive activity for the exercise of communicative power.

3.3. Sharp power: the dishonest influence

The third central concept is sharp power, which **Nye** (2018) defines as the use of dishonest information for hostile purposes by a State or one of its agents. The semantic umbrella of the term 'sharp power' refers to the influence exerted by authoritarian states through the use of three types of activities:

> "Intention (to destabilize or undermine the morality of the adversary instead of informing or showing one's own culture), use of the media (through lies or distortion), and the absence of publicity (a surreptitious or hidden character)" (**López-Aranda**, 2019, p. 24).

The ability to trace the information is one of the keys to distinguishing sharp power, which uses short-term tactics (an election or propaganda campaign, political action) less than long-term stratagems (reputation or country brand). It obtains preliminary support from anti-diplomacy (**Der-Derian**, 1987), the behaviour of which explains the attitude of some international actors. These are professional practices that challenge authority, develop a new language, and promote new values that are diametrically opposed to the liberal Wilsonian order. The digital society provides new opportunities for diplomatic innovation and the emergence of actors working on the side-lines of states and the international organizations created by them (**Der-Derian**, 2009).

This activity is associated with the intervention of Russia and China in the international arena through techniques that seek to attack the values and principles of open societies, as well as their electoral systems and procedures (**Walker**; **Ludwig**, 2017; **Tworek**, 2019). **Cardinal**, **Kucharczyk**, **Mesežnikov** and **Pleschová** (2017) have presented four specific cases of intervention in Peru, Argentina, Slovakia and Poland with a wide variety of actions to influence and interfere in electoral processes and the shaping of public opinion.

In Russia, the precedent can be found in the USSR's own international communication. The so-called "active measures" were

> "propaganda, provocation, manipulation of the foreign media, infiltration by operatives, covert paramilitary operations, or a *kombinatsiya*" (**Aznar-Fernández-Montesinos**, 2019, p. 140).

An updated version of this idea has become vaguely popular under the label of the "Gerasimov doctrine" as an add-on to cyberwar, cyber intelligence, disinformation and propaganda, a sort of "grey area" of information, military operations and low-intensity actions (**Baqués**, 2017).

The academic literature has been more critical of the Chinese strategy, often identified as the "charm offensive" (**Kurlantzick**, 2007), which hides the country's intentions and puts international branches of the *Confucius Institute* in the spotlight. **Sahlins** (2015) calls them "academic malware", and **McCord** (2014) considers them a threat to academic freedom. A report prepared by the *National Endowment for Democracy* (2017) details Chinese practices in several countries, especially in Latin America and Eastern Europe: newspapers, media, scholarships, think tanks, and technological support are used to increase the presence and reputation of the Asian giant.

Sharp power utilizes a weakness inherent in democracies and open societies, which is openness to the free flow of ideas and direct contact with authoritarian states, yet without mediation through blocks or multilateral institutions. To this end, imprecise content is disseminated through mobile devices to take advantage of "cognitive vulnerabilities" (**Fernández-Dols**, 2019, p. 52) which are errors of perception, the feeling of being right, or the desire to be right. Echo chambers and information bubbles affect political and electoral behaviour less than the erosion of social trust in democratic institutions and processes. Aznar-Fernández-Montesinos explains that sharp power acts in the following way:

> "It tries to present itself as just one more expression of information plurality, a type of alternative" (**Aznar-Fernández-Montesinos**, 2019, p. 146).

To the extent that its leadership style is different and has shaped new concepts such as "peaceful growth", or the "new style of great power relations", its appearance generates concern (**Hinck** *et al.*, 2016).

However, this theoretical structure is reminiscent of alternative facts or "politically incorrect" content. Under the label, "you won't see this in the traditional media", supremacist, racist and misogynist content is spread (**Marwick**; **Lewis**, 2017). The intellectual ambiguity of "alternative facts" makes it easy for the Russian and Chinese media to position themselves as information options far removed from the Western journalistic paradigm. Audiences become disoriented, low-quality audiences are legitimized, and the blame for false information is placed on the adversary. Therefore, all of this 'noise' makes it difficult to comprehend international news. Moreover, the consumption of such information and cultural services promotes a non-Western identity that opens up other avenues of influence that are not necessarily pernicious. This epistemological breach in the international community affects the legal criteria that support freedom of information and expression against hate speech, or the protection of national interests over individual freedom. This is no small matter.

The intensive use of digital technologies has increased the capability of conveying opinions and comments that erode open institutions, either through bots and troll farms, memes, data surveillance and spying (*Huawei*, *Xiaomi*), or the automation of inaccurate content. This characteristic makes it difficult to respond in an environment of ephemeral communication. Hamid-Akin Ünver explains:

> "The cost of defending against such attacks requires a large amount of resources and better coordination. Even when the defender is successful, the psychological process is consuming and persistent" (**Ünver**, 2017, p. 7).

The logic of digital reproduction generates economies of scale that take advantage of the free nature of social networks in order to share and distribute information, knowing or not knowing whether it is imprecise, or even blatantly false.

The European Union's response to this phenomenon is part of its global foreign policy strategy. It should be emphasised that China is now a systemic rival and not just a usual economic competitor (*European Commission*, 2019). In this scenario, it is true that communication is used as a tool to promote one's own values and counteract disinformation campaigns and hybrid threats (*European Commission*, 2018; *Swedish Civil Contingencies Agency*, 2018). The European approach encompasses the protection of data and individual rights, the regulation of digital platforms, the fight against false content, and the protection of electoral processes against possible interference. Thus, European cybersecurity gives priority to international communication, not only to channels or technologies.

In summary, sharp power is unique in its use of propaganda techniques that are already known, as well as in public diplomacy adapted to the new times.

Therein lies the bewilderment of Europeans and Americans, as Russia and China have deployed their powers of seduction and attraction not only to defend their interests, but also to degrade those of others. In a situation of economic crisis and social disbelief, these new threats require a systematic examination by liberal democracies.

3.4. Strategic narrative: consolidating the new paradigm

The fourth theoretical development that should be added to the mix is the proposal of **Roselle**, **Miskimmon** and **O'Loughlin** (2014): the strategic narrative. These authors describe this phenomenon as follows:

> "Political actors attempt to build shared meaning of the past, present, and future of international politics in order to shape the behavior of domestic and international actors" (**Miskimmon**; **O'Loughlin**; **Roselle**, 2017, pp. 77-78).

This narrative examines the social dimension of the communicative experience, which creates meaning according to our networks and peers. Identity is developed by networking in a community of shared meaning. This is relevant because personal contact affects the content of the message: it is more reliable if it comes from a source close to one's own interests (mobile messaging, social networks). Therefore, this narrative explains events and gives them meaning according to a code, an experience, and a future perspective. The design, implementation, and audience reception of the messages leads to the development of shared meaning, either to promote agreements related to international consensus, or to identify blind spots. The definition of concepts such as "terrorist" and "occupied territory", or even human rights themselves, explain how each political actor projects their interests through narratives in three levels of analysis.

The first level is the system narrative, which explains the position of a political actor when confronted by, as well as within, the international order. The key is knowing how countries perceive themselves, especially when they have been great powers, through their cultural expressions, statements made by their political leaders, and the international events they organize. This international scope has an impact on the local audience. The case of Russia is paradigmatic, as it declares that Russian culture has contributed to universal civilization on the same level as other schools of thought or values, such as public international law or liberal democracy (**Miskimmon**; **O'Loughlin**, 2017). **Snyder** (2018) points out that the narrative of Putin's Russia is a mix of nationalist ideology, a sense of destiny, resentment toward the West, and a high dose of cynicism. **Pomerantsev** (2019) explains the disintegration of the Russian information system and how disinformation is managed by political powers with little opposition from professional journalism. This argument is also found in the disappointment demonstrated toward the European Union by the Visegrad group of countries (Hungary, Poland, the Czech Republic, and Slovakia), which see themselves as the losers of European globalisation, as expressed in recurrent disagreement with the *acquis communautaire* (**Krastev**, 2017).

Secondly, the identity narrative explains the rise in the use of history, pre-political values, and the uniqueness of a territory in explaining its participation in global events. In **Fukuyama's** work (2018), the question of identity, recognition, or dignity (translated from the classical Greek term *thymos*), is identified with the resurgence of strong political leadership with an authoritarian profile. **Norris** and **Inglehart** (2019) explain Brexit as an identity phenomenon rooted in wars between generations regarding culture and values. Stateless nations claim their right to exist as well as international recognition of their identity, whether real or figurative. Other countries recreate contexts of past empires in order to gain legitimacy in their geographical regions. **Frankopan** (2018) explains how Iran is using Chinese investments in the new Silk Road to position itself as the backbone of Asia, thereby reinforcing its own vision of regional power and universal civilisation. In this case, the use of memory is one of the essential changes in the handling of international political communication (**Ociepka**, 2018). Memory compresses mental models and gives internal coherence to international reality, even though it might not be based on true facts. Information chaos and disinformation used as weapons of war allow for manipulation of the past and assumption of the role of victim (**Cull**, 2019, pp. 167-168). Tzvetan Todorov, quoted by **Gascón** (2015), argues that Europe's shared memory is not really shared, but is divided between those who have always lived on the western side and those who are ex-communists.

Finally, the policy narrative is directed at shaping a political objective. The consensus in the fight against climate change heard in the *European Parliament* and in national governments promotes the transmission of messages to the audience. On the other hand, analysis of the international position with regard to the resolution of the conflict between Israel and Palestine reveals the conceptual disagreement related to the actors, the legitimacy of their claims, or their methods of political action.

In short, the strategic narrative is interesting because it deals not only with the way in which a political actor is viewed and placed in the international arena, but also with how public discourse is developed –which political institutions and instruments will be used– and how the audience deciphers the discourse. It measures the persuasive effects that an interpretation of the international order has on the convergence between power and communication, between tangible assets and emotional elements in the globalization story, and between historical experience and expectations.

Ultimately, this narrative offers new lines of research in the field of propaganda. The use of echo chambers, bubbles, computerized propaganda and other similar techniques have a stronger impact in a situation in which the polarization is more "emotional" than ideological (**Tucker** *et al.*, 2018, p. 19). Del-Fresno and Manfredi point to this cocktail of fiction and emotion in the Catalonian crisis:

> "The emotions and feelings are real. It can also be concluded that the objectives are real, and therefore the shared emotions are important. In other words, emotions and feelings are equated with truth and legality. This is how epistemology is produced, as well as the legality of post-truth" (**Del-Fresno**; **Manfredi-Sánchez**, 2018, p. 1232).

Therefore, to counteract the new propaganda, one cannot design a communication strategy based on reason and sound arguments, but must rewrite the narrative of those who consume such propaganda (**Archetti**, 2018).

4. Critical theory of international communication

Heterodox theories represent the set of ideas and proposals that try to explain the social changes and phenomena that have not fit comfortably into the thoughts of the great authors and debates of the 20th century. However, such developments are now essential for understanding political globalisation, the rise of emerging countries on the international scene, the future of employment in the face of automation, the appearance of feminism (**Nordberg**, 2015), or the fight against climate change. International communication has supported the growth of these theories through Marxism, constructivism and post-colonialism. Modes of economical production of knowledge and its distribution among social classes, as well as systematic inequality and identity, are descriptive and normative areas of study more important than those of State or foreign policy.

Gramsci believes that hegemony makes and produces social consensus through the expansion of certain ideas, which are assumed to be the dominant public opinion. We are indebted to this Italian author for his use of the notion of consent:

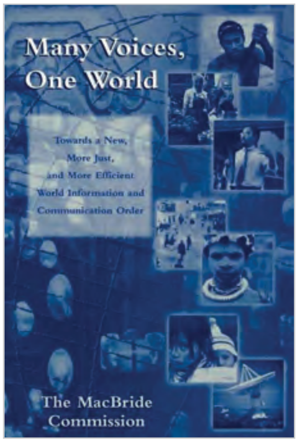
> "The state promotes and requires consent; moreover, it educates consent" (**Gramsci**, 1971, p. 258).

Hegemony controls theoretical advances, provides resources for investigation, and promotes expressions that favour a certain interpretation of events. Robert Cox writes as follows:

> "Theory is always for someone, and always has a purpose. All theories have a perspective that emanates from a position in time and space, specifically in the political and social dimension" (**Cox**, 1981, p. 128).

Heterodoxy has different levels of analysis. The first is the basis of the political economy of communication and the nature of international media; the second deals with the study of social movements and media activism outside the hegemonic agenda (**Carroll**; **Hackett**, 2006).

1) The *International Communication* section of the *International Association for Media and Communication Research* (*IAMCR*) strengthens the lines of investigation of the first: the global vision of the media industry, not only that which is Anglo-Saxon, in addition to political economy and other forms of intercultural expression. The very creation of this section at the 1976 conference, and its subsequent formalization in 1978, coincides with the expansion of cultural studies and the multiplication of epistemologies applicable to the consumption and reception of information. Specifically, it studies the role of the media in the development of foreign policy. The work of **Galtung** and **Ruge** (1965) structures the analyses of the international press and its contribution to the knowledge and judgement of international crises. For Galtung, the media industry contributes to "cultural imperialism" (**Galtung**, 1971, p. 93), in which multinational companies operate as control mechanisms (**Mattelart**, 1979). **Schiller** (1971) is unrivalled in his ideas regarding the communication industry as a tool for the domination of power structures and the promotion of the capitalist economy. Information technology contributes to the achievement of this objective and the establishment of a flow of commercial and communicative relations of domination. This framework of analysis resulted in the work entitled, "International Commission for the Study of Communication Problems; Many Voices, One World", commonly known as the *MacBride Report*, which is the key document among the international communication studies sponsored by *Unesco* for the purpose of breaking the American model of pre-eminence over the industries of culture, entertainment and communication. Thus, a "new order" is being pursued, the so-called *NWICO* (*New World Information and Communication Order*), the ideas of which are being disseminated through the proliferation of *Unesco* chairs (**Cabedoche**, 2013).



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In this intellectual tradition, Alleyne coins the term "imperialism of communication" for the following reason:

> "It involves the domination of news and the channels of international communication by preeminent nations" (**Alleyne**, 1995, p. 58).

Along the same lines, **Mosco** (1996) published the foundations of the political economy of communication, which has opened the door to works that explain how the exercise of power uses its principles and rules to control the information system: technology, market and cultural products serve the elites to impose their message. **Miège** (1989) rejects capitalist creation of cultural elements, which has degraded their critical function. **Bustamante** (2003), **Labio-Bernal** (2006) and **Reig** (2015) bring this approach closer to the industry, markets and information structure of Spain. In Latin America, the *Latin Union of Political Economy of Information, Communication and Culture* (*Ulepicc* in Spanish) is the leader in contributions to critical theory in communication and international culture. The recent work of **Sierra-Caballero** (2019) bears mentioning, as it consolidates the construction of "cognitive capitalism" as the commodification of the social production of knowledge in this school of thought, as well as the contributions of Fernández-Vicente on the commodification of the intimate life, which is overexposed in social networks and urban environments (**Fernández-Vicente**, 2016).

Under this heading, studies have appeared related to the ownership of agencies and communication companies that influence the international section and the understanding of global issues (**Curran** *et al.*, 2015). These relationships between political and economic power are defined as the political economy of communication, which have compiled patterns of research. **Chang** (1998) identified the news patterns of Reuters, as well as the factors and filters that might explain why some countries are part of the global news chain while others are left out. **Wilke**, **Heimprecht**, and **Cohen** (2012) coined the expression, "the geography of news" to explain what is considered international reporting in a comparative study of 17 countries, and how journalists and media editors articulate their reporting criteria. In the study, a distinction is made between first-rate international news (political events, elections, economic facts), which deserve international media attention, and second-rate news typical of pages related to society, tourism or culture. With regard to content analysis, the description of the nature of a conflict transmits to the international audience an image of who is a terrorist, a combatant, a mercenary, or a contractor, whose characteristics are very different from those who take up arms in a war scenario. It suffices to recall the recurring controversy related to using the label of "terrorist group" or "separatist group" when referring to *ETA* in the Anglo-Saxon press (**Holder**, 2005). Both descriptions have distinct connotations.

At the institutional level, the free circulation of cultural goods and services, protection of local industry, types of intellectual property, or technological standards, all appear as issues for debate. Non-western countries argue that this framework perpetuates structural inequality based on the control of channels, approaches and messages. Mattelart considers the way in which the discourse on migratory movements in the Mediterranean is developed (**Mattelart**, 2014). The growth of Chinese business conglomerates reflects the trend of promoting China as a global player, as well as the interpretation of information according to Beijing's point of view, and finally, the analysis itself of current issues with its own particular characteristics (**Thussu**; **De-Burgh**; **Shi**, 2017). Moreover, the televised news revolution of *Al Jazeera* certainly bears mentioning. Its development has built an audience in the Arabic language that aspires to offer high quality news standards and the introduction of new points of view in the genres of opinion and interpretation. The impact of this Qatar-operated television station has been studied as a phenomenon in revolutionizing the media scene in the Arabic language (**Zayani**, 2005; **El-Issawi**, 2016), as a counterbalance to the hegemony of global information (**Seib**, 2008, 2012a), or as embodiment of the Arab Spring uprisings (**Sultan**, 2013). Whatever the case may be, the Qatar network has unified audiences in the Arabic language, connected existing Diasporas, and generated its own agenda of political and social issues in line with allegations made by the researcher **Cherribi** (2017).

In short, **Mattelart** and **Koch** (2016) consider the systematic growth of large channels to be a response to the "Americanization" of audio-visual markets. The list includes satellite ownership, as well as digital information providers and aggregators (**Samei**, 2016). The conglomerate headed by *Russia Today* (**Audinet**, 2018), or Venezuela's *TeleSur* venture (**Lugo-Ocando**, 2017), are instruments of "television diplomacy" used to counteract the hegemony of large western operators. The paradox is obvious. Models created during the fervor of 'Chavism', or in Putin's Russia, do not meet the standards of journalistic ethics of quality, objectivity and freedom of expression. Their close ties to the executive powers are harmful to their reputation. Moreover, when the United States copied this model far from the standards of the *United States Information Agency* (*USIA*) (**Cull**, 2012), it made the same mistakes: the *Al Hurra* project –although alive– is not a journalistic benchmark in the region[3] (**Rugh**, 2017).
https://www.alhurra.com

Regarding this same point, the study of language and the international scene can be included. Bially calls this phenomenon the "representational force" (**Bially**, 2005), which foreshadows the decision-making process in the international sphere. It results from events on the international stage, the selection of leaders and spokespersons, and the choice of "humanitarian" conflicts, or those that cannot be attended due to "national interests". The novelty lies in the use of fiction to achieve these political goals. Saunders states that "geopolitical television" has constructed a cognitive map based on aesthetic values far from the monopoly of national television programming, so that new ways of seeing and learning about international politics are being produced (**Saunders**, 2019, p. 693). The aesthetic power of television fiction gives cultural meaning and context to current affairs news, while the audience naturally makes an association between reality and fiction. In a global market of content and platforms, consumption is not associated with a national setting, but instead transforms the entertainment industry (**Cunningham**; **Craig**, 2016).

Finally, the contributions of **Fuchs** (2018) should be highlighted. The author argues that *Twitter* has promoted social polarisation and the rise of political demagogy based on emotion and nationalist sentiments. Thus, the Brexit situation, as well as Donald Trump's presidency, are part of the same phenomenon of the intensive use of social networks to achieve nationalist political objectives regardless of social problems (climate change, unemployment, etc.). This trend toward using digital communication to control behaviour, and for social purposes, is worrisome because it affects public policy and individual freedom (**Zuboff**, 2019).

2) The second level brings together the alternative modes and uses of international communication. Social movements and global protests appeared in academic literature in the mid-1990s. After September 11, 2001, anti-war actions and anti-neoliberal interpretations of protest have been on the rise. The demonstrations in Seattle and Genoa, the *March 15th* movement, the *#Yosoy132* show of defiance, or *Occupy Wall Street*, expanded the repertory of international protests and provided the basis for the theoretical approach of "mass self-communication" (**Castells**, 2008). It is no longer enough to have a vision of left/right or workers/employers, but instead we are witnessing the emergence of moral and post-material demands linked to individual and collective identity. It is not possible to establish categories after analysing the events in Spain, Chile, Catalonia, Hong Kong or Ecuador, yet patterns of behaviour that utilize protest in order to create images that promote political change can be inferred. The repertory of protests of diverse social origins connect with

political information and the global scene (**Sampedro**; **Martínez-Avidad**, 2018). The management of social networks and their specific techniques (memes, videos, *Twitter* campaigns) are being studied in line with the proposals of **Melucci** (1985), which are as follows: the development of symbols and social relations has replaced the material production of protest, eliminating the boundary between direct activism and activism of a media-oriented nature.

Within this dynamic, it is worth highlighting the growing interest in political movements that have modified the agenda with actions that have had an impact on the international audience, despite the inequality of capabilities (access to large international media or campaign financing). Therefore, symbols that give anthropomorphic meaning to political demands (**De-Andrés**; **Nos-Aldás**; **García-Matilla**, 2016) are being promoted. The names of Greta Thunberg, Aaron Swartz and Audrey Tang have made the number of references greater.

International symbolism offers value that supports a cause (independence, climate change, human rights), and unifies the discourse when facing distinct audiences. Symbolic meanings have been fed by the global culture of social networks, which have allowed for the rapid and easy accumulation of symbolic value (hashtags, icons) that can be published, promoted or shared on worldwide platforms. Low-budget campaigns compete with large advertisers thanks to a less rigid, more proactive, and inexpensive organisation in terms of individual commitment. Collective action obtains immediate results, strengthening the sense of community, whether or not it breaks its own information bubble. Linking the channel and the message reduces production costs as there are no differences between senders and receivers. Each participant has the same level of access to the networks, so they become potential message creators or re-senders of successful viral content. The quality of the video or meme is irrelevant, since commitment takes precedence over the professionalization of journalistic or audio-visual production.

The symbolic communication of protest generates emotional closeness and a sense of community away from conventional political institutions (parliament, political parties or trade unions). The causes bring together individual interests, accelerate cognitive change, and erode trust in institutions. Impact is measured by the ability to influence the agenda rather than by the achievement of specific objectives (a referendum, a legislative change, a resignation). In the political arena, the "secessionist world of Catalonia" stands out (**Ordeix**; **Ginesta**, 2014, p. 6), which uses #CataloniaWins, #FreedomForCatalonia, and #CatalansForYes to spread its messages on *Twitter*. Supporters of Scottish independence in 2014 met on *Twitter* with users such as @wearenational or @celebsforindy. Global companies have taken up the discourse of political causes and have developed purposeful or commitment-oriented business strategies (**Matos**; **Vinuales**; **Sheinin**, 2017).

It can be concluded that these heterodox ideas, now on the side-lines, are on the road to occupying the centre stage of academic research. The new political geographies, the question of individual and collective identity, the feminist movement, or the symbolism of causes (climate change, freedom in China or Egypt) take up more space in congresses, journals and centres of analysis. The basic foundations of state and nation seem insufficient when it comes to cataloguing and examining alternative international communication channels.

6. New paths of research

International communication has become a discipline with growing impact on social science, yet it still occupies a position halfway between international relations and social communication. The new political consideration of globalisation has accelerated this process to the extent to which factors of change have been linked to the production of messages, distribution through various channels, and the consumption of content for an international audience. At this point in time, it is one of the most vibrant and transdisciplinary fields of study. From political science to economics, the rapid transformation of international communication has generated an important academic corpus with regard to instruments for the use of power, influence and war. International studies have included the theories and tools of communication, and the result has been the development of new lines of research. In recent times, a review of the different methodological and analytical approaches to the phenomenon of disinformation has been enough to understand the new international reality. In addition to those from other branches of life sciences, all social scientists document, study and examine the relationship between truth, falsehood and uncertainty in the various domains of public life (**Fletcher**; **Schwartz**; **Wong**, 2019).

The balance is positive for studies that build theory from practice, or in other words, that need empirical force to consolidate working hypotheses, methodologies or terminological specifications. There is an extensive academic bibliography, yet with a serious deficit: in university curricula, the subject still must struggle to be considered basic or core, so there are few monographs that facilitate progress in the systematic study of the discipline. Moreover, the subject is not consolidated in the Anglo-Saxon world, but instead is an area destined for postgraduate studies.

Nevertheless, research work in international communication seems to be productive and open to a crossover of study frameworks and subjects. Below I have outlined five major areas that could be used to structure an agenda and serve as a guide for the coming years. They are as follows:

- Application of interdisciplinary methods to redefine political globalisation
- Nature of the international journalist
- Hybridization of the political system and the new populist era
- Information structure, and
- The old new propaganda; the cutting-edge of international communication.

Let us look at each one.

1) Firstly, interdisciplinarity consists of the ability to use different methodologies and theoretical foundations in order to explain an increasingly complex reality. International communication will assist in establishing epistemological and normative pluralism as a native element of globalisation. It is not a question of creating a new academic discipline with requisite standards and its own jargon, but it might serve instead as a guideline for those that currently exist. At this point, we should mention the need to promote a transfer of knowledge among professionals and academics for complex disciplines such as climate change, worldwide public health, or migration, which are realities that will shape the international scenario in this century. Through international communication, meanings are negotiated, power is structured, and the course of events is understood. **Waisbord's** work (2019) lays the foundations for this methodological and theoretical renewal.

2) The second area of study is the very nature of the international journalist, the professional who reports, interprets and gives their opinion on events of a global nature for a specific, delimited, and often local audience. The crisis of journalistic companies has led to a systematic reduction of the networks of professionals and collaborators abroad, as this service is hard to justify due to its declining benefits and the fact that it is no longer unique. The decline of the correspondent should be systematically studied, both as an indicator of the interest (or lack thereof) among the audience for what happens in a country as a subject of the profession's transformation outside the logic of the newsrooms. At this time of ongoing disinformation, the departure of the correspondent is not good news: there is no longer anyone at the actual destination to contrast, question and explain an international context. The future of the journalist or special reporter should be linked to public demand. There is no media literacy without an international component of the state of the world, international political relations, or the position of a country in the face of conflict. A large amount of fake news and disinformation campaigns feed the partisan view, thereby fuelling stereotypes and rumours. Benkler, Faris and Roberts have mapped out the polarisation networks in American democracy and categorised these actors as "fake news entrepreneurs and political clickbait makers" (**Benkler**; **Faris**; **Roberts**, 2017, p. 9). The user as both producer and consumer of disinformation products and services is part of the value chain. Stroud, Thorson and Young make sense of the phenomenon with the following statement:

> "The leverage of social identity would be more effective at the point of distribution rather than the point of reception by the audience" (**Stroud**; **Thorson**; **Young**, 2017, p. 46);

Displaying our identity on social networks, and above all our disagreement with traditional media, lengthens the life cycle of disinformation. There is no longer any trace of the journalistic profession.

3) The third area is consolidation of the populist realm, which uses emotional roots in developing strong leadership. As a result, aggressive rhetoric and discursive instability emerge, or in other words, a "time of hyperbole" in political discourse, using the wise metaphor of **Gallardo-Paúls** (2018). Electoral campaigns, social protests, and political decisions all contribute to models of public leadership based on the cult of personality and celebrity (**Wheeler**, 2013). From an international perspective, it should be pointed out that the populist model offers two ways in which it can be studied. On one hand, there is the use of international affairs to strengthen national policies by presenting economic data, the recovery of historical memory, and the reinforcement of a culture of security based on the idea of allies/enemies. On the other hand, hyper-leadership contributes to the de-institutionalisation and undermines the credibility of political entities. The establishment is composed of diplomats, military officers and journalists, yet they do not represent the "people" in a phenomenon that is already global: "the steady erosion of independent journalism and the deterioration of democratic politics" (**Crilley**; **Gillespie**, 2019, p. 273). Donald Trump and Boris Johnson are the preferred objects of study in this phenomenon, but the contribution of other leaders such as López Obrador, Barack Obama, Enmanuel Macron, and Justin Trudeau to this overexposed political model of leadership should not be overlooked. Pop politics and entertainment have found a comfortable position in the government communication apparatus that uses public resources to decisively influence the political and social structure (**Amado**, 2014).

4) The fourth area of future research would be a review of the global information structures in the media system, a kind of mapping of the political, economic and social powers. Business groups, the role of global cities, lobbies, the concentration of ownership, the impact of technology on industry, or the situation of independent journalism are all factors in understanding international communication. The digital geography of power will also be an instrument of authority when promoting the emergence of technological operators, start-ups or telecommunications companies with global ambitions. Everything points to the fact that we are moving toward a multipolar system of spheres of influence with their own characteristics in the United States, the European Union, and China. It remains to be seen which models will be developed in Russia, Turkey, Qatar or Iran. The regulation of issues such as privacy, media ownership, data protection, transparency, or governance have already appeared in congresses and specialised journals. It will also be relevant to discover the real impact of social networks on the resolution of international political conflicts. Reports on the "*CNN* effect", or that of "*Al Jazeera*", diminish in the face of studies on the value of *Twitter*, *Instagram*, or whatever else may emerge. The issue of network neutrality will ultimately grow when faced with globalisation of the processes of digitized production, distribution of content, and liberalisation of digital services **(Pickard**; **Berman**, 2019). Neutrality affects the good governance of international communication, reduces arbitrariness in prior censorship, and promotes inter-state as well as supra-state instruments of cooperation.

5) Finally, the fifth area is propaganda, which provides an endless source of subjects and possibilities for research projects. Information disorder allows for the defence of interests with communicative instruments now labelled as post-truth, post-factual, or something similar (**Mearsheimer**, 2011; **Amado**, 2016; **Bennett**; **Livingston**, 2018). With both new and old techniques, political campaigns that use active cognitive manipulation (e.g. exposure to false data, the *Cambridge Analytica* scandal), as well as passive manipulation (algorithm black box, bubbles, echo chambers) are now being generated. There has been less impact than dreamed of by writers of totalitarian-style literature, but there is evidence that

> "when people are flooded with information, they perceive the information that matches their interests as being of higher quality, and it is more likely to be consumed" (**Stroud**; **Thorson**; **Young**, 2017, p. 46).

This challenge forces democracies to deploy appropriate public policies to counteract the effects of manipulation in the political and electoral system, as well as in its priorities of foreign policy. Such a decision requires sound ethical consideration in order to define the challenge to be addressed, and how to address it (**Bjola**, 2018).

It seems likely that technology will change the dynamics and scope of the issue as the cost of production continues to experience decreasing marginal expense, with special mention of bots and trolls (**Bradshaw**; **Howard**, 2017), artificial intelligence (**Ufarte-Ruiz**; **Manfredi-Sánchez**, 2019), the production of automated texts, and low cost fake videos (**Bullock**; **Luengo-Oroz**, 2019). **Adler** (2018, p. 13) has contributed to the theoretical groundwork and introduced the figure of the math keeper as the one who controls the algorithms that draw out knowledge regarding international reality. After the gatekeeper and info keeper, this new element analyses the automation of data and decisions. On the cultural side, fiction has helped to disseminate concepts of international relations, in spite of how superficial or imprecise they might be. In particular, the semiotics of walls and borders that "Game of Thrones" has popularized help distinguish a barbaric "they" from which to safeguard oneself. Like **Lacoste** (2009), geopolitical communication is an instrument of power for promoting conflict, imposing peace, or fabricating nations, because it connects maps, histories or border controls. Whether through platforms or state communication systems, the dissemination of content under the label of a documentary film "based on real events" and other similar labels builds an emotional narrative that seeks the identification of audiences with a pool of social values together with an alteration of judgment. Finally, the creation of propaganda is based on the management of emotions. Emotion constitutes an ethos of authority that challenges the closed structures of the State, which cannot manage the feelings of its population expressed in social networks (**Zaharna**; **Uysal**, 2016).

"Emotion constitutes an ethos of authority that challenges the closed structures of the State, which cannot manage the feelings of its population expressed in social networks"

In short, the new era of political globalization revolves around international communication structures and policies that are consolidated in social science studies. This occurs even more so when new actors emerge who are willing to innovate in the design and execution of communicative power in such a way that they transform the methods, concepts and tools of international communication. We are at the very beginning of a research discipline that has been called to participate in the explanation of numerous phenomena. Therefore, it will be exciting to talk about these issues in the coming years.

7. Notes

1. In memoriam

On January 15, 2020, María-Teresa La-Porte, pioneer in Spain of international and development communication, died. Born in Madrid in 1961, she was a professor at the *Faculty of Communication* of the *University of Navarra*, where she was the first woman to practice as dean.

2. Günter Schabowski, member of the *Socialist Unity Party* of the German Democratic Republic, became world famous in November 1989 when he gave a slightly wrong, improvised answer in response to a question at a press conference, raising popular expectations much faster than the government had planned, and as a result, massive crowds gathered on that same night at the Berlin Wall, forcing it open after 28 years.

Shortly afterward, the entire German internal border was dismantled.

3. *Al Hurra* has not been able to impact the media agenda in the Arabic language. The project is alive, like so many others, because it has funding from the *US State Department*, but it is not a reference television from the journalistic point of view.

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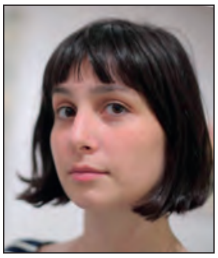

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Resumen

Este trabajo presenta un análisis de la bibliografía existente sobre redes sociales en Iberoamérica, con el objetivo de organizar las principales temáticas cubiertas, relevar sus hallazgos, y proponer caminos futuros de investigación. Las cuatro áreas temáticas que se destacan son: comunicación política y gobierno electrónico; periodismo y medios tradicionales; grupos sociales (incluyendo adolescentes y jóvenes, marginados, mujeres, empresarios e *influencers*, estudiantes, y adultos mayores) y áreas de uso (comercio, turismo, educación, salud, comunicación profesional); y participación política y cívica. Revisamos la bibliografía desde la perspectiva de las plataformas (*Twitter*, *Facebook, WhatsApp*, *Instagram*, *YouTube*, y *Snapchat*) y desde las regiones geográficas y países que componen Iberoamérica, para observar similitudes y diferencias. Concluimos con la mención y el análisis de los dos patrones más sobresalientes de las investigaciones: 1) tendencia a esperar por parte de las redes un potencial transformador que no necesariamente se comprueba, sobre todo para el caso de la comunicación política y el periodismo; 2) capacidad transformadora de las redes para sus aplicaciones en las áreas turismo, educación y salud, donde los medios tradicionales no se han caracterizado por tener un rol destacado. Finalmente, proponemos algunos caminos para estudios futuros, entre ellos la realización de trabajos comparativos, la incorporación de miradas relacionales en el tratamiento de las redes, la suma de metodologías mixtas, experimentales y computacionales, y la consideración, desde el diseño de investigación, de la aceleración del cambio tecnológico y de la necesidad de generar preguntas y conceptualizaciones capaces de sobrevivir al paso del tiempo.

Palabras clave

Redes sociales; Medios sociales; Iberoamérica; América Latina; Comunicación política; Periodismo; Participación; Jóvenes y adolescentes; Mujeres; Adultos mayores; Comercio; Salud; Educación; Turismo; *Facebook*; *Twitter*; *WhatsApp*; *Instagram*; Artículo de revisión.

Abstract

This paper presents an analysis of the existing literature on social networks in Ibero-America, with the objective of organizing the main topics covered, highlighting findings, and proposing future research paths. The four thematic areas that stand out are political communication and electronic government; journalism and traditional media; social groups (including adolescents and young people, those marginalized, women, entrepreneurs and influencers, students, and older adults) and areas of use (including commerce, tourism, education, health, professional communication); and political and civic participation. In addition, we review the literature from the perspective of the platforms (*Twitter*, *Facebook*, *WhatsApp*, *Instagram*, *YouTube*, and *Snapchat*) and from the geographical regions and countries that make up Ibero-America, to observe similarities and differences. We conclude with the mention and analysis of the two most outstanding patterns of the studies examined: 1) a tendency to expect from the networks a transformative potential that is not necessarily proven, especially in the case of political communication and journalism; 2) transformative capacity of networks in the areas of tourism, education and health, in which traditional media have not been characterized by having a prominent role. Finally, we propose some paths for future studies, among them the pursuit of comparative works, the incorporation of relational perspectives in the treatment of networks, the addition of mixed, experimental and computational methodologies, and the consideration, from the research design standpoint, of the acceleration of technological change and the need to generate questions and conceptualizations capable of surviving the passage of time.

Keywords

Social media; Social networks; Ibero America; Latin America; Political communication; Journalism; Participation; Youth; Adolescence; Women; Older adults; Commerce; Health; Education; Tourism; *Facebook*; *Twitter*; *WhatsApp*; *Instagram*; Review article.

1. Introducción

Las redes sociales son ampliamente utilizadas en Iberoamérica. De acuerdo con el informe "Global digital yearbook 2019", producido por *Hootsuite* y *We Are Social* (2019), el 26%[1] de los países que conforman dicha región tienen una penetración de redes sociales de más del 70% (Argentina, Chile, Costa Rica, Ecuador, Perú, Uruguay). Más de un 52% tiene una penetración que va del 50% al 69% (Andorra, Bolivia, Brasil, Colombia, Cuba, El Salvador, España, México, Panamá, Paraguay, Portugal, República Dominicana). Es por esto que, a pesar de que existe una predominancia de bibliografía sobre redes enfocada en el Norte Global, sobre todo en los casos de Estados Unidos y Norte de Europa, la investigación sobre el tema en Iberoamérica es creciente y tiene razón de ser.

Desde esa perspectiva, este artículo busca organizar, condensar y caracterizar lo que se conoce hasta ahora sobre las redes sociales en Iberoamérica, así como proponer algunas líneas para continuar la investigación en curso. Para ello se analizan los hallazgos de 160 fuentes, en su mayoría de tipo académico, con algunos casos de literatura gris (provenientes de organismos internacionales, *think tanks*, o empresas dedicadas a la investigación en medios).

Después de revisar la bibliografía relevante, encontramos dos patrones sobresalientes. Por un lado, notamos una tendencia a esperar por parte de las redes un potencial transformador que no necesariamente se comprueba, sobre todo para el caso de la comunicación política, el gobierno electrónico, y el periodismo. Por el otro, observamos evidencia de la capacidad transformadora de las redes para sus aplicaciones en las áreas de turismo, educación y salud, donde los medios tradicionales no han tenido un rol necesariamente destacado. Finalmente, sugerimos una serie de caminos para investigaciones futuras. Entre ellos se incluye la realización de trabajos comparativos, la incorporación de miradas relacionales en el tratamiento de las redes, y la suma de metodologías experimentales y computacionales, entre otras recomendaciones.

> Hay una tendencia a esperar un potencial transformador de las redes que no necesariamente se comprueba, sobre todo en comunicación política, gobierno electrónico y periodismo

El artículo procede del siguiente modo. Las primeras cuatro secciones presentan las temáticas más tratadas por la bibliografía:

- comunicación política y gobierno electrónico;
- periodismo y medios tradicionales;
- grupos sociales y áreas de uso;
- participación política y cívica.

Luego se revisan trabajos enfocados tanto en plataformas como en regiones, desde perspectivas comparativas. Por último, se concluye con un análisis de los patrones sobresalientes de los estudios revisados, y con una propuesta para investigaciones futuras.

2. Comunicación política y gobierno electrónico

Un área que la bibliografía sobre redes sociales en Iberoamérica ha estudiado predominantemente es el de la comunicación política y el gobierno electrónico. Dentro de esta área, un tema que atrae considerable atención es el uso de las redes en y para las campañas electorales (**Abejón-Mendoza**; **Sastre-Asensio**; **Linares-Rodríguez**, 2012; **Briceño-Romero** *et al.*, 2019; **Castillejo**; **Semova**, 2012; **Fenoll**; **Cárcamo-Ulloa**; **Sáez-Trumpe**, 2018; **García**; **García-Casado**; **Varona-Aramburu**, 2012; **Miquel-Segarra**; **Alonso-Muñoz**; **Marcos-García**, 2017; **Senmartin**, 2014; **Zugasti**; **Sabés**, 2015). **Cárdenas**, **Ballesteros** y **Jara** (2017) comparan la bibliografía existente sobre redes sociales y campañas electorales para los casos de Chile, España y México, y concluyen que

> "el uso de redes sociales en las campañas electorales permanece lejos de elementos horizontales y conversación y participación en el contexto iberoamericano" (p. 28).

Zugasti y **Sabés** (2015) realizan un análisis de los contenidos de *Twitter* publicados por los principales candidatos en las elecciones presidenciales españolas de 2011, y hallan

> "un empleo preferente de *Twitter* como si de un tablón de anuncios o altavoz de sus actos electorales se tratara" (p. 174).

En general, estos textos se preguntan por la capacidad de las redes de alterar o no las formas en que las instituciones de la vida pública generan lazos de información, comunicación e interacción con la ciudadanía o el electorado.

> En comunicación política, un tema que atrae considerable atención es el uso de las redes en y para las campañas electorales

Algunos trabajos se han enfocado en las redes en tanto que medios tecnológicos (**Filer**; **Fredheim**, 2017; **Santana**; **Huerta-Cánepa**, 2019) y otros han enfatizado su contenido (**Harlow**, 2019; **Ortellado**; **Ribeiro**, 2018). En términos de medios tecnológicos, **García**, **García-Casado** y **Varona-Aramburu** (2012) estudian el caso de las elecciones españolas de 2011 y notan, a diferencia de los trabajos previos mencionados, un uso de las redes sociales asociado al de los cibermedios, caracterizados por

> "instantaneidad o simultaneidad, continuidad, interactividad, 'multimedialidad', versatilidad, transnacionalidad, transtemporalidad e hipertextualidad" (p. 15),

y por

> "mediar entre los hechos y las audiencias" (p. 27).

En cuanto a contenido, **Suau-Gomila** y **Pont-Sorribes** (2019) realizan un análisis de contenido de los tuits de los partidos *Podemos* y *Ciudadanos*, y de los líderes Pablo Iglesias y Albert Rivera, en las elecciones españolas de 2016. Los autores hallan que

> "los tuits que se han hecho más virales son los de contra campaña y auto promoción" (p. 1136),

lo cual indicaría que

> "no fomentan la deliberación, ni promueven la participación democrática" (p. 1136);

también observan que

> "los líderes políticos consiguen difundir más sus tuits que los partidos políticos (..) [y] buscan generar un vínculo de proximidad con los ciudadanos" (p. 1136).

A esto se suma el interés por comprender el uso y la incidencia de las redes sociales en ciertos procesos políticos. **Carrasco-Polaino**; **Villar-Cirujano** y **Tejedor-Fuentes** (2018) realizan un análisis de contenido de *Twitter* alrededor del referéndum catalán de 2017, y afirman que

> "las entidades soberanistas, y especialmente las asociaciones, tienen una enorme capacidad para difundir sus mensajes. Son más eficaces a la hora de generar información y provocar interacciones" (p. 82) con los usuarios.

Deltell, **Claes** y **Osteso** (2013a) han incluso investigado cómo las redes pueden predecir tendencias electorales. A través de su análisis cuantitativo y cualitativo de tuits producidos durante las elecciones andaluzas de 2012, crean un modelo con menos errores de predicción que encuestas paralelas, y concluyen que

> "*Twitter* refleja la tendencia y el sentimiento políticos de la sociedad" (p. 14).

Otro tópico que se destaca en este rubro es el del gobierno electrónico. Así, proyectos existentes han estudiado cómo distintos actores políticos y públicos utilizan las redes sociales como canales de promoción, de comunicación de políticas, y como espacio de interacción con los ciudadanos (**Aguirre-Sala**, 2014). Entre los actores bajo análisis se incluyen gobiernos locales (**Gálvez-Rodríguez** *et al.*, 2018; **Riorda**; **Conrero**, 2017) y nacionales (**Dinneen**, 2012; **Picazo-Vela**; **Fernández-Haddad**; **Luna-Reyes**, 2016). **López-Alonso** y **Moreno-López** (2019) examinan cómo los municipios españoles en zonas rurales implementan y hacen uso de la llamada "comunicación 2.0" mediante las redes sociales. Hallan que a pesar del esfuerzo de los municipios por adoptar redes sociales, existen diferencias importantes dependientes del tamaño del municipio. Aquellos más pequeños muestran

> "una falta de digitalización desde el momento en que no tienen un website o correo electrónico público operando en otras plataformas online"[2] (p. 93).

Otros actores estudiados son los funcionarios públicos y políticos (**López-de-Ayala**; **Catalina-García**; **Fernández-Fernández**, 2016; **Segado-Boj**; **Díaz-Campo**; **Lloves-Sobrado**, 2015; **Selva-Ruiz**; **Caro-Castaño**, 2017; **Welp**; **Ruth**, 2017; **Zulianello**; **Albertini**; **Ceccobelli**, 2018), y los líderes de opinión (**Deltell** *et al.*, 2013b). La bibliografía sobre funcionarios políticos ha mostrado especial interés por comprender el discurso populista (**Kioupkiolis**; **Pérez**, 2019; **Salgado**; **Stavrakakis**, 2019) y su aparición y continuidad en redes. Así, **Waisbord** y **Amado** (2017) examinan el uso de *Twitter* que hacen presidentes latinoamericanos, algunos considerados populistas y otros no. Detectan que la comunicación de aquellos populistas sigue un modelo tipo *broadcast*, con poca tendencia hacia la interactividad con el público. Por su parte, **Salgado** (2019) examina el caso de Portugal como uno supuestamente exento de rasgos populistas, y observa que

> "los estilos y discursos populistas fueron más comunes en los comentarios de los ciudadanos y particularmente en la página de extrema derecha del PNR [Partido Nacional Renovador], pero en términos generales no fueron recurrentes"[2] (p. 63).

La autora nota que

> "de no ser por las redes sociales (*Facebook*) y los espacios para los comentarios de los lectores, la visibilidad del populismo sería casi inexistente"[2] (p. 63).

En términos de actores, se ha estudiado el uso de las redes por parte de los parlamentos (**Giraldo-Luque**; **Villegas-Simón**; **Durán-Becerra**, 2017). **Rodríguez-Andrés** y **Álvarez-Sabalegui** (2018) realizan un meta-análisis de la bibliografía sobre los 17 parlamentos autonómicos de España, y lo complementan con un monitoreo de las redes de cada uno de ellos. Encuentran que

> "la mayoría de los perfiles siguen siendo usados de forma prioritaria como plataformas de difusión unidireccional de información" (p. 1002) y "la comunidad con la que cuentan los parlamentos autonómicos en las redes sigue siendo muy reducida (..) y, además, poco participativa" (p. 1002).

La bibliografía relevante ha estudiado también qué tipo de información política circula en redes (**Casero-Ripollés**, 2018; **Wainberg**; **Müller**, 2017) y qué impacto tiene esto sobre la representación de los temas y sobre su consumo (**Machado** *et al.*, 2018). **López-Rabadán** y **Doménech-Fabregat** (2018) realizan un análisis de contenido de posteos en *Instagram* durante la intensificación del proceso independentista catalán, entre 2017-2018, y notan que

> "si bien los líderes y los partidos han avanzado en la normalización de su uso político [de *Instagram*], todavía no presenta un patrón consolidado" (p. 1026), con "registros y estilos comunicativos, [que van] desde una (auto) presentación básica de los líderes hacia una espectacularización más intensa" (p. 1026).

Por último, algunos autores han investigado cómo la comunicación política se transforma de los medios tradicionales a las redes sociales (**Ruiz-Del-Olmo**; **Bustos-Díaz**, 2016).

3. Periodismo y medios tradicionales

El segundo tema que la bibliografía sobre redes sociales en Iberoamérica ha examinado considerablemente es la relación con el periodismo y los medios tradicionales. Los textos existentes han investigado, en primer lugar, cómo las organizaciones mediáticas (**García-De-Torres** *et al.*, 2011; **Gómez-Domínguez**; **Besalú-Casademont**; **Guerrero-Solé**, 2016; **Said-Hung** *et al.*, 2013) y los periodistas (**Jerónimo**; **Duarte**, 2010; **González-Molina**; **Ramos-del-Cano**, 2013; **Mourão**, 2016) hacen uso de las redes como fuentes informativas (**Cobos**, 2010), como herramientas de comunicación con sus públicos (**Said-Hung** *et al.*, 2014), y como forma de producir medios alternativos (**Harlow**, 2017).

El interés de fondo que une estos textos es similar al de la sección previa: la pregunta por la continuidad o el cambio en las rutinas asociadas con los medios tradicionales, tanto desde el lado de la producción como del consumo.

En cuanto a las organizaciones mediáticas, **García-De-Torres** *et al.* (2011) examinan cómo 27 medios de Argentina, Colombia, México, Perú, Portugal, España y Venezuela hacen uso de *Twitter* y *Facebook*, y observan que ambas plataformas

> "se han consolidado, en términos cualitativos, como fuente informativa",

y son valoradas por los medios

> "en alta medida [por] su capacidad para proporcionar alertas y exclusivas" (2011b, p. 618).

Requejo-Alemán y **Herrera-Damas** (2011), en cambio, estudian los contenidos publicados en *Twitter* por cinco medios generalistas de España (*El país*, *ABC*, *El mundo*, *La razón* y *Público*), y descubren que el uso es sobre todo informacional y no tanto conversacional. Los autores indican que

> "los administradores de las cuentas de los diarios analizados parecen haber transferido mecánicamente a *Twitter* su propio rol en los medios tradicionales" (2011, p. 177).

Varios estudios se han enfocado en la radio (**Díaz-Del-Campo**; **Segado-Boj**, 2013; **Gutiérrez-García** *et al.*, 2014; **Peña-Jiménez**; **Pascual**, 2013; **Piñeiro-Otero**, 2015). Así, **Ramos-del-Cano** y **González-Molina** (2014) observan que

> "*Facebook* y *Twitter* son las redes sociales en las que las radios españolas y portuguesas tienen presencia de manera mayoritaria" (p. 66),

y que

> "España contempla un uso más equilibrado de las funciones informativas y promocionales, mientras que Portugal apuesta claramente por la información" (p. 66).

Otras investigaciones se han focalizado en la prensa y la televisión (**Gómez-Domínguez**; **Besalú-Casademont**; **Guerrero-Solé**, 2016; **Marta-Lazo**; **García-Idiakez**, 2014; **Puebla-Martínez**; **Silva**, 2015; **Raimondo-Anselmino**; **Sambrana**; **Cardoso**, 2017). Así, **Gómez-Domínguez**, **Besalú-Casademont** y **Guerrero-Solé** (2016) estudian la actividad de tres programas de televisión española (*BBC*, *RTVE* y *CCMA*) en *Twitter* y notan una

> "poca capacidad mostrada por los servicios públicos multimedia para crear un debate público" (p. 392).

En relación con los periodistas, **Saldaña** *et al.* (2017) indican que *Twitter* es la plataforma más usada por los periodistas en América Latina con fines periodísticos, a pesar de la gran popularidad de *Facebook* en la región. Así, observan

> "un cambio en la práctica del periodismo donde las redes sociales se están convirtiendo en caminos legitimados de fuentes y reportaje"[2] (2016, p. 17)

con los periodistas exhibiendo una apertura hacia el periodismo participativo. Al mismo tiempo, **Varona-Aramburu** y **Sánchez-Muñoz** (2016) analizan la desconfianza respecto de las redes sociales como fuentes, y demuestran que

> "los periodistas españoles no consideran recomendable el uso de las redes sociales como fuentes de información periodística" (2016, p. 801).

Las referencias hasta aquí mencionadas se vinculan con el uso de las redes como fuentes informativas y/o herramientas de comunicación. **Harlow** (2017) suma el uso de las redes sociales como forma alternativa de producción de noticias. La autora realiza un estudio sobre cuatro proyectos de medios en El Salvador con el objetivo ulterior de comprender el potencial rol liberador de la tecnología en la constitución de medios alternativos.

La bibliografía enfocada en periodismo y medios tradicionales también se ha preguntado por la interacción entre los usuarios y los medios tradicionales a través de redes. Algunos han considerado la construcción de perfiles de diarios tradicionales o programas de televisión en redes como *Facebook* o *Twitter*, desde la mirada de los medios tradicionales (**Merino-Bobillo**; **Lloves-Sobrado**; **Pérez-Guerrero**, 2013; **Ramos-del-Cano**, 2013). **Gallardo-Camacho**, **Lavín** y **Fernández-García** (2016) estudian programas de televisión deportivos y su presencia en *Twitter*, y notan que

> La bibliografía también se ha preguntado por la interacción entre los usuarios y los medios tradicionales a través de redes

> "las emisiones deportivas generan un alto nivel de conversaciones y aseguran porcentualmente una participación más elevada que el resto de programas" (p. 283).

Otros estudios se han enfocado en cambio en la perspectiva de los usuarios (**Silva**; **Colussi**; **Rocha**, 2018; **Masip** *et al.*, 2015; **Salgado**; **Bobba**, 2019; **Da-Silva** *et al.*, 2017; **Tur-Viñes**; **Rodríguez-Ferrándiz**, 2014). **Masip** *et al.* (2015) estudian el "menú digital de los cibernautas españoles" (p. 368) y encuentran que

> "la segunda actividad preferida en las redes sociales es acceder a noticias de actualidad" (p. 368).

En ese sentido, notan que las redes provocan

> "el acceso a noticias de medios que no forman parte de su dieta informativa habitual, e incluso de medios ideológicamente no afines, lo que significa un incremento del pluralismo informativo en la dieta de los internautas" (p. 369).

Otra serie de trabajos se ha enfocado en la existencia, circulación y control de información falsa (**Bandeira** *et al.*, 2019; **Newman** *et al.*, 2019). **Bandeira** y **Braga** (2019) detectan que, en las elecciones presidenciales de Brasil 2018,

> "la desinformación y las narrativas falsas se convirtieron en algo a lo que los candidatos, los medios, y los votantes tuvieron que reaccionar"[2] (p. 15).

Bernal-Triviño y **Clares-Gavilán** (2019) estudian el caso de la plataforma de *fact-checking* española *Maldita.es*, y hallan que, desde el punto de vista de la producción del chequeo, el teléfono

> "móvil y [las] redes sociales son la parte indispensable para el funcionamiento del proyecto" (p. 6).

Desde el punto de vista de la recepción, **Catalina-García**, **Sousa** y **Silva-Sousa** (2019) investigan las actitudes de estudiantes universitarios en Brasil, España y Portugal respecto de las noticias falsas, y afirman que

> "la mayoría de los jóvenes de los tres países se considera bien capacitados, pero no totalmente, para detectar noticias falsas" (p. 108).

Otros temas tratados por la bibliografía sobre redes sociales en Iberoamérica incluyen el consumo incidental de noticias (**Boczkowski**; **Mitchelstein**; **Matassi**, 2018), la conformación de repertorios de medios tradicionales y de redes (**Serrano-Puche**; **Fernández**; **Rodríguez-Virgili**, 2018), el sensacionalismo en el periodismo tradicional y de redes sociales (**Kilgo** *et al.*, 2018), y la capacidad de *agenda-setting* de los medios tradicionales y las redes (**Valenzuela**; **Puente**; **Flores**, 2017). Por ejemplo, **Mitchelstein** *et al*., (2018) estudian la capacidad de *engagement* de los contenidos publicados por ocho diarios argentinos en *Facebook* y *Twitter*. Demuestran que si bien la agenda noticiosa es predominantemente sobre asuntos no-públicos, la agenda de las audiencias muestra mayor interés por asuntos públicos. Esto, según los autores, refleja

> "un uso de redes para el compromiso cívico y la construcción de capital social, es decir, para la relación con contactos a partir de temas políticos y sociales y no solo individuales" (p. 168).

4. Grupos sociales y áreas de uso

Otro conjunto de textos sobre redes sociales en Iberoamérica se ha enfocado en el uso de redes por parte de grupos sociales relevantes, y también en ciertas áreas de aplicación e injerencia de las redes. Hay al menos siete grupos sociales que se destacan: adolescentes y jóvenes, marginados, mujeres, empresarios, *influencers*, estudiantes, y adultos mayores. Y al menos cinco áreas exploradas: comercio, turismo, educación, salud y comunicación profesional. El interés a través de estos textos parece ser el de comprender las particularidades de grupos sociales en relación con las redes, y el de entender la diversidad de los usos y aplicaciones de las redes en distintas áreas, sobre todo a nivel organizacional e institucional.

> Se ha estudiado el uso de redes sociales por al menos siete grupos sociales: adolescentes y jóvenes, marginados, mujeres, empresarios, *influencers*, estudiantes, y adultos mayores

Los adolescentes y jóvenes han sido considerablemente estudiados (**Boczkowski**; **Matassi**; **Mitchelstein**, 2018; **Campos**; **Simões**; **Pereira**, 2018; **De-Oliveira**; **Zuniga-Huertas**; **Lin**, 2016; **Dye**; **Antón**; **Bruckman**, 2016; **Marcelino-Mercedes**, 2015; **Pereira** *et al.*, 2018; **Weigelt**; **Parmeggiani**, 2016). **Almansa-Martínez**, **Fonseca** y **Castillo-Esparcia** (2013) llevan a cabo un estudio comparativo entre Colombia y España para entender el uso de redes sociales de los adolescentes de entre 12 y 15 años; observan que

> "en ambos países los jóvenes tienen necesidad de 'estar' en la Red y de mostrarse en ella de la forma más original posible (...) se manifiestan con un lenguaje propio, ajeno a las normas ortográficas y gramaticales al uso" (p. 133).

Barbosa-Neves *et al*. (2015) realizan entrevistas en profundidad con jóvenes portugueses que no utilizan redes sociales y distinguen entre cuatro tipos de no-usuarios. Concluyen así que

> "el no-uso no es un *cluster* singular e indiferenciado –hay un abanico de no-usuarios a lo largo de un continuum"[2] (p. 132).

Otro grupo de interés incluye a los marginados (**Pelli**, 2013; **Spyer**, 2017; **Wagner**; **Fernández-Ardèvol**, 2019). A partir de trabajo de campo en centros comunitarios de tecnología, **Nemer** (2016) estudia el uso que hacen de las redes quienes viven en una favela en Brasil y nota que ese uso debe ser explicado de manera matizada, puesto que las redes son utilizadas como una forma de empoderamiento,

> "incluso frente a inequidades sociales y digitales"[2] (p. 13).

Haynes (2016) realiza una etnografía sobre la comunidad de Alto Hospicio, Chile para describir y comprender

> "los modos en que los hospiceños usan las redes sociales como un conducto para resaltar ciertos discursos y borrar otros, para sustentar la normatividad y redefinir la ciudadanía desde una posición marginalizada"[2] (p. 3).

La autora encuentra que

> "particularmente en un área marginalizada, las redes sociales se han convertido en la esfera pública más prominente donde se puede apelar a, o cuestionar, la ciudadanía"[2] (pp. 3-4).

Las mujeres constituyen otro grupo social de gran interés para la bibliografía de redes en Iberoamérica (**Batista** *et al.*, 2017; **Sjöberg**, 2019). **Castro** (2018) estudia el caso del movimiento *Ni una menos* en Argentina y observa que las redes

> "funcionan como los tejidos que facilitan la comunicación, la solidaridad y la construcción de la identidad colectiva" (p. 56).

Matos (2019) realiza un análisis crítico de la bibliografía sobre feminismo aplicada al caso de Brasil y, al hacerlo, enfatiza la apropiación de las nuevas tecnologías por parte de movimientos feministas como estrategia de empoderamiento. La autora describe el uso de las redes sociales para la expresión propia y el reclamo

> "sobre los derechos de las mujeres, (...) derechos reproductivos y aborto, (...) violencia contra las mujeres en Brasil y (...) por una mayor participación política e inclusión de representaciones mediáticas de género más complejas"[2] (p. 19).

Al mismo tiempo, los trabajos sobre redes en Iberoamérica han estudiado empresarios, desde *influencers* a CEOs (**Garton**; **Hijós**, 2017). Así, **Capriotti** y **Ruesja** (2018) comparan la presencia, contenido y capacidad de interacción en *Facebook*, *Twitter*, *LinkedIn*, *Instagram* y *YouTube* de CEOs que manejan compañías latinoamericanas o globales. Detectan que si bien la mayoría de los CEOs dice tener un perfil en *LinkedIn*, un tercio de ellos, contrario sensu, no tiene ninguna presencia en redes y que quienes tienen, por ejemplo *Twitter*, no aprovechan su capacidad comunicativa. **Mañas-Viniegra**, **Veloso** y **Cuesta** (2019) estudian cuánta atención se dirige a marcas de moda versus *influencers* de *Instagram* que incluyen mensajes de conciencia sobre apariencia física. Su muestra consiste en un grupo de usuarias de dicha red en España y Portugal que se autoidentifican con un físico con curvas; los resultados indican que la diferencia de atención se observa en relación al contenido compartido y no al tipo de emisor.

Otro grupo social es el de los estudiantes (**Miranda**; **Isaías**; **Pífano**, 2016). **Tavares**, **Sobral** y **Motta** (2016) investigan cómo *WhatsApp* es utilizado por los estudiantes de odontología en São Pablo, Brasil, y encuentran que

> "la aplicación *WhatsApp* es considerada por los participantes una herramienta útil e importante en el acceso a la información, en el apoyo al proceso de enseñanza-aprendizaje y en las decisiones clínicas" (p. 510).

Serra *et al*., (2017) se centran en España y Ecuador para preguntarse cómo los estudiantes universitarios utilizan *Facebook* y *WhatsApp* con fines académicos. Concluyen que

> "las diferencias en el uso de redes sociales se basan principalmente en dos variables: la naturaleza propia de cada actividad académica y el agente con el que se llevan a cabo" (p. 209).

Finalmente, otro grupo es el de los adultos mayores (**Matassi**; **Boczkowski**; **Mitchelstein**, 2019). **Rebelo** (2015) investiga el uso de internet en general y de *Facebook* en particular por parte de los adultos mayores en Portugal. Nota que

> "*Facebook* parece poder asumir, para estos usuarios más adultos, un papel posibilitador de reencuentros y de reatar lazos personales y contactos perdidos hace muchos años"[2] (p. 148).

Correa (2016) analiza por medio de una encuesta la asociación entre variables sociodemográficas y habilidades, y qué tipos de usos se hacen de *Facebook* y con qué frecuencia, para el caso de jóvenes adultos en Chile. La autora encuentra que

> "controlando por [variables] sociodemográficas, las habilidades digitales (…) no son un predictor de la frecuencia de uso de *Facebook*. También, las personas más jóvenes y menos educadas usan *Facebook* más frecuentemente que los participantes más grandes y más educados"[2] (p. 1103).

Las áreas de uso que se cubren por la bibliografía incluyen primero lo que podríamos denominar en rasgos generales, comercio (**Carizani**; **Marques**, 2018; **García-Medina**; **Correia-Pereira**, 2012; **Lorenzo-Romero**; **Gómez-Borja**; **Alarcón-del-Amo**, 2011; **Da-Rosa**, 2010). **Costa-Sánchez** (2016), por ejemplo, examina las marcas en que los portugueses más confían, aquellas llamadas "superbrands", y su uso de las redes sociales y, más específicamente, de los canales de *YouTube*. La autora detecta que *Facebook* y *Twitter* son las plataformas más usadas, seguidas de *YouTube*, y que esta última es empleada sobre todo de manera "tradicional y poco interactiva" (p. 14). También observa allí una

> "baja presencia de contenidos que difundan las acciones de responsabilidad social corporativa" (p. 15).

Otra de las áreas es la de turismo (**Amaro**; **Duarte**, 2017; **Brogueira**; **Batista**; **Carvalho**, 2016; **Martínez-Rolán** *et al.*, 2019). **Marques** y **Koven** (2017) estudian el uso de un grupo de *Facebook* sobre la diáspora portuguesa en Francia; lo hacen desde una perspectiva que combina

> "el estudio de narrativas online como prácticas sociales y el estudio lingüístico antropológico de comunidades imaginadas"[2] (p. 286).

Al hacerlo encuentran que

> "las narrativas de *Facebook* (..) proveen un medio discursivo a través del cual los participantes encarnan versiones particulares de la persona en diáspora [diasporic personhood], al postear desde un aquí y ahora en Francia, sobre el deseo de comunión con el allí en Portugal, mientras están los unos y los otros en ambos lados al mismo tiempo"[2] (p. 305).

Otra área examinada es educación (**Faba-Pérez**; **Infante-Fernández**; 2019). **Possolli**, **Do-Nascimento** y **Da-Silva** (2015) realizan un estudio cualitativo para entender cómo los docentes de Curitiba, Brasil, usan *Facebook* con "potencial didáctico-pedagógico"[2] (p. 1). Lo que notan es que *Facebook* como herramienta

> "contribuyó sobremanera en el área de salud, sea a través de las Campañas del Ministerio de Salud o por la divulgación entre los usuarios, alertas sobre asuntos importantes, cursos en las especialidades más diversas" (p. 9).

Al mismo tiempo, **Guzmán-Duque**, **Del-Moral-Pérez** y **González-Ladrón-de-Guevara** (2012) investigan cómo un grupo de 20 universidades iberoamericanas y sus docentes utilizan *Twitter*. Observan que todos los casos bajo análisis poseen una cuenta de *Twitter* activa, y que

> "los seguidores y la universidad tienen una relación dinámica que facilita la aplicación de estrategias dirigidas a comunicar las políticas de la universidad a la comunidad educativa" (p. 36).

En relación con esto último, otra área tratada por la bibliografía es salud (**Tello** *et al.*, 2013). **Peña-García** *et al*., (2016) investigan a través de una encuesta la existencia de una adicción hacia *Facebook* por parte de estudiantes universitarios en salud en el área de Sinaloa, México. Hallan que

> "el 22,2% [de la muestra] muy a menudo pasa mucho tiempo pensando en *Facebook* y planeando cómo usarlo, un 48,6% siente a menudo y muy a menudo el impulso de utilizar más seguido el *Facebook*" (p. 38).

Cuesta-Cambra, **Martínez-Martínez** y **Niño-González** (2019) examinan cómo se comunica información sobre vacunas y antivacunas en redes sociales para el caso de España. Hallan que en *Facebook* los grupos sobre el tema han pasado

> "de una presencia únicamente antivacunas a espacios provacunas o neutrales donde la gente comparte sus dudas. Sin embargo, estos espacios carecen de presencia de especialistas y suelen tener un tono negativo o de miedo hacia las vacunas" (p. 12).

Finalmente, la bibliografía cubre el área de la comunicación profesional (**Sebastião**; **Zulato**; **Santos**, 2017). **Linke** y **Oliveira** (2015) comparan los casos de Portugal y Alemania para comprender distintos niveles de profesionalización de la comunicación online y en particular de redes sociales. Los autores encuentran que mientras que

> "ambos países muestran altos porcentajes de organizaciones utilizando redes sociales", "gran actividad no necesariamente quiere decir profesionalización"[2] (p. 307).

Gálvez-Rodríguez, **Caba-Pérez** y **López-Godoy** (2014) analizan el uso de *Facebook* por parte de organizaciones sin fines de lucro en Colombia, y afirman que estas

> "necesitan hacer un mayor esfuerzo en el uso de las redes como una estrategia comunicacional" (p. 869).

5. Participación política y cívica

El último tema trabajado por la bibliografía sobre redes sociales en Iberoamérica concierne a la participación política y cívica. Diversos trabajos han estudiado cómo las redes sociales facilitan o promueven la movilización, protesta y activismo (**Corrales-Mejías**, 2015; **De-Melo-Romão**, 2014; **Harlow**, 2012; **Harlow**; **Harp**, 2012; **Long**, 2018; **Masías**; **Hecking**; **Hoppe**, 2018; **Salzman**, 2015a; 2015b; **Santana**; **Silva**, 2013; **Valenzuela**, 2013; **Valenzuela**; **Arriagada**; **Scherman**, 2012; **Valenzuela**; **Correa**; **Gil-de-Zúñiga**, 2018; **Valenzuela**; **Bachmann**; **Bargsted**, 2019), e intervienen en reclamos por la libertad política (**Arias**, 2019), y pedidos económicos (**Cardoso**; **Di-Fátima**, 2013), entre otros. **Mota** y **Santinha** (2012) tratan el caso de tres actividades cívicas en Aveiro, Portugal. Concluyen que

> "las tecnologías de redes sociales fueron de hecho un buen soporte (...) porque crearon un contexto donde los ciudadanos pudieron (y pueden) tener acceso a información más detallada y a través del diálogo colectivo"[2] (p. 40).

Casero-Ripollés (2015), por ejemplo, realiza un estudio de caso y entrevistas en profundidad para entender el uso de las redes sociales por el activismo político español desde el surgimiento del movimiento 15-M. Concluye que

> "las redes sociales juegan un papel fundamental en las dinámicas de los activistas políticos en España" (p. 547), introduciendo "novedades en las prácticas y las estrategias comunicativas" (p. 548).

Finalmente, **Valenzuela** *et al.*, (2016) estudian participación política y uso de redes sociales a través de una encuesta realizada en 17 países latinoamericanos, y señalan que si bien

> "las redes sociales se han convertido en un objeto de estudio prominente para la investigación sobre movimientos sociales y participación política en América Latina y otros lugares, hay vastos sectores de la población que permanecen excluidos de estas plataformas"[2] (p. 705).

El interés de fondo que parece atravesar todos estos textos es hasta qué punto pueden las redes sociales influir consistentemente en los procesos participativos y de toma de decisión colectiva.

Algunos trabajos se enfocan en el efecto de plataformas en particular. **Gil-de-Zúñiga**, **Ardèvol-Abreu** y **Casero-Ripollés** (2019) analizan encuestas realizadas en España, Estados Unidos y Nueva Zelanda sobre el uso de *WhatsApp* en las discusiones políticas y su impacto en otras formas de participación. Encuentran que

"El interés de fondo es hasta qué punto pueden las redes sociales influir consistentemente en los procesos participativos y de toma de decisión colectiva"

> "la discusión política en *WhatsApp* parece –al menos en algunos contextos y para algunos grupos etarios– promover formas convencionales de participación como el voto, el contacto con oficiales electos, o la participación en una sesión de preguntas y respuestas con políticos"[2] (p. 12).

Según los autores, el efecto de *WhatsApp* es sobre todo fuerte para el caso del activismo. Una de las posibles razones que proveen es que

> "los usuarios pueden percibir que *WhatsApp* ofrece más control sobre quién puede ver sus mensajes que otros entornos online más abiertos. Como resultado, pueden tener menos reservas para discutir temas políticos o involucrarse en conversación que persuada o movilice"[2] (p. 13).

Halpern, **Valenzuela** y **Katz** (2017) analizan una encuesta realizada en Chile y comparan cómo el acto de compartir información política puede producir diferentes efectos sobre el involucramiento en actividades políticas, dependiendo de si se trata de *Facebook* o *Twitter*. La conclusión es que

"*Facebook* tiene un efecto significativo en las formas colectivas de eficacia, mientras que *Twitter* tiene sobre todo influencia sobre formas internas"[2] (p. 330).

La bibliografía relevante también ha investigado el impacto de las redes sobre procesos electorales y actitudes políticas (**Gainous**; **Wagner**; **Gray**, 2016; **Hoskins**, 2013; *Kofi Annan Foundation*, 2017; *Transparencia Electoral en América Latina*, 2018). De esta manera, **Navia** y **Ulriksen-Lira** (2017) toman el caso de Chile y analizan, a través de encuestas, cómo su participación electoral para los años 2011 y 2013 pudo ser afectada por el uso de medios y redes sociales. A partir de sus resultados, plantean que

> "se podría especular que el consumo de redes no incide en la decisión de ir a votar, sino que solamente refuerza la predisposición a ir a votar de gente que, en general, consume medios tradicionales y usa redes sociales" (2017, p. 83).

Además, la bibliografía académica ha estudiado la forma en que las redes facilitan la exposición selectiva a información sobre todo política. **Aruguete** y **Calvo** (2018) investigan el consumo de información política en *Twitter* para el caso de una protesta por la subida de tarifas de servicios públicos en Argentina, desde la perspectiva del análisis de redes. Los autores indican que compartir contenido en redes

> "encuadra las narrativas políticas al resaltar [ciertas] facetas o temas"[2] (p. 498).

De esa forma,

> "tanto usuarios pro-gobierno como de la oposición interactúan con pares de igual parecer en burbujas separadas de información, compartiendo diferentes posteos y propagando encuadres políticos divergentes"[2] (pp. 498-499).

Otros trabajos han relevado el marco legal detrás de las redes (**Bolgov**; **Filatova**; **Semenova**, 2017), así como la censura estatal existente en distintos casos hacia los contenidos que allí circulan. El informe de la *Alianza Regional por la Libre Expresión e Información* (2016) reporta que

> "el Estado Brasileño, en el escenario de la celebración del Mundial de Fútbol de 2014, ha hecho uso del monitoreo de las plataformas virtuales para criminalizar actividades legítimas" (p. 14).

Finalmente, la bibliografía relevante ha estudiado la presencia y circulación del discurso del odio y de la desinformación en las redes. En cuanto al discurso del odio, **Recuero** (2015) plantea que en las elecciones brasileras de 2014,

> "si bien hubo polarización política entre los dos partidos principales (...), con hostilidad entre los candidatos, las redes sociales reflejaron un país aún más polarizado"[2] (p. 1).

La autora nota un pasaje del discurso del odio desde foros anónimos hacia redes sociales con identificación, donde los contactos son familia y vecinos. En relación con la desinformación en redes (**Bursztyn**; **Birnbaum**, 2019), **Pérez-Argüello** y **Barojan** (2019) reportan sobre la desinformación en México y observan que durante las elecciones presidenciales de 2018, se produjo automatización y amplificación artificial "más que desinformación orgánica"[2] (p. 24). Según las autoras, en *Twitter*

> "usuarios tipo bot intentaron influenciar y promover información engañosa sobre el proceso electoral (…) [promoviendo] una serie de hashtags para animar la victoria de un candidato a pesar de los resultados oficiales no habiendo sido publicados aún"[2] (p. 24).

"Las plataformas de redes sociales más estudiadas, en orden de más a menos, son *Twitter*, *Facebook*, *WhatsApp*, *Instagram*, *YouTube* y *Snapchat*"

6. Plataformas

Los trabajos revisados sobre redes sociales en Iberoamérica tienden a hacer foco principalmente en seis plataformas En orden de la más a la menos estudiada, estas son *Twitter*, *Facebook*, *WhatsApp*, *Instagram*, *YouTube* y *Snapchat*.

En relación con *Twitter* (**Gallardo-Camacho**; **Lavín**; **Fernández-García**, 2016; **Duarte**, 2010; **Marta-Lazo**; **García-Idiakez**, 2014; **Piñeiro-Otero**, 2015), **Fenoll**, **Cárcamo-Ulloa** y **Sáez-Trumpe** (2018) señalan que la forma en que se utilizan las convenciones de *Twitter* (como por ejemplo el uso del retweet) durante procesos electorales en España varía significativamente según el tipo de medio que utilice la red y el contexto político.

En cuanto a *Facebook* (**Merino-Bobillo**; **Lloves-Sobrado**; **Pérez-Guerrero**, 2013; **Rebelo**, 2015; **Salgado**; **Bobba**, 2019), **De-Oliveira**, **Zuniga-Huertas** y **Lin** (2016) realizan una encuesta en Brasil con jóvenes, y observan que algo que produce involucramiento con esta plataforma son las expectativas relacionales de estar y actuar en la red, a la par de un interés por la interacción social y el entretenimiento.

Cuando se trata de *WhatsApp* (**Gil-de-Zúñiga**; **Ardèvol-Abreu**; **Casero-Ripollés**, 2019; **Matassi**; **Boczkowski**; **Mitchelstein**, 2019), **Silva**, **Colussi** y **Rocha** (2018) analizan esta red y su uso en la radio española. A pesar del estilo y la dinámica más convencional del medio, los autores notan que *WhatsApp* es vista por los productores de la radio como una

> "herramienta ideal para la participación de la audiencia" (p. 88)[2].

Se resalta, por ejemplo, la funcionalidad de las notas de voz.

En cuanto a *Instagram* (**López-Rabadán**; **Doménech-Fabregat**, 2018; **Mañas-Viniegra**; **Veloso**; **Cuesta**, 2019), **Selva-Ruiz** y **Caro-Castaño** (2017) investigan cómo los diputados españoles utilizan *Instagram* y encuentran, entre otras cosas, que

> "puede observarse que el empleo habitual de los diputados no aprovecha las posibilidades del lenguaje de una red social eminentemente visual" (p. 913).

En relación con *YouTube* (**Costa-Sánchez**; **Túñez-López**, 2019), **Costa-Sánchez** (2016), en el estudio mencionado de las "*superbrands*" en Portugal enfatiza que en esta red

> "los spots son los contenidos predominantes, unos mensajes publicitarios que las marcas elaboran para la televisión como pantalla prioritaria y reciclan para los canales de *YouTube*" (p. 14),

de lo que la autora deduce

"la ausencia de una estrategia adaptada con contenidos específicos para un nuevo canal" (p. 14).

Finalmente, para el caso de *Snapchat*, **Cristofol-Rodríguez**, **Alcalá-Vidal** y **Fernández-Pérez** (2018) notan, a través de una encuesta y un *focus group* con usuarios españoles, que el uso de *Snapchat* se vio significativamente desincentivado por la aparición de las "historias" de *Instagram*.

Lo que nos muestra este último trabajo sobre *Snapchat* es un interés por la comparación. Si bien las redes sociales mencionadas suelen ser estudiadas de forma individual, hay investigaciones que incluyen comparaciones explícitas entre plataformas (**Abejón-Mendoza**; **Sastre-Asensio**; **Linares-Rodríguez**, 2012; **Boczkowski**; **Matassi**; **Mitchelstein**, 2018; **Costa-Sánchez**; **Túñez-López**, 2019; **González-Molina**; **Ramos-Del-Cano**, 2013; **Matassi**; **Boczkowski** (manuscrito no publicado); **Ramos-Del-Cano**; **González-Molina**, 2014). Así, **Rodríguez-Andrés** y **Álvarez-Sabalegui** (2018) en su análisis del uso de redes por parte de los parlamentos autonómicos españoles plantean que

> "de todas las redes sociales, la única en (...) que los parlamentos mantienen conversación con sus seguidores es *Twitter*. En *Facebook* el número de respuestas es muy bajo (..) y, en el resto de redes [incluyendo *Instagram* y *YouTube*], prácticamente inexistente" (p. 1000).

Al mismo tiempo, en su estudio sobre el *engagement* producido por medios, **Mitchelstein** *et al*., (2018) observan que mientras que en *Twitter* las noticias

> "con mayor interacción son sobre asuntos públicos, en (...) *Facebook* hay una proporción mayor (...) de noticias sobre esparcimiento, más puntualmente noticias que presentan historias de ciudadanos comunes, combinadas con otras noticias de temáticas populares como deportes" (p. 168).

7. Regiones

La bibliografía sobre redes sociales en Iberoamérica ha estudiado regiones y países sobre todo de forma individual. En el cuerpo de textos relevados encontramos que, en orden de mayor a menor cantidad de artículos, se encuentran menciones a países de América Latina, en conjunto o separados, a España, a Portugal, y, finalmente, a países de Iberoamérica considerados en conjunto. En cuanto a países de América Latina (**Bandeira**; **Braga**, 2019; **Batista** *et al.*, 2017), **Oller** *et al*., (2017) estudian la cultura periodística de Argentina, Brasil, Chile, Colombia, Ecuador, El Salvador y México, y sostienen que en la región, donde

> "la discusión gira en torno a los periodistas y su relación con las corporaciones mediáticas"[2] (p. 56), "los periodistas destacan los cambios vinculados a la importancia de las redes sociales y el nuevo rol de la audiencia en el periodismo"[2] (p. 50).

En relación a España (**Requejo-Alemán**; **Herrera-Damas**, 2011; **Harlow**, 2019), en un estudio relativamente temprano sobre *Twitter* y campañas electorales, **Abejón-Mendoza**, **Sastre-Asensio** y **Linares-Rodríguez** (2012) declaran que

> "la brecha digital en España es mucho mayor que en EUA y sigue presente, por lo que plantearse hablar de la ciberdemocracia está muy lejos de la realidad" (p. 133).

Cuando se trata de Portugal (**De-Omena**; **Rosa**, 2015; **Brogueira**; **Batista**; **Carvalho**, 2016), **Campos**, **Simões** y **Pereira** (2018) realizan un trabajo exploratorio sobre el activismo digital de los jóvenes portugueses y describen que, en 2012, Portugal vivió una serie de procesos políticos, como la intervención del *Fondo Monetario Internacional* (*FMI*) y de la *Comisión Europea*, que dieron paso

> "a varias protestas, llevando a la creación de nuevas plataformas y grupos activistas, así como a la movilización de individuos ordinariamente no afiliados con grupos u organizaciones políticas"[2] (p. 490),

donde las redes ocupan un lugar importante a la hora de organizar. Finalmente, otros estudios se dedican a observar países de Iberoamérica considerados en conjunto (**Almansa-Martínez**; **Fonseca**; **Castillo-Esparcia**, 2013; **Cárdenas**; **Ballesteros**; **Jara**, 2017). **Catalina-García**, **Sousa** y **Silva-Sousa** (2019), en el ya mencionado estudio de actitudes de estudiantes sobre noticias falsas en Brasil, España, y Portugal, afirman que, si bien el 40% de los participantes españoles dice informarse a través de *WhatsApp* y, por ende, en gran parte a través de su entorno, este número contrasta con el "14% de los portugueses y el 21% de los brasileños" (p. 102).

Algunos de estos trabajos han puesto especial énfasis en la comparación entre regiones o países (**Amaro**; **Duarte**, 2017; **Cárdenas**; **Ballesteros**; **Jara**, 2017; **Giraldo-Luque**; **Villegas-Simón**; **Durán-Becerra**, 2017; **Harlow**, 2019; **Puebla-Martínez**; **Silva**, 2015; **Weigelt**; **Parmeggiani**, 2016). Así, **Almansa-Martínez**, **Fonseca** y **Castillo-Esparcia** (2013) y otros, en su estudio sobre el uso de *Facebook* en adolescentes colombianos y españoles, señalan que

> "en el caso de Colombia, los adolescentes reconocen que así lo hacen [aceptar a desconocidos en la red], mientras que en España la mayoría dice que únicamente aceptan a personas conocidas" (p. 134);

según los autores, esto último no corresponde con el accionar que observan. **Serra** *et al.* (2017), dedicados al uso de *Facebook* y *WhatsApp* en España y Ecuador con fines académicos, observan que

> "en España se prioriza el uso de *Whatsapp*, mientras que en Ecuador la red más utilizada suele ser *Facebook*. La comunicación con los docentes, sin embargo, no se realiza mayoritariamente a través de *Whatsapp* en el caso español, algo que sí sucede en Ecuador" (p. 215).

8. Conclusión

En este trabajo presentamos y organizamos la bibliografía realizada sobre redes sociales en Iberoamérica. Identificamos cuatro temáticas principales:

- comunicación política y gobierno electrónico;
- periodismo y medios tradicionales;
- grupos sociales y áreas de uso;
- participación política y cívica.

Asimismo, observamos aquellos trabajos que se enfocan en plataformas y en regiones o países específicos, y resaltamos su ejercicio comparativo.

Uno de los hallazgos que parece atravesar la mayoría de los textos relevados es que suele esperarse de las redes un potencial transformador que en muchos casos no se confirma, o al menos no es lo suficientemente aprovechado. La bibliografía sobre comunicación política y gobierno electrónico, y aquella sobre periodismo presenta con claridad esta idea. A modo de ejemplo, en ambos campos la presunción sobre las redes es que estas son técnicamente capaces de proveer el espacio para una comunicación horizontal, sea con los ciudadanos o con las audiencias. Sin embargo, varios trabajos en dichas áreas resaltan que lo que termina por observarse es una comunicación sobre todo vertical, tendente a la provisión de información de arriba hacia abajo.

> Varios trabajos sobre comunicación política y sobre periodismo resaltan que se observa una comunicación sobre todo vertical, de información de arriba hacia abajo

Se lee que el estilo comunicacional de algunos gobiernos populistas no se altera sustantivamente al pasar de los medios tradicionales a plataformas como *Twitter* (**Waisbord**; **Amado**, 2017). O que el modo en que los parlamentos utilizan redes como *Instagram* tiene un carácter predominantemente informativo y no participativo (**Rodríguez-Andrés**; **Álvarez-Sabalegui**, 2018). También se nota que programas televisivos, en su presencia en redes como *Twitter*, distan de generar un espacio público de deliberación (**Gómez-Domínguez**; **Besalú-Casademont**; **Guerrero-Solé**, 2016). En este sentido, la bibliografía se caracteriza por mantener un análisis dicotómico donde las redes sociales se comparan muchas veces implícitamente con los medios tradicionales, y donde estos últimos parecen seguir dominando las dinámicas de producción y circulación de información.

El rasgo novedoso de las redes sociales en la región aparece sobre todo en el área de los usos o aplicaciones concretas, específicamente en los sectores de turismo, educación y salud. Posiblemente porque en el contraste implícito con los medios tradicionales, las redes han posibilitado una ventana de oportunidad que quizá los medios tradicionales generalmente no han cumplido. Vemos que plataformas como *Facebook* pueden proveer un espacio de producción compartida de sentido sobre la diáspora y los viajes de un país a otro (**Marques**; **Koven**, 2017). Notamos que las universidades construyen una interacción fluida con su comunidad a través de *Twitter* (**Guzmán-Duque**; **Del-Moral-Pérez**; **González-Ladrón-de-Guevara**, 2012), o cómo grupos de *Facebook* surgen como esferas de debate sobre la vacunación, donde se pasa de un discurso antivacuna a otro neutral o provacuna (**Cuesta-Cambra**; **Martínez-Martínez**; **Niño-González**, 2019).

Con vista a trabajos futuros sobre redes sociales en Iberoamérica, proponemos ciertos caminos posibles de investigación. En primer lugar, y en términos de objetos de estudio, sería deseable continuar con estudios que explícitamente comparen entre plataformas y entre (sub)regiones –como lo han hecho algunos trabajos relevados. En ese sentido cabe mencionar que las plataformas distan de ser universales (**Valenzuela** *et al.*, 2016), y que su uso varía dependiendo de qué región se trate –como el caso de *Twitter* que, si bien lidera el ranking de las plataformas más estudiadas en Iberoamérica, en 2018 era utilizada por solo el 12,1% de la población latinoamericana (*Statista*, 2019).

A nivel conceptual, proponemos incorporar miradas relacionales sobre el tratamiento de las redes. Esto implica considerar, desde las preguntas y el diseño de investigación, la forma en que la recepción de las plataformas es mejor comprendida de forma sistémica y no granular. Mientras que en el primer caso se entiende que el uso de una red está en parte determinado por el uso de otras, en el segundo se estudia una plataforma por vez, o se consideran varias plataformas como si se tratara de entes completamente separados. En el corpus de textos analizados, una gran mayoría opta por la perspectiva granular; sostenemos que estos estudios, que iluminan en profundidad aspectos particulares de cada red, podrían complementarse con miradas relacionales.

En términos de metodología, sería interesante sumar estudios mixtos, y otros que incorporen métodos experimentales o computacionales. Los métodos experimentales permiten aislar las variables independientes, y los computacionales dan la oportunidad de producir modelos que pueden ser manipulados. Finalmente, en relación con las interpretaciones y las implicaciones de los estudios sobre redes en la región, es necesario considerar que la introducción de tecnologías digitales y su adopción tiene un ritmo particularmente acelerado. Esto genera la pregunta por la

> En el contraste con los medios tradicionales, las redes han posibilitado una ventana de oportunidad que quizá los medios tradicionales no han cumplido

validez a largo plazo de los resultados presentados y de sus interpretaciones. Estudios futuros deberían trabajar en pos de diseñar preguntas y conceptualizaciones capaces de sobrevivir al paso del tiempo.

9. Notas

1. Este y los porcentajes que siguen fueron calculados a partir de los datos presentados en el reporte para cada país de la región.

2. La traducción es nuestra.

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A synthetic approach to the classification of music. Review article

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Abstract

This paper first reviews the advantages and disadvantages associated with both pre-coordination and post-coordination in classification. It then argues that we can have the advantages of both if we couple a post-coordinated (synthetic) approach to classification with a user interface that privileges the word order in search queries. Several other advantages of such an approach to classification and search are reviewed. It better captures the nature of a work (or object), addresses important issues with respect to social diversity, and facilitates user queries. It produces subject strings that resemble sentence fragments; this serves to clarify the meaning of terms within the subject string, and makes subject strings more comprehensible since humans typically think in sentences. These various benefits are then illustrated in the classification of works of music. It is shown that many important characteristics of works of music are best handled by such a system. These are generally poorly addressed, or not addressed at all, by existing approaches to the classification of music.

Keywords

Post-coordination; Pre-coordination; Subject strings; Classification; Music; Basic concepts; Social diversity; Grammar; Sentences; User interface; Nature of a work; Recall; Precision; Search; Information retrieval; Knowledge organization; Review article.

1. Introduction

The first part of this paper will review the latest thinking on synthetic (that is, post-coordinated) approaches to classification. It will discuss in particular how the *Basic Concepts Classification* (*BCC*) employs a synthetic approach toward the classification of documents, objects, or ideas. The second part of the paper then discusses how a synthetic approach facilitates the classification of works of and about music.

2. A synthetic approaches to classification

The third section will summarize the "traditional" view that there are both advantages and disadvantages associated with post-coordination. The fourth section will argue that it is possible to pursue a post-coordinated approach that has all of the advantages traditionally associated with pre-coordination. The fifth section then outlines several further advantages associated with this type of post-coordination. We then briefly discuss the broad outlines of the *Basic Concepts Classification* which pursues this type of post-coordination.

We should first define our terms. A "synthetic" approach to classification allows the classifier to combine different terms from a classification in generating a subject string. They might, for example, combine "subverting," and "democracy" to create "subverting democracy." Such an approach is often called "post-coordination," because the combination of terms occurs after the classifier investigates the document (or object or idea) to be classified. The alternative is "pre-coordination" in which the classifier must choose from an enumerated list of (generally complex) subject headings the heading that most closely captures the document (or idea or object) in question.

3. Pre- or post-coordination? The traditional view

Svenonius (1993), **Jacob** (2004), and **Šauperl** (2009) all agree that there are both advantages and disadvantages associated with both pre-coordination and post-coordination. They each conclude that each approach might be best suited to different contexts. **Šauperl** (2009) had wondered whether technological advances had caused one type of system to become preferable. She finds the same result as **Jacob** (2004) and as **Svenonius** (1993): each of the two systems has advantages.

The main advantages attributed to pre-coordination are speed and precision. Speed of searching, both Jacob and Šauperl argue, is better in pre-coordinated systems because complex subject headings allow for more focused retrieval, and hence for better precision. Pre-coordinated systems facilitate faster search because they are precise: The user does not get a lot of "false drops": suggestions that are a poor fit for the search query.

We should worry that users cannot achieve a precise search until they first identify the appropriate subject heading to search for

We should worry, though, that users cannot achieve a precise search until they first identify the appropriate subject heading to search for. This is no trivial concern: Many public libraries have moved away from subject classification because of a feeling that users struggle with subject search; they instead organize their shelves the way bookstores do (**Lyttle**; **Walsh**, 2018). Even university libraries are increasingly moving away from subject searching in favor of keyword searching. This is unfortunate, for subject searching is potentially far more precise than keyword searching (**Hjørland**, 2012) –but only if users know how to perform subject searches. A post-coordinated system might have an important advantage at the "front end" of a search if users can easily combine search terms.

With respect to precision, Šauperl worries that a post-coordinated search for "philosophy of history" will find many works on "history of philosophy" that are inappropriate to the query. This argument is critical to her view that pre-coordination has advantages, for a pre-coordinated system with a heading "philosophy of history" will direct users only to works on that subject. Yet we can note here that Šauperl's conclusion depends entirely on her assumption that search interfaces follow a Boolean process, interpreting the search as "any combination of philosophy AND history." If the search interface were to somehow care about the order in which search terms were entered, then a post-coordinated search might be just as precise as a pre-coordinated search.

One further advantage of pre-coordination is that individual terms are clarified by being placed within a complex subject string: We clarify which of the many meanings of "culture" is implied when this is placed in the heading "popular culture." Yet again, a post-coordinated approach can have the same advantage if combined with an appropriate search interface, in this case one that recognizes that "popular" is an adjective for "culture."

Post-coordinated systems have various advantages. They have shorter schedules: rather than enumerate any possible complex heading, the classificationist need only enumerate a set of simpler terms that can be combined in myriad ways. Post-coordinated systems are therefore also more hospitable, as new combinations can be facilitated automatically. When the first works in Physical Chemistry appeared they could be easily classified by combining those terms; Classifiers might otherwise have to prioritize Physics or Chemistry –and miss out on the important combination of the two– until a classificationist added Physical Chemistry to the classification. Post-coordinated systems thus grow in size much more slowly. Only rarely is it necessary to add new terms to the schedules. For similar reasons, post-coordinated systems age more gracefully, for the complex strings within pre-coordinated systems gradually fail to capture how complex ideas are expressed. New ideas can be simply expressed with new combinations in a post-coordinated system.

Post-coordinated systems are easier to learn and to employ by classifiers. As noted above, they have shorter schedules. These schedules can be organized more logically, for it is easier to logically subdivide a simple concept than a complex combination of concepts. Post-coordinated classifications are thus less expensive to create and maintain.

There are also several criteria for which pre- and post-coordinated systems fare equally well. **Svenonius** (1993) claimed that they were equivalent with respect to recall, the percent of relevant documents obtained. Both pre- and post-coordination can potentially be handled by computers. Both are well suited to universality (that is, they can be applied to any subject matter), and are browsable.

Jacob, Svenonius, and Šauperl each concluded that there was no clear winner between pre- and post-coordinated systems. Each approach might prove best suited to different circumstances. Crucially, though, the disadvantages attributed to post-coordination all hinge on the nature of search interfaces. If a search interface were developed that prioritized the order in which search terms were entered, and thus could engage with the subject string as a whole, a post-coordinated approach might match or exceed a pre-coordinated approach with respect to speed, precision, and clarity.

If the search interface were to somehow care about the order in which search terms were entered, then a post-coordinated search might be just as precise as a pre-coordinated search

4. The best of both worlds?

Interdisciplinary scholarship teaches us to always look past dichotomies and ask if there is some continuum or middle ground between alleged opposites (**Repko**; **Szostak**, 2020). We have already seen that *all* of the advantages attributed to pre-coordinated systems rest on an assumption that post-coordinated systems are associated with search interfaces limited to Boolean search algorithms. Yet it is quite feasible to develop search interfaces that do prioritize the order in which search terms are entered, and thus clearly distinguish "philosophy of history" from "history of philosophy." Such an interface could also then treat "popular culture" as a whole rather than seeking any use of both "popular" and "culture." Computer science undergraduates have design such an interface for use with the *BCC* in the past, and at present a computer scientist is developing a sophisticated thesaural interface for the *Basic Concepts Classification* that prioritized word order in search queries.

The fields of "information retrieval" and "classification" operate quite separately within information science, even though both are interested in guiding users to the information they seek. Information retrieval has focused on the design of search interfaces, while classification research has taken the search interfaces of the 1960s as given. Yet information retrieval scholars have increasingly recognized that there are limitations to keyword searching, and that there may be scope for combining retrieval techniques with some sort of subject classification. It is time to achieve greater coordination between these two fields, and work toward a combination of classification and information retrieval techniques that best guides users to the information they seek.

It is quite feasible to develop search interfaces that do prioritize the order in which search terms are entered, and thus clearly distinguish "philosophy of history" from "history of philosophy"

The ideal is for a user to be able to type a search query in their own words. This is what information retrieval systems allow. But keyword searching lacks precision compared to subject searching (**Hjørland**, 2012). So, the ideal then is for a search query to be translated into controlled vocabulary that guides the user precisely toward the desired information. If we can develop a search interface that translates a user query into a post-coordinated subject string, then we can combine ease-of-use and precision. Note that one of the alleged advantages of pre-coordination, speed of use, is maximized in such an approach: The user does not have to struggle to identify controlled vocabulary but is nevertheless guided precisely to the most suitable documents (or objects or ideas). If associated with an appropriate search interface, then, a post-coordinated system could outperform a pre-coordinated system in both speed and ease of use.

We are exploring the possibility that such a thesaural interface can be developed for use with the *Basic Concepts Classification* (*BCC*) using the *Universal Sentence Encoder* (*USE*: **Cer** *et al.*, 2018). *USE* has been fed very large batches of text: it identifies synonyms for words and phrases through vectors in 512-dimensional space modeled after the idea, "you shall know a word from the company it keeps" (**Firth**, 1957, p. 11). The guiding principle is that if two words are often used in a similar context they likely have a similar meaning. Happily, *USE* can potentially deal with phrases rather than just individual words. This will save classifiers and users from having to translate each word individually into controlled vocabulary. More importantly, phrases further clarify the meaning of the words they contain (as we saw with "popular culture" above). Notably, *USE* does discriminate on the basis of word order, for it places each term in the context of the phrase it is embedded within.

The entire terminology of the *BCC* (and the *Unspsc* codes used to identify goods and services within *BCC*) have been encoded into 512 floating point numbers by *USE* so that *USE* can be instructed to translate phrases into *BCC* controlled vocabulary. Users –and classifiers– can be (immediately) given ten possible *BCC* translations from which to choose. Technically, the algorithm uses a vector array built from pre-computed embeddings of *BCC* phenomena, *Unspsc* terms, relators, and combinations of relator and phenomena, and from that array it selects the ten nearest neighbors, using a mea-

Figure 1. Home page of the thesaural interface for *BCC*

sure of cosine similarity (cosine similarity is employed based on the assumption that vectors pointing in a similar direction have similar meaning).

A demonstrator version of the interface can now be seen at
https://sites.google.com/a/ualberta.ca/rick-szostak/research/basic-concepts-classification-web-version-2013/thesaural-interface-for-bcc

> If associated with an appropriate search interface, a post-coordinated system could outperform a pre-coordinated system in both speed and ease of use

At present it deals best with shorter phrases. Readers can enter any phrase and be guided to appropriate *BCC* terminology (and given the *BCC* notation that goes along with that terminology). At present, they may have to search again if important terms are missing in the generated subject string. We are working on algorithms that can cope with larger phrases. We are also working on tree structures based on the hierarchies within *BCC*: the translator can then appreciate that the best place to look for controlled vocabulary for a type of painting is within the category "Art" rather than "Mathematical concepts." Note that our interface can be trained over time through repeated use (and selection by users or classifiers of particular options) to better select the best *BCC* translation of particular queries.

With such an interface we can mimic the "front end" advantages of post-coordinated systems (classifiers and users can put together their desired subject string) while delivering the same "back end" degree of precision as pre-coordinated systems. The system allows "philosophy of history" to be clearly distinguished from "history of philosophy" without requiring the user to first ascertain what search terms are allowed within the classification. It thus combines the advantage of logical syntax with the advantage of user construction of search terms. **Šauperl** (2009) notes that users generally appreciate neither the complex subject strings of pre-coordinated systems nor the contours of Boolean searches required by post-coordinated systems. The approach outlined here spares them from both inconveniences.

5. Further advantages of a synthetic approach:

5.1. We can construct subject strings that mimic sentence fragments

The subject strings generated by the *BCC* to describe documents or objects generally resemble sentence fragments. That is, they tend to group nouns, verbs, and adjectives in the order in which they might appear in a sentence. Such subject strings may at first seem bizarre to the scholar or user familiar with existing subject headings within the *Library of Congress*, *Dewey Decimal*, or *Universal Decimal Classifications* that privilege nouns and provide terms in an order quite different from everyday speech. Yet there are huge advantages in pursuing a grammatical format. Most importantly, we spend our entire lives (once we acquire language) thinking, speaking, reading, and writing in sentences. This is the way we are accustomed to combining words. And thus we comprehend strings of words that form (part of) a sentence far better than we comprehend strings of words organized in any other way. Classificationists and classifiers may gain familiarity over time with the unusual format of subject headings, but the typical user can be expected to comprehend subject headings far less well than they understand the average sentence.

A secondary and related advantage is that a sentence serves to clarify the meaning of the words that it contains. As noted above, the phrase "popular culture," serves to constrain which of the thousands of different uses of the word "culture" we are referring to. Sentences, it should be stressed, are less ambiguous than single concepts, for the sentence provides context for all constituent concepts. This recognition of the importance of context lies at the heart of communication theory. Communication theory focuses on 'thought units' rather than concepts. 'Thought units' may be bigger or smaller than a sentence, but will comprise multiple concepts (**Gorman** *et al.*, 2010). Information scientists worry a great deal about terminological ambiguity: How can we guide users to the information they seek when the words they will use in a search are inevitably ambiguous? We should thus value the ambiguity-reducing effects of placing concepts within sentences.

The experience of *Precis* (*Preserved context indexing system*), an indexing system developed by Derek Austin and colleagues for use in the *British National Bibliography* in the 1970s, is instructive. The purpose of *Precis* was to identify a number of different subject headings with different lead entries (at a time when subject headings were still provided in card catalogues and thus it was of critical importance that a user correctly identify the lead term). Nevertheless, the designers of *Precis* found it useful to employ grammatical construction within the key elements of their subject headings. They had experimented with other types of word order before deciding that grammar was best.

> The subject strings generated by the *BCC* to describe documents or objects generally resemble sentence fragments

> "The fact that general rules of this kind can be deduced and applied in practical indexing would seem to indicate that natural language is endowed with a greater measure of underlying logic than many classificationists would allow" (**Austin**, 1974, p. 82).

It is also noteworthy that *Precis* was successfully translated into French. It would appear that the differences in grammar between the two languages were not overwhelming.

> We comprehend strings of words that form (part of) a sentence far better than we comprehend strings of words organized in any other way

Once we are comfortable with the idea of a subject string that is constructed like a sentence, then we can imagine that a classifier can easily construct such a string. They can begin by identifying a critical sentence within a document or object description. They can then simply translate that sentence into controlled vocabulary. We shall see below that in so doing the classifier best captures the nature of a work (or object).

5.2. We can in so doing pursue facet analysis without facet indicators

Facet analysis has been recommended within the field of Knowledge Organization for several decades, but has only rarely been pursued in practice. Facet analysis has two key components:

- A stress on a synthetic or post-coordinated approach to classification, in which simple terms are combined to generate a complex subject string.
- The idea that the terms synthesized will represent different "facets" of a subject. We can eschew the challenge of providing an intentional definition of the word "facet" –that is, attempting to identify the essence of the term in a couple of sentences– by instead providing *inter alia* below an extensional definition: a list of what are considered to be at least the main facets that need to be addressed.

When **Ranganathan** (1962) introduced the idea of facet analysis, he suggested five key facets. The *Bliss Classification* later expanded this to include 13 facets (*Bliss*, 2017). It turns out that each of the 13 facets identified in *Bliss* are either a specific element of a grammatical sentence, or refer to a specific schedule within the classification of phenomena within the *BCC*.

1) Thing. *Bliss* treats 'Thing' as the principal foci of interest within a discipline. But there is no need to restrict its usage in this way. *Bliss* generally treats nouns as "Things," and thus the main noun in a subject string can be interpreted as the "Thing."

2) Kind (of thing). This is the primary fashion in which nouns are disaggregated within a hierarchical classification, including *BCC*. One advantage of a synthetic approach to classification is that we can hope to pursue a logical disaggregation. We need not treat recycling as a kind of garbage simply because there is no other place to put it within an enumerated classification. Moreover, we will often be able to avoid enumerating a set of subclasses by instead achieving these through synthesizing a main class with a set of adjectives or verbs. In any case we can employ a 'kind of thing' in a sentence without needing to indicate that that is what it is.

3) Part (of a thing). As with kinds, this facet could be handled by either subdivision or synthetic construction. We must, though, take care to indicate when we disaggregate by parts rather than kinds. Since many parts can be applied to multiple things –both houses and cars have doors– it may prove superior to have a distinct schedule of parts (within the schedule of things) that can be linked to many things. This is the practice recommended for the "Material" facet below. Such a schedule would then have unique notation that would clearly indicate when this facet was being employed.

4) Property (of a thing). This is an adjective. Adjectives generally appear before nouns in English (but after in Spanish and French). In some sentences adjectives appear after a verb: Steel is strong.

5) Material (comprising a thing). Materials are a noun, but play here a role similar to an adjective. They can be captured in a sentence much like an adjective (steel girder) or following 'of' or 'made of.' Materials are a distinct schedule (with notation NM) within the *BCC*.

6) Process. This facet refers to changes within a 'thing' under study. This is a self-reflexive kind of verb: grow, decline, fluctuate, or remain stable. We need only distinguish verbs that refer to an internal process of change from the much broader set of verbs that refer to the action of one thing on another. This will obviously be the case when there is only one noun in a sentence. Within the *BCC*, these self-reflexive verbs do receive distinct notation.

7) Operation. Here we capture ways in which a phenomenon is influenced from outside. Most verb-like terms fulfil the role of operation. Thus, the use of a verb (indicated by an arrow) in a *BCC* subject string signals an operation.

8) Product. Here *Bliss* captures the results of operations on natural entities. These will take the place in a sentence of an object: a thing that is acted upon. It is odd that *Bliss* emphasizes this particular kind of object but has no general facet for "object." Grammar tells us that these are an important component of many sentences. A subject

> Sentences, it should be stressed, are less ambiguous than single concepts, for the sentence provides context for all constituent concepts

classification that did not mention "democracy" in a work about "institutions for strengthening democracy" would be seriously deficient. We should thus provide within facet analysis for a general treatment of objects. In a *BCC* subject string these will be nouns appearing after verbs.

We do not have to employ facet indicators to signal which facet is represented by a particular notation, as is done in all existing faceted classifications

9) By-product. Same as above.

10) Patient. *Bliss* refers here to "intermediate goods:" things that are made only to be transformed into something else. Intermediate goods can be captured in a causal chain A causes B causes C. Note that in such a sentence it is abundantly clear that B is the patient and C is the product. *Bliss* assumes that A is the main 'thing': We could leave to classifiers a decision (if necessary) as to which term is most important for shelving purposes.

11) Agent. Agents act upon other things. They will generally take the place of A in the type of sentence above. Agents are generally individuals, but sometimes tools or institutions. All of these are nouns. Each type of noun carries a specific kind of notation within the *BCC*.

12) Space. Space captures any physical (including political boundaries) or spatial dimension. These are a very specific kind of noun. These are a distinct schedule within *BCC* (with notation N1).

13) Time. Time refers to any chronological or temporal characteristic: These are also a very specific kind of noun (N2 within *BCC*).

The *Integrative Levels Classification* changes the order of the above facets slightly and adds three new facets. "**Purpose or result**" generally describes a relationship and would be captured by a causal relationship: <thing> <relationship> <thing>. A "**Pattern**" is a representation, such as a poem about X. This would usually be captured by inserting 'of' or 'in' or 'about' between two nouns. "**Modality**" deals with how a phenomenon is perceived. This largely captures elements of the theories and methods and perspectives employed by scholars. These are again specific types of nouns that should have a particular place in a logical hierarchy of things. Once again classificatory notation can obviate the need for a facet indicator.

Each facet will thus be clear in context: We do not have to employ facet indicators to signal which facet is represented by a particular notation, as is done in all existing faceted classifications, including *Bliss*, *Colon*, and the *Integrative Levels Classification* (each of which is impressive in many ways). Nor does the classifier have to consciously employ facet analysis: If they have carefully selected or concocted a sentence from a document or object description that captures the most important facets of a work, they can proceed to translate this into a *BCC* subject string. They can, if they choose, check to see if they have inadvertently missed an important facet.

5.3. We can facilitate user queries

We have indicated that a classifier might move fairly directly from a sentence in a document or object description to a subject string. A user should be able to perform an analogous operation: state a query in natural language, have this translated into controlled vocabulary, and be directed to appropriate subject strings.

We shall see below that the nature of a work is best expressed in a sentence. A user query is also expressed as a sentence. At present, we interpolate between a user and the work they seek a subject heading that is not formatted as a sentence. This inevitably risks translation problems as we translate sentences into something else and then back again. A subject string in the form of a sentence can potentially guide the user fairly directly to appropriate works (or objects). We can thus combine ease of query formation with precision in search outcomes.

This all depends, though, on the user query being in –or translated into– a similar format to the subject string. And then we need to query how regular grammar is, and whether a search interface can easily translate a user query into some standard grammatical format employed by classifiers. **Szostak** (2017) surveyed the basic rules of English grammar and identified the following list of adjustments that a classifier (or computer) might make in moving from an object (or document) description to a standard grammatical format:

- Translating interrogative, imperative, and exclamatory sentences or clauses into declarative format.
- Ignoring pronouns and most determiners.
- Using only the most specific form when nouns are repetitive.
- Translating verbs into the infinitive.
- Using combinations with auxiliary verbs to capture verb tenses.
- Translating phrasal verbs and idioms into synonyms (a task for a thesaurus).
- Placing simple adjectives before nouns but post-adjectival phrases after.
- Using compound adjectival forms to capture gradation.
- Translating adjectival phrases with "that" (or similar words) into adjectival phrases using prepositions or infinitives.
  Ignoring or translating the rare adverb that does not appear after a verb or before an adjective or adverb.
- Using an extra set of parentheses if necessary (or some other notational device) to clarify whether a modifier is an adjective or adverb.

- Distinguishing adverbs from prepositions when the same word can be used for each.
- Ignoring the first component of a correlative conjunction.
- Addressing inverse verbs, ideally by preferring one form over its inverse.

This is a long but manageable list. And it must be stressed that most people most of the time follow a standard grammatical construction. Therefore, no adjustments are necessary most of the time. It should also be stressed that most if not all of these adjustments can be programmed into a search interface. A user employing an unusual sentence structure should still be guided to the documents or objects they seek (and note that if the search interface does not cope well with unusual sentence structure the user is still no worse off than if using standard Boolean search methods).

A final point: Some readers may immediately be reminded of struggling to learn rules of grammar in elementary school. But linguists appreciate that we all employ nouns and verbs and adjectives with great facility even if we might have struggled to identify these on a test in Grade 5. Users will not usually find it difficult to enter a grammatical search query if we do not remind them about elementary school.

5.4. We can facilitate machine searching

One of the challenges in computerization of pre-coordinated systems is that these are all characterized by ad hoc decisions difficult for a computer to master; the proposed system is resolutely logical. Since we have separate schedules of relators and properties we do not have to somehow squeeze "recycling" into a classification of things simply because there is no better place to put it. We have then further clarified the meaning of terms by placing these within subject strings that pursue a standard grammatical format. Each of the transformations outlined in the preceding subsection can potentially be programmed into a computer. The user should generally not have to worry about whether they are formulating their query in a grammatically correct format.

5.5. We can employ natural language

Svenonius (2004) worried that there is a tradeoff between employing natural language in a classification system versus applying very precise meanings to controlled vocabulary that differ from the common understandings of the terms used. As with our discussion above of pre- versus post-coordination, we should ask whether this tradeoff can be minimized in practice through a novel approach to classification. And here again it is quite possible to at least decrease the tension identified by Svenonius.

The *Basic Concepts Classification* is described below. But we can appreciate here the idea of "basic concepts" themselves. **Szostak** (2011) defined basic concepts as those which carry very similar understandings across disciplines or cultural groups. Philosophers have long debated the nature of concepts and whether it is possible for diverse individuals to have shared understandings of concepts. **Szostak** (2011) reviewed leading concept theories and argued that most if not all of these supported the idea of basic concepts. He stressed that philosophers often focused on whether precise definitions of concepts were possible; classificationists can be satisfied with a more relaxed standard: can enough similarity in understanding of a concept be achieved such that users of the classification can be guided to relevant documents, objects, or ideas? If we agree that there are such concepts –think of "chair" or "dog"– then it is quite possible to employ natural language basic concepts in a very precise manner. The *BCC* is built upon such concepts. Users should readily appreciate most terms in the *BCC*, since they are natural language terms, but most users should nevertheless have very similar understandings of what these terms mean.

The challenge identified by Svenonius really comes into play with complex concepts. Different users may then understand the terminology in quite different ways, and the classification will have to carry extensive scope notes indicating how terms are defined. "Globalization," is a complex concept that means "effects of foreign investment on employment" to some and "effects of American movies on Spanish culture" to others. But "investment," "employment," and "movies" are basic concepts for which broadly shared understandings exist. If we make complex concepts by explicitly combining basic concepts in a grammatical subject string, as in "effects of foreign investment on employment," then broadly shared understandings are maintained. Indeed, placing concepts within a sentence-like structure further enhances shared understanding, as we have seen above.

It *may be* that some complex concepts prove hard to disambiguate into basic concepts. As always, we should be careful of drawing empirical conclusions from theoretical arguments. The *BCC*, for example, lists a common set of political ideologies, even while recognizing that people might have quite different understandings of, say, "socialism." In general, though, complex concepts can be broken into sets of basic concepts. This eliminates or at least alleviates the tension identified by **Svenonius** (2004). User studies can potentially be performed on the *BCC* to measure the degree of shared understanding of *BCC* terminology.

> Readers can enter any phrase in our demonstrator interface and be guided to appropriate *BCC* terminology (and given the *BCC* notation that goes along with that terminology)

5.6. We can capture the nature of a work

Foskett (1996, p. 127) argued powerfully that subject headings should be co-extensive with the essence of a work. But what exactly is the nature of a work? What is it that makes a particular work unique and distinguishes it from other works? (see **Furner**, 2010). **Smiraglia** (2001) argued that the essence of a work could be identified as the ideas that the work expressed. Smiraglia's purpose was to distinguish the meaning of a "work" from the meanings of "text" and "document" and other similar concepts. To this end he surveyed not just the literature in philosophy and information science but also linguistics, sociology, and other fields. He concludes that (2001, p. 122):

> "… the intellectual dimension of a bibliographical entry is the set of composed ideas that it conveys, which is called a work."

Texts and documents can be defined in physical terms but a work is necessarily abstract: it is a set of ideas. Works thus have an "inherent nature as communicative signifying objects" (p. 54). *FRBR* (*Functional requirements of bibliographic records*) also treats a work as an abstract entity (p. 47).

Smiraglia (2001) does not define what he means by "ideas." We can usefully flesh out this term, recognizing that works either make an argument and/or provide a description. Ideas will comprise some set of: descriptions of phenomena or relationships among phenomena, causal arguments about how one phenomenon influences another, theories applied, methods applied, and perspectives applied. Classifying works along these dimensions will thus capture the nature of a work. Classifications that omit any of these (and existing classifications in widespread use omit most and handle others poorly) will quite simply not capture the nature of a work. If a work is about the effect of tougher sentences on crime rates, then the subject heading should capture precisely the combination of "tougher sentences," "effect on," and "crime rates." Note that, since ideas are generally expressed in sentences, the ideal subject string to capture the nature of a work will also generally take the form of a sentence or sentence fragment.

Most scholarly works –and perhaps most general works– are about some sort of posited causal relationship. Yet they are almost never given a subject heading that captures the essence of the causal relationship(s) that the work is about. We try and fail to classify works about causal arguments as if they were about one complex thing. Users searching for that particular causal relationship thus face unnecessary difficulty in finding it. While the particular causal relationship(s) addressed in a work are the key aspect of what a work is about, other important aspects include any theory or method or data that was employed as well as the perspective or worldview of the author. These also should be captured in our classifications. These various characteristics of a work were identified as classificatory desiderata in the *Leon Manifesto* (2007).

Importantly, **Furner** (2010) appreciates that philosophers have devoted little attention to what a work is about but much to what a sentence is about. The point to stress here is that the approach recommended here reduces the gap between "what a work is about" and "what a sentence is about" by describing works in terms of causal statements. (Note that works that describe a thing or an action rather than a causal relationship could also be captured in terms of statements about things and or effects.) We can then apply philosophical thinking regarding the nature of a sentence to understanding the nature of a work. We have seen above a general appreciation that sentences clarify meaning.

Smiraglia's analysis nevertheless identifies certain caveats. Most centrally, the ideas that comprise a work are conveyed semantically. It is thus not possible to entirely distinguish substance from style (p. 67). A work may be appreciated as much or more for the style with which certain ideas are conveyed as for the ideas themselves. Smiraglia makes special note of music, but one could reflect also on poetry or a political speech such as the *Gettysburg Address*. Yet the blending of substance and style hardly obviates the value of identifying the key ideas of a work. It does, though, indicate that some attempt to capture style would be useful. This will likely prove a much harder task than classifying substance. Some descriptors might be fairly easy to apply: humor, satire, sarcasm. Others would present a greater challenge: rhetoricians disagree about the full set of rhetorical strategies that can be employed in a work, and how each might be identified. If we can agree on a set of rhetorical strategies to place in a classification it would then be quite easy to include these in a synthetic subject string.

Smiraglia also notes that author and reader may disagree about the key ideas in a work. Deconstructionists have shown that works (especially of fiction) often contain ambiguities of which the author was not consciously aware. Yet it should be possible in most cases to identify the key causal arguments an author was trying to make (and new authors could be asked to supply such information) as well as any theories and methods explicitly applied.

Since works might be instantiated in multiple texts and documents, a decision must be made about when a work is transformed into a new work. Such a change might be primarily stylistic: a movie based on a novel is generally considered a new work no matter how closely it follows the original. But in general,

> "The degree of change in ideational and semantic content determines the point at which a text represents a new work" (p. 50).

How would we know when ideas have changed enough to declare a new work? A precise answer to such a question may never be possible. But the approach to classification pursued here would at least suggest some key questions to ask:

has the causal argument changed?; has a new theory been applied?; has a new method been applied? Positive answers to any of these would signal the creation of a new work (though we might still wonder if adding one new variable to a complex argument really generates a new work).

Hjørland (2014), after reviewing some of the confusion surrounding the term "information," suggests that information science would be well advised to understand its focus as "documents" rather than "information." Following Smiraglia, we might suggest a better focus would be 'works' (though it is also important to identify the different documents that might instantiate a particular work; we will also argue below for the advantages of classifying also objects). In any case, this section takes Hjørland's suggestion a step further, and argues effectively that we should focus primarily upon "statements." The best we can hope for is to organize statements, and also the perspectives (including theories and methods applied) from which these emerge. We might also as a field eschew that other contested term 'knowledge.' Humanity almost never 'knows' anything, but we can increase our confidence in the reliability of particular statements by compiling argument and evidence. The purpose of a classification system, then, is to guide users to relevant statements and the arguments and evidence that support these.

Floridi's well-known efforts to define "information" are broadly consonant with an emphasis on statements and perspectives. For Floridi, information must be about something, it must be meaningful, and it must be well-formed. He also stresses what he terms the "truthfulness" of information (**Furner**, 2014 summarizes Floridi's thinking on these issues). Statements of the sort we stressed above would meet the first three criteria. They would be about something and well-formed. Their meaningfulness would reflect whether they were statements about something that some user valued and came from a perspective that the user valued (see below). **Furner** (2014) argues that information science should devote much more attention than it has to "truthfulness." Our attitude toward "truthfulness" can be the same as our attitude toward "knowledge": the best that humans can do is evaluate the arguments and evidence that support any statement. We are again guided to reflect on how we can both guide users to relevant statements and facilitate their efforts to evaluate these.

5.7. We can classify documents, objects, and ideas

In recent decades, museums and art galleries around the world have developed an online presence. They often, though not always, try to provide some overview of their collections online. Users then naturally wonder if they can search across museums for particular objects. And some users naturally wonder if they can search across different types of institutions for documents (both primary and published) and museum and gallery objects relevant to a particular topic of interest. **Marty** (2014, p. 618) discusses user needs from the point of view of museums:

> "They [users] want to be able to say, "I'm writing a paper about Hercules," or "I'm researching the evolution of glass-making technologies," and find all the relevant resources in one search, in person or online, regardless of the type of collections where the records they need may be stored. They do not want to learn that most information systems are not geared toward answering these kinds of questions, and they especially do not want to discover how difficult it still is today for cultural heritage organizations to share information about their collections and enable searching across multiple institutions."

Note that museums hold some objects because they are typical of a particular time and place (say, an axe used to chop trees), but hold other objects because they are special (say, a golden axe used for ceremonial purposes). A synthetic approach allows us to classify both types of object. Museums have not found typical document classification systems very useful for their purposes, precisely because these have been designed for documents rather than objects. But a classification such as *BCC* with a detailed schedule of phenomena is well-suited to the classification of objects. The schedules of properties and relators can then serve to clarify the nature of an object (golden axe) or its purpose (for chopping wood).

We have noted above that documents can be classified in terms of the key idea(s) that they contain. It follows that we could, if we wish, classify ideas themselves. As **Gnoli** (2008) has stressed, a classification scheme should ideally be able to handle both works and ideas. And **Börner** (2006), intriguingly, envisages a not-too-distant future in which scholars no longer write stand-alone papers but rather contribute nodes or nuggets to a web of knowledge. She can be seen as operating within a long tradition in information science, from at least the work of Paul Otlet, which sought to classify both works and ideas. A classification system that classifies works in terms of ideas is clearly one way –and perhaps the best or only way– to do so. The *BCC* strives to encompass all phenomena and types of interaction, and is thus well-suited to the web of knowledge envisaged by Börner.

5.8. We can better cope with social diversity

One common criticism of existing classification systems is that they embody gender or ethnic or other stereotypes. If, for example, male nurses are treated as a special subclass of "nurse," then the classification communicates an (outdated) idea that nurses are or should be female. Many scholars of information science struggle to erase such biases from commonly used classifications. The sort of synthetic approach urged in this paper has the natural effect of eliminating bias.

If subject strings are made by combination, and there are schedules of gender that include all genders, schedules of ethnicity that include all ethnic groups, and so on, then the string "male nurse" is formed in exactly the same way as the string "female nurse." Individual classifiers may still be biased in the way they form subject strings but the classification itself naturally treats all groups in the same way.

> The sort of synthetic approach urged in this paper has the natural effect of eliminating bias

The reliance on basic concepts within the *BCC* serves further goals with respect to social diversity. It ensures that members of different groups will understand a classification in similar ways. If not for the reliance on basic concepts, an individual from one community may have trouble navigating a classification designed by a member of another community. Importantly, members of all communities will also be able to navigate the classification similarly well, as long as they possess basic literacy skills. The *BCC* thus enhances information access among disadvantaged communities. Recall that many public libraries have found that users struggle with subject classification; it is an important social goal that members of all groups should be able to access the information they need.

Basic concepts are likely also far easier to translate across languages than complex concepts. The lesser degree of ambiguity in the original language should facilitate the identification of a very similar term in other languages. Moreover, basic concepts tend to represent things that we perceive in similar ways in the world around us. We can thus potentially provide similar levels of information access across linguistic groups.

A KOS (knowledge organization system) designed by members of one community may exclude concepts deemed important by members of other communities. The hospitality of a KOS –the ability to add new terms– is thus an important consideration here. A hospitable system will be less likely to exclude subject strings of interest to particular groups. It is not always clear where to place a new term within the multi-level hierarchies of complex terms that characterize enumerated classifications. Within a synthetic approach, new terms can usually be created through a new synthesis of existing terms. When a new basic concept must be added to a KOS, this is easier in flat and logical hierarchies: One need not search multiple levels and wonder what the principles guiding the hierarchy are.

Olson (2007) famously argued that a hierarchical approach to classification may reflect a male perspective. Women may be more likely to see the world in terms of non-hierarchical relationships. A synthetic approach is grounded in a belief that authors and users should potentially be able to combine any set of concepts as they see fit. Classification systems that pursue a synthetic approach to developing subject headings still have to organize the concepts to be synthesized hierarchically, but these hierarchies can be much flatter than those within enumerated classification. The *Basic Concepts Classification*, for example, only rarely has more than three or four levels of hierarchy.

6. The *Basic Concepts Classification*

The *Basic Concepts Classification* (*BCC*; **Szostak** 2019) is a "universal" scheme: it attempts to encompass all areas of human understanding. Both general users from different cultural backgrounds and scholars from across disciplines can potentially utilize the *BCC* to find documents, objects, or ideas produced in any culture or discipline. Whereas most universal schemes are organized around scholarly disciplines, the *BCC* is instead organized around phenomena (things), the relationships that exist among phenomena, and the properties that phenomena and relators may possess. As noted above, this structure allows the *BCC* to apply facet_analysis –an approach to classification long emphasized within the field of knowledge organization– without requiring the use of facet indicators.

The main motivation for the *BCC* was a recognition that existing classifications that are organized around disciplines serve interdisciplinary scholarship poorly. We have noted above several further advantages of a classification such as *BCC*. The *BCC* may also prove advantageous for the Semantic Web, since its separate schedules of things, properties, and relators are well-suited to the "(subject)(predicate or property)(object)" structure employed on the Semantic Web (**Szostak** *et al.*, 2016, pp. 177-182).

We discussed above how *BCC* functions best in concert with a thesaural interface that allows classifiers and users to move directly from a natural language sentence toward a *BCC* subject string. We can note here that the *BCC* is also compatible with innovative visualization techniques. An interface could allow users to experiment with various sorts of changes to a search query once this has been translated into *Basic Concepts* –perhaps by simply sliding a mouse over the different elements of the query. For example, a user searching for "(dogs)(biting)(mail carriers)" could be alerted to documents addressing "(cats)(biting)(mail carriers)" or "(dogs)(licking)(mail carriers)" or "(dogs)(biting)(neighbors)". The user can thus easily follow their curiosity to a host of related subjects. This is much harder to do within pre-coordinated classifications. Note that the user can choose to alter nouns or verbs or adjectives/adverbs in their searches. The *BCC* thus instantiates a "web-of-relations" approach that allows users to find information related in a host of ways to the initial query. Users and search interfaces could likewise easily move between broader and narrower terms in the hierarchies of phenomena (or properties). They could similarly move between simple relators and more complex relators formed via synthesis. Last but not least, the visual interface could also guide users to related material: from searching “(dogs)(bite)(mail carriers)” to “(mail carriers)(go to)(hospitals)”.

The classification of phenomena expanded on a table developed in **Szostak** (2004),
https://www.isko.org/cyclo/bcc#refS

which itself had reflected the reading of hundreds of works across all human science disciplines in **Szostak** (2003). Ten main categories of phenomena were identified: two individual-level categories of Genetic Predisposition and Individual Differences; Non-Human Environment; and seven societal-level categories, Art, Culture, Economy, Health and Population, Politics, Social Structure, and Technology and Science. These were subdivided logically in terms of “type of”. Several more categories have been added to address natural science subject matter: in accord with the idea of integrative levels: These address Waves and Particles, Molecules and Atoms, Rocks, Biological Entities, Flora and Fauna, Celestial Objects, and Mathematical Concepts.

Schedules of relators were added over time, based on **Szostak** (2012), and these were given quite different notation from the schedules of phenomena. A schedule of “properties” was developed inductively over time as the *BCC* was used to classify sets of documents and objects; it also is notationally distinct. One key goal was to have very short notations so that multiple terms could be combined in subject strings. Wherever possible, notation was developed that would be easy for users and classifiers to remember.

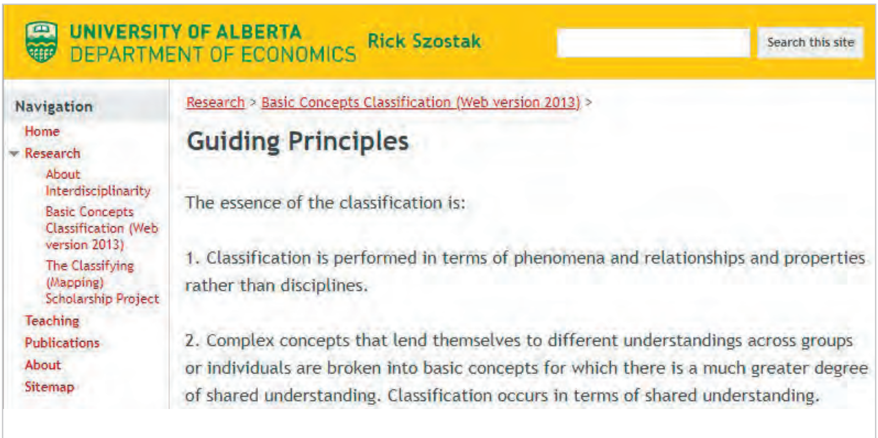

Figure 2. *BCC*. Guiding principles.

The *BCC* was encouraged and informed by preceding efforts to develop a universal phenomenon-based classification within the field of knowledge organization (**Szostak** *et al.*, 2016, pp. 96-100, review this history). The *Classification Research Group* in the United Kingdom had discussed the principles of such a scheme in much detail over a period of many years (e.g. *Classification Research Group*, 1969). The most important influence, though, has been Claudio Gnoli, who has pioneered the *Integrative Levels Classification* (ILC, 2004; **Gnoli**, 2016; 2017a; 2017b; 2018). There are many similarities between the ILC and *BCC*: both take a faceted phenomenon-based and analytic-synthetic approach to classification. The major initial difference between the *BCC* and ILC was the development of separate schedules of relators and properties; this has led over time to an emphasis within *BCC* on the development of subject strings that follow grammatical rules (see above).

The *BCC* has been developed online at:
https://sites.google.com/a/ualberta.ca/rick-szostak/research/basic-concepts-classification-web-version-2013/guiding-principles

Many additions have been made to the *BCC* online since it was uploaded in 2013. The schedules for the subject matter of the human sciences are largely complete (with some exceptions such as the treatment of mental disorders), but work remains to be done on several schedules addressing natural science phenomena. The schedules of relators and properties are well developed. The classification has been successfully employed in classifying dozens of randomly selected documents and museum artifacts. The *BCC* is being translated into Linked Open Data.

We have already mentioned some key guiding principles:

- Synthetic classification utilizing separate schedules of phenomena, relators, and properties
- Short logical hierarchies of phenomena
- Reliance wherever possible on *basic concepts*: those that are understood in broadly similar ways across individuals and communities
- Synthetic subject strings generally resemble sentences or sentence fragments. The use of common grammatical format facilitates search: a user’s search query can be translated into the most relevant subject string.

Some other key guiding principles can be mentioned:

- For relators, several dozen key relators are developed within a handful of very flat hierarchies. These can be combined synthetically with each other and with phenomena or properties to generate thousands of very precise relators.

- Hierarchies of phenomena generally reflect a "type of" disaggregation (rarely "parts of") which reflects an ontological understanding of the world, supplemented as necessary by literary warrant, ensuring that all relevant concepts are captured.
- The notations attached to concepts are generally both short and expressive. It is thus possible to synthesize several terms and still have a notation for a subject string of manageable length. A user familiar with the classification may be able to recognize the string from the notation.
- Detailed classifications of methods and theory types are included in the classification of things so that works can be precisely classified in terms of the theories and methods applied as well. Scholars often care not just (or primarily) about what a work is about but what theories and methods were applied. It is at present generally impossible to search by theory or method applied.

7. Classifying music

Music has proven to be particularly difficult to classify. In part, this is simply because there are so many types of music. But in part it is because music is so multifaceted: it is used for many purposes, has multiple effects on its audience, conveys a diversity of themes, and reflects a wide variety of societal influences. The classifier of a particular piece of music may think it important to capture why the work was written or the effect it had (say, for a song used by a revolutionary movement). Certainly, it is easy to imagine a user wanting to search for works of music along such dimensions.

A dedicated music classification will struggle to adequately classify all of the possible influences on or effects of a piece of music –precisely because a wide variety of social, political, cultural, economic and other phenomena may be implicated. Arguably, then, the best way to capture the myriad influences on and effects of music is within a general (i.e. universal) classification that pursues a synthetic approach. Then, the classifier can have access to the widest possible array of influences and effects. The *BCC*, with its separate schedule of relators, makes it especially easy to capture the diverse influences on or effects of a piece of music.

> The best way to capture the myriad influences on and effects of music is within a general (i.e. universal) classification that pursues a synthetic approach

By synthesizing across the schedules of the *BCC* we can potentially capture many important dimensions of works of music which are ignored in existing approaches to music classification. However, a subject string embracing all dimensions would be very long. Classifiers might then wish to emphasize only some dimensions for particular works. Typical *BCC* practice is to be guided by descriptions of works in choosing which dimensions to stress. A library that used subject strings for shelving purposes could choose which element of the subject string to prioritize (and then BOLD this in the subject string).

The synthetic nature of *BCC* means that many dimensions of music can be captured by synthesizing across diverse schedules of *BCC*. The next section reviews those dimensions for which this is surely the case, and the succeeding section reviews those dimensions for which this is likely the case.

8. Dimensions that can surely be addressed by synthesis

Existing schedules within *BCC* allow us to address synthetically several dimensions that might be important in classifying particular works. In all cases, a synthetic approach allows us to be (more) exhaustive in our treatment whereas existing enumerated schemes inevitably provide limited options which tend to be biased toward particular musical genres:

- *Intention of composer.* If desired and known, a classifier might add a motive: (to)(encourage)(nationalism). At present, it is generally not possible to indicate composer intention within subject headings.
- *Time period and place.* Classificationists have moved away over time from using terms such as "rococo" toward more objective time periods. The *BCC* allows time periods of any sort to be designated (schedule N2). [We could potentially have an Index which advised users what time period they might search for "rococo" etc.] Likewise, the schedule N allows detailed indication of geographical areas. Note that the classifier might wish to indicate when and where a work was created, but at times might instead or also indicate where it was most famously performed.
- *Creators.* Cutter numbers can be used to indicate particular composers or musicians. It should be stressed that a synthetic approach allows the classifier to potentially capture `diverse elements of creation: (Composer X)(creates)(symphony); (Composer Y)(adapts)(symphony); (Conductor X)(directs)(symphony); (Singer X)(sings); (Guitarist X)(plays). Note that by using (and) we could indicate multiple singers or players or combinations of composer, conductor etc. For choruses, or other joint efforts it is also possible to indicate gender, age, and other characteristics of a group, by synthesis. One particularly useful type of synthesis here would be when a work originally performed for one set of instruments or voices is re-arranged for a different ensemble. [Similarly, a synthetic approach allows us to capture multiple instantiations of a work, such as a recording accompanied by sheet music, or a piece created for an orchestra played by a quintet.]

- *"Kinds" of music.* (for)(wedding)(for)(ballet). The *Library of Congress Classification* (*LCC*) allows for music for children, dance music, chance music, electronic music, national music, and music of a special character. Why should these particular kinds of music be privileged? Why shouldn't the classifier be able to indicate any kind of music? Why shouldn't a user be facilitated in finding particular kinds of music? The *BCC* allows any potential kind of music to be indicated.
- *Subject.* Not all works of music have a subject. But for those which do this can be an important component of a subject heading. A subject heading for "The 1812 Symphony" should surely capture the fact that this is a piece of music about war. The subject heading for a love song should say something about love. And we might usefully get more detailed, distinguishing songs about mutual love from songs about unrequited love. As with any other work classified in *BCC*, the subject of a piece of music can be captured by synthesizing across the schedules of *BCC*. We should likely agree on a standard word such as "representing" which would introduce the subject within a subject string.
- *Effect.* The subject of a work of music may signal its likely effect: A love song is arguably intended to make us feel happy or sad, and reflect on the importance of love in our lives. The kind of music also tells us something about effect: Dance music should encourage us to dance. Yet at times it may be useful to directly indicate the effect, or at least intended effect, of a piece of music. Scholars of music still debate the effects that music in particular, and art more generally, can have on us. But we still might at times feel comfortable to say that a particular song encourages happiness, sadness, reflection, nationalism, anger or numerous other emotions or attitudes.
- *Types of analysis.* Though most of our attention in this section is devoted to works "of" music, we would also want to classify works "about" music. In general, works about music can be treated just as works about any subject –except when they analyze dimensions of music that need to be fleshed out. Music theories can be classified like any theories in schedule TT. (Music)(appreciation) is captured synthetically as is (psychology)(of)(music). So also are works about the construction of instruments. [These examples are the only types of analysis given special attention by the *LCC*. Again, the obvious question is why we would wish to privilege a subset of types of analysis. Why not treat sociology of music or politics of music just as we treat psychology of music?]

It is useful to reflect on users for a minute. What sort of searches might users wish to perform? Can we easily imagine that users might wish to search for intention or subject or kind of music? If so, can we easily imagine that different users might wish to search for quite different intentions or subjects or kinds of music? If we answer both questions positively, then we should seek a classification that facilitates such queries. This is most feasible within a general classification designed for post-coordination. It is, sadly, infeasible within all existing music classifications.

8.1. Dimensions that can likely be addressed by synthesis

With some small adjustments to existing *BCC* schedules we can likely capture several additional dimensions:

- *Traditions*. Popular, folk, and classical are all descriptors that should exist within schedule Q (of properties, or adjectives/adverbs). We could make sure that all "traditions" are captured somewhere. Note that schedule C of the *BCC* lists dozens of different cultural values. The *BCC* also allows for any ethnic group or country to be identified. It is thus potentially feasible at present to indicate any possible cultural tradition by referencing a group, place, or core value.
- *Sacred music*. Existing schemes do a limited job of indicating which parts or types of religious service a particular piece of music is intended for. We need to flesh out schedule CR on religion so that we can then link (for)(baptism) or (for)(Christmas)(service). One question is to what degree we can identify common types of ceremony across religions.
- *Techniques.* Individual techniques like "breathing" can be captured synthetically. TM codes for methods in general.
- *Intended audience*. The *BCC* has many descriptors of types of people and groups. We can thus easily signal that a particular work was designed with the French army or Chinese farmers in mind. We need, nevertheless, to identify any audience types peculiar to music.
- *Culture*. This in practice seems to mean country, ethnicity, language, and/or time period, all captured in detail in *BCC*. The *BCC* also provides a lengthy schedule CV of cultural values. Existing classifications of music are vague about what might be captured under "culture"; since the *BCC* devotes the entire schedule C to unpacking culture into subclasses, the classifier can be very precise about the cultural influences on or of a work.

Here again, we are aspiring to an exhaustive treatment, whereas existing systems classify only some traditions, types of religious ceremony, techniques, and audience. The option to associate pieces of music with cultural values is novel. Once again, a synthetic and general classification such as *BCC* allows us to serve a far wider range of user queries than can existing approaches to music classification.

9. Concluding remarks

Music is a particularly fertile ground for synthetic classification. Yet a synthetic approach allows superior classification of any set of documents, objects, or ideas. If we couple a synthetic classification to an appropriate user interface we can facilitate the efforts of both classifiers and users. We need, though, to break down the barriers between the fields of classification and information retrieval, and embrace the idea that subject strings should look like sentences.

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Contenidos inmersivos violentos: investigación con *eye tracking* en jóvenes universitarios en España y Portugal

Immersive content with violence: A research using eye tracking with university students in Spain and Portugal

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Resumen

Los diarios se han visto afectados por una progresiva pérdida de lectores durante la última década, específicamente entre los menores de 24 años. Éstos continúan informándose sobre sus áreas de interés, pero en redes sociales. Por ello, la prensa ha incorporado un periodismo lúdico, inmersivo y participativo a partir de tecnologías como la realidad virtual o los vídeos 360°. Mediante un análisis cuantitativo y cualitativo de los datos obtenidos con la técnica de *eye tracking* y la realización posterior de entrevistas semiestructuradas, esta investigación comprueba la atención que los universitarios españoles y portugueses prestan a los contenidos periodísticos inmersivos violentos. También se analiza la comprensión y la capacidad de concienciación de los estudiantes ante este material informativo con hechos violentos. Se pone de manifiesto la capacidad del periodismo inmersivo para atraer la atención del público menor de 24 años y para concienciar sobre conflictos sociales a partir de la visualización de contenidos violentos.

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Palabras clave

Periodismo digital; Periodismo inmersivo; *Serious games*; Juegos serios; Violencia; Realidad virtual; Vídeo 360°; Estudios de usuarios; UX (*user experience*); Jóvenes; *Eye tracking*; España; Portugal.

Abstract

Newspapers have been affected by a progressive loss of readership over the last decade, especially among those under 24 years old. This group continues to stay informed about topics of their interest, but through social networks. For this reason, the press has incorporated a playful, immersive, and participatory journalism based on technologies such as virtual reality or 360 videos. Through quantitative and qualitative analysis of data obtained from eye tracking, and by subsequently performing semi-structured interviews, this research verifies the attention paid by Spanish and Portuguese university students to violent, immersive, journalistic content. Students' understanding and awareness of this informative material with violent events is analyzed. The capability of immersive journalism to capture the attention of the public under 24 years old and to raise awareness about social problems based on visualization of violent content is highlighted.

Keywords

Digital journalism; Immersive journalism; Serious games; Violence; Virtual reality; VR; 360 video; Users studies; UX (user experience); Young people; Eye tracking; Spain; Portugal.

1. Introducción

La lectura de los periódicos se ha resentido notablemente por el efecto del consumo mediático online. El *Estudio General de Medios* (*AIMC*, 2018) ya sitúa a los diarios como el sexto medio por penetración en España tras diez años de permanente caída, lo que supone que su consumo fue en 2018 el 57,48% del que tenía en 2008. El menor dato de consumo se encuentra en los jóvenes de 14 a 19 años (3,9%) y en los de 20 a 24 años (4,3%). A pesar de que el 43,5% de los jóvenes afirma no leer nunca, el 46,1% usa internet todos los días para obtener información sobre asuntos sociales o políticos, frente al 36,6% de media en todos los perfiles de edad (*CIS*, 2017), lo que a priori refleja interés sobre la actualidad informativa online y puede suponer una oportunidad para revitalizar los periódicos con géneros emergentes y formatos que proporcionen algún nivel de juego e interacción social.

La gamificación o ludificación es la aplicación de los juegos a un contexto ajeno a su finalidad original, para fidelizar, incentivar la acción, fomentar el aprendizaje o promover la resolución de cuestiones, partiendo del pensamiento lúdico que subyace en los juegos para trascender el mero entretenimiento (**Deterding** *et al.*, 2011). La gamificación ha encontrado en la recreación y simulación de realidades o los videojuegos posibilidades interactivas e inmersivas plenamente integradas en la esfera académica e investigadora (**Scolari**, 2013) y estos juegos han pasado a denominarse *serious games* (**Girard**; **Ecalle**; **Magnan**, 2013).

Los *juegos serios* presentan un carácter pedagógico basado en un entretenimiento que favorece una inmersión en la realidad con un punto de vista determinado (**Ulrich**; **Helms**, 2017), sin olvidar que su narrativa puede resultar apropiada para áreas como la Psicología, el Periodismo o la Comunicación digital (**Lugmayr** *et al.*, 2017), contribuyendo a concienciar sobre comportamientos socialmente responsables (**Yam** *et al.*, 2017) y a mitigar levemente los sesgos cognitivos, permitiendo mejorar la empatía y en definitiva el cambio social (**Papoutsi**; **Drigas**, 2016).

Si bien pudieran derivarse efectos perniciosos de adicción o agresividad, algunos autores mantienen que éstos han sido exagerados en la misma proporción que en los videojuegos en general (**Bosche**; **Kattner**, 2013), frente a los que encuentran correlación entre la exposición a los videojuegos violentos y una mayor agresividad en el comportamiento (**Anderson**, 2004) y otros que inciden en los síntomas depresivos y los rasgos antisociales previos como predictores de la agresividad y la violencia (**Ferguson**, 2011).

Los *juegos serios* en el área periodística y de la comunicación digital comienzan a partir de los denominados *newsgames* (**Frasca**, 2007), género iniciado por *The New York Times* al incorporar videojuegos generados a partir de algún acontecimiento informativo en su edición online como complemento al contenido de las noticias publicadas, a pesar de que la bibliografía científica ha prestado más atención a los aspectos lúdicos que a los informativos y comunicativos (**Gómez-García**; **Navarro-Sierra**, 2013) y a que muchos de ellos se generan para trasmitir una opinión (**Gómez-García**; **Cabeza-San-Deogracias**, 2016).

Al potenciar información y opinión sobre entretenimiento se evoluciona hacia un género más próximo al reportaje y el documental informativo y menos al videojuego. Es la adaptación de los *newsgames* a un periodismo lúdico, inmersivo y participativo (**García-Ortega**; **García-Avilés**, 2018) a partir de la realidad aumentada, virtual o el vídeo 360° para representar de forma interactiva parte de una realidad. Este género se ha denominado periodismo inmersivo (**Domínguez-Martín**, 2015) o *docugame*

Al potenciar información y opinión sobre entretenimiento se evoluciona hacia un género más próximo al reportaje y el documental informativo y menos al videojuego

(**Vázquez-Herrero**; **López-García**, 2016; 2017) y obedece a una evolución de los medios informativos digitales que han afrontado un proceso de convergencia (**Jenkins**, 2006), posibilitando al público convertirse en protagonista –o al menos en observador privilegiado– de la actualidad al encontrarse inmerso en ella decidiendo qué punto de vista desea adoptar dentro del camino que le guía a través de los acontecimientos.

El periodismo inmersivo ha sido posible gracias a la integración de periodistas y programadores en los procesos tecnológicos de los periódicos digitales (**Marcos-Recio**; **Edo-Bolós**; **Parra Valcarce**, 2018). Se ha revelado como un método para mejorar la visibilidad de los colectivos sin voz en los medios, proporcionando perspectivas alternativas sobre los hechos y mejorando la concienciación de los públicos (**Sacco**; **Gorin**; **Schiau**, 2018), ya que la vivencia narrativa mejora la comprensión del acontecimiento y la empatía hacia sus protagonistas (**Ruiz-Collantes**, 2008). Tanto el periodismo inmersivo en formato de realidad virtual como en vídeo 360° acercan la realidad al espectador (**Pérez-Seijo**, 2017), mejoran la credibilidad de la fuente, la empatía y la intención de compartir más el contenido que en el formato tradicional en texto e imágenes (**Sundar**; **Kang**; **Oprean**, 2017). Además posibilitan la exploración del lugar de los hechos, experimentando los públicos la sensación de presencia y participación de la actualidad informativa (**Domínguez-Martín**, 2015), lo que ha motivado que *The New York Times* haya producido 300 reportajes inmersivos en el trienio 2015-2017 (**Benítez-de-Gracia**; **Herrera-Damas**, 2018) y se haya convertido en el principal impulsor de este género periodístico. La interacción alcanzada oscila desde lo selectivo, si el público influye sobre el relato final; pasando por lo inmersivo, formando parte del relato; lo social, facilitando al público expresarse sobre el asunto; lo generativo, si posibilita al receptor producir contenidos; hasta lo físico, si se alcanza una plena experiencia personal a través de la realidad aumentada o la virtual (**Vázquez-Herrero**; **Negreira-Rey**; **Pereira-Fariña**, 2017).

> El periodismo inmersivo en formato de realidad virtual o de vídeo 360° acerca la realidad al espectador y mejora la empatía y la intención de compartir más el contenido que el formato tradicional

En definitiva, la convergencia digital de estos géneros emergentes y formatos informativos en múltiples soportes mediáticos, que se ha venido a denominar periodismo transmedia (**Jenkins**, 2003; **Scolari**, 2009), proporciona una experiencia inmersiva lúdico-periodística en la que es necesario determinar si favorece una mayor atención del público más joven hacia la actualidad informativa con contenido violento y si además la comprende, participa de ella y forma una opinión sobre el acontecimiento.

2. Objetivo y método

La finalidad de esta investigación es comprobar la atención prestada por los jóvenes universitarios de España y Portugal a los contenidos periodísticos inmersivos violentos, así como la comprensión de los propios contenidos informativos en ausencia del género periodístico de la noticia tradicional. Para la consecución de este objetivo general, se utiliza la técnica de *eye tracking* para establecer a qué áreas de interés presta atención el público, así como la intensidad y reiteración de la misma, de modo que sea posible diferenciar si la audiencia centra la atención en los agresores o la agresión en sí, las víctimas o además su atención visual busca ayuda en quienes presencian la escena violenta.

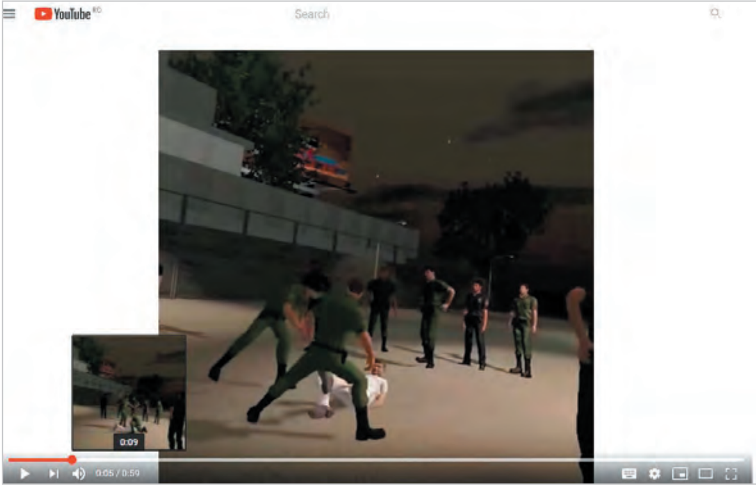
Los objetivos específicos son:

- Determinar si el perfil de audiencia menos afín a los periódicos presta atención al periodismo inmersivo y a la noticia que amplía tal contenido.
- Establecer diferencias en la atención en el público español con respecto al portugués.
- Diferenciar el grado de atención mostrado hacia el agresor o la agresión con respecto a las víctimas y a los testigos del acontecimiento periodístico.
- Verificar el grado de comprensión del contenido de la información transmitido.

La neurocomunicación (**Cuesta-Cambra**; **Niño-González**; **Rodríguez-Terceño**, 2017) es una combinación de la Psicología, la Neurociencia y la Economía (**Madan**, 2010) que hace posible la medición del proceso cognitivo de los sujetos sobre determinados estímulos. Esta especialidad solventa las limitaciones que presentan las tradicionales encuestas, grupos de discusión o entrevistas en profundidad a la hora de que los individuos informen conscientemente sobre sus comportamientos, motivaciones o emociones (**Ariely**; **Berns**, 2010). Dentro de la neurocomunicación, el *eye tracking* es una técnica biométrica capaz de medir la atención visual a partir de los movimientos y fijaciones oculares hacia las zonas de interés (**Duchowski**, 2013). Es precisamente la atención la que inicia el procesamiento cognitivo y afectivo y numerosos autores han puesto de manifiesto que hay una correlación positiva entre la atención y la memoria (**Loftus**; **Kallman**, 1979; **Bornstein**; **D'Agostino**, 1992; **Goodrich**, 2011). Para la presente investigación se ha utilizado un *eye tracker TOBII X3-120* en Portugal y un *X2-60* en España.

> Los estímulos presentados a los sujetos fueron dos vídeos 360° que reconstruyen con modelado 3D los hechos que constituyeron noticia e incorporan el sonido real grabado

En la investigación han participado voluntariamente 120 individuos –entre junio y diciembre de 2018– con el perfil que la bibliografía científica señalaba mostrar un menor interés hacia las noticias tradicionales en prensa, a pesar de utilizar las redes sociales para informarse: jóvenes de entre 18 y 24 años, que en la investigación proceden de las universidades *Complutense* y *Rey Juan Carlos* de Madrid en España (50%-grupo 1) y la *Universidad de Aveiro* (50%-grupo 2) en Portugal. Ambos grupos registraron paridad de género, a pesar de que éste no manifestó diferencias significativas.

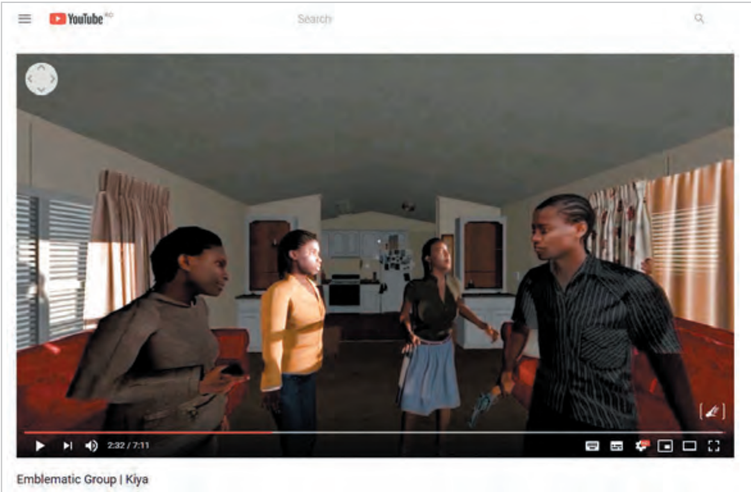


Escena de *Use of force*
https://www.youtube.com/watch?v=I1QM-9BRU_4

Los estímulos presentados a los sujetos fueron dos vídeos 360° creados por *Emblematic Group*, reconstruyendo con modelado 3D los hechos que constituyeron noticia e incorporando el sonido real grabado.

El primero, *Use of force*, recrea con realidad virtual la muerte de Anastasio Hernández en la frontera entre México y EUA tras ser golpeado por agentes.

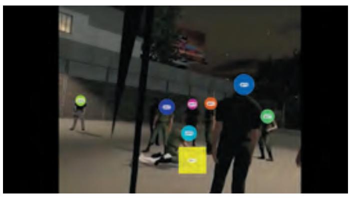
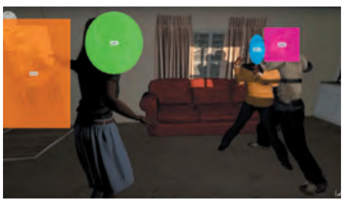
El segundo se titula *Kiya* y recrea una escena de violencia de género que finaliza con el asesinato de la mujer maltratada.



Escena de *Kiya*
https://www.youtube.com/watch?v=qYsAIukRqog

En los dos casos se busca concienciar al convertir al espectador en uno de los testigos y el audio es el real de las grabaciones recogidas en las respectivas escenas de los crímenes. Para ambos estímulos (tabla 1) se han definido áreas de interés (AOI) dinámicas, que consiguen registrar la atención en imágenes en movimiento y comparar la atención que se presta a los agresores, las víctimas, la ayuda que puedan proporcionar los testigos presentes en la escena o que puedan entrar al rescate por una puerta. Todo ello en los momentos de máxima tensión en cada uno de los casos: una visión directa de la agresión, el momento en el que el agresor muestra mayor nerviosismo con el arma en la mano, cuando apunta en la cabeza con la pistola a la víctima y al sonar el primer disparo.

Tabla 1. Áreas de interés (AOI) de los estímulos *Use of force* y *Kiya*

<table>
<tr><th>AOI</th><th colspan="2">E1 - Use of force (00:00:36) – 3”</th><th colspan="2">E2 - Kiya 1 (00:01:48) – 5”</th></tr>
<tr><td>AOI 1</td><td>Víctima y agresión</td><td rowspan="4"></td><td>Compañera de la víctima</td><td rowspan="4"></td></tr>
<tr><td>AOI 2</td><td>Agresor</td><td>Víctima</td></tr>
<tr><td>AOI 3</td><td>Testigo militar principal</td><td>Agresor</td></tr>
<tr><td>AOI 4</td><td>Testigos militares (agrupa AOI 4 a 8)</td><td>Pistola</td></tr>
<tr><th>AOI</th><th colspan="2">E3 - Kiya 2 (00:04:24) – 5”</th><th colspan="2">E4 - Kiya 3 (00:04:47) – 5”</th></tr>
<tr><td>AOI 1</td><td>Compañera de la víctima</td><td rowspan="4"></td><td>Puerta</td><td rowspan="4"></td></tr>
<tr><td>AOI 2</td><td>Víctima</td><td>Primer policía</td></tr>
<tr><td>AOI 3</td><td>Agresor y pistola</td><td>Segundo policía</td></tr>
<tr><td>AOI 4</td><td>Puerta</td><td>Compañeras de la víctima</td></tr>
</table>

La variable dependiente se localiza en los niveles de atención registrados en los estímulos presentados, mientras que las variables independientes son la procedencia de España o Portugal de los sujetos y el género, puesto que todos los participantes se encuentran en un rango de edad único elegido por los motivos aludidos anteriormente. Se evalúan cualitativamente los mapas de calor o *heat maps* y cuantitativamente:

- cantidad de fijaciones oculares o *fixation count* (FC);
- duración en segundos de cada fijación o *fixation duration* (FD);
- segundos que transcurren desde que el estímulo hace acto de presencia hasta que se produce la primera fijación o *time from fixation* (TFF);
- duración total en segundos de atención o *total fixation duration* (TFD).

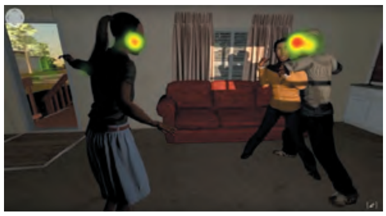
El software estadístico con el que se han tratado los datos obtenidos ha sido *SPSS* v.25.

Tras finalizar la visualización de todos los estímulos, se realizaron entrevistas semiestructuradas entre los 120 sujetos para dilucidar qué hecho informativo consideraban que se había producido a partir del vídeo que acababan de visualizar, de modo que se valorase la comprensión del propio contenido como complementario o sustitutivo de los géneros periodísticos tradicionales, teniendo la posibilidad de visualizar la noticia asociada posteriormente.

3. Resultados y discusión

El análisis cualitativo de los *heat maps* pone de manifiesto (tabla 2) que la atención de los participantes se centra en la acción violenta, ya que ésta se produce en todos los sujetos con independencia de si se encuentra más próxima al agresor o a la víctima. Sin embargo, se aprecian diferencias entre ambos grupos. El grupo 2 presta atención más repartida entre la víctima y el agresor y, además, busca ayuda más focalizada al registrar mayor atención a los testigos que podrían intervenir para detener la acción y la puerta por la que podrían buscar una salida o esperar la entrada de otro tipo de ayuda.

Tabla 2. *Heat maps* de los estímulos *Use of force* y *Kiya*

Todos los participantes	Grupo 1	Grupo 2
E1 - *Use of force*		
		
E2 - *Kiya 1*		
		
E3 - *Kiya 2*		
		
E4 - *Kiya 3*		
		

En los tres estímulos en los que se ve en pantalla la agresión, ya sea en forma de golpes o de amenaza con la pistola, se obtiene la atención del 100% de los sujetos. La atención prestada a la víctima oscila, en función de los estímulos, desde el 100% –E1, en la que no se puede separar de la agresión por la mínima distancia entre ambas zonas– y el 84,20% (E2) y el 50% (E3), a pesar de superar en atención al agresor, que oscila entre el 35,80% (E3), 69,20% (E1) y 100% (E2). La escena de máxima violencia (E4), aunque ésta no sea visible directamente, acapara la mayor atención, con el 100% de los participantes en tres de las cuatro AOI. Los testigos secundarios en E1-*Use of force* acaparan una mínima atención, por lo que se excluyen del análisis final.

> El análisis cualitativo de los *heat maps* pone de manifiesto que la atención de los participantes se centra en la acción violenta, con independencia de si se encuentra más próxima al agresor o a la víctima

En la comparativa realizada entre las áreas de interés similares entre todos los sujetos, las diferencias son claramente significativas (p<0,05). Al comparar la atención prestada a la víctima o a sus acompañantes, la primera presenta un menor TFF en todos los casos en los que está acompañada, destacando su presencia conjunta con la agresión (TFF=0,88; p=0,000), mientras que la atención más rápida la consigue una de las acompañantes de la víctima en el momento de mayor violencia, cuando la propia víctima no se encuentra presente en la imagen (TFF=0,31; p=0,000). Estas dos situaciones también registran un mayor número de fijaciones oculares significativo (FC=3,01 y FC=4,04, respectivamente; p=0,000) y la mayor duración media de cada fijación ocular en el caso del primer caso (FD=0,46; p=0,000).

El agresor registra la mayor atención en el momento de máxima tensión con el arma con la que se produce la agresión, con la fijación media más rápida (TFF=0,43, p=0,000), el mayor número medio de fijaciones (FD=10,48; p=0,000), y la segunda mayor duración media de cada una de esas fijaciones (FD=0,035; p=0,000).

En cuanto a la presencia de testigos compañeras de la víctima, policías que acuden al rescate o la entrada/salida a través de la cual el espectador busca la llegada de alguna ayuda o una salida a la situación violenta, la atención más rápida la registran los policías que activamente acuden a socorrer a la víctima (TFF=0,60: p=0,000).

De igual modo, el policía que acude recibe un mayor número de fijaciones oculares (FC=6; p=0,000) con la segunda mayor duración media en cada fijación (FD=0,39; p=0,000).

La puerta de entrada registra el segundo mayor número de fijaciones oculares (FC=2,69; p=0,000) junto a la de salida –en función del plano de la grabación– (FC=2,16; p=0,000), aunque con menor duración media en cada fijación (FD=0,28 y FD=0,25, respectivamente; p=0,000) que el policía, los testigos de la agresión en *Use of force* (FD=0,41; p=0,000) o la acompañante de *Kiya* durante la agresión (FD=0,29; p=0,000).

Las diferencias significativas entre ambos grupos (tabla 2) ponen de manifiesto que en E1 el grupo 2 presta atención más rápidamente al agresor (TFF=0,84; p=0,001), con un mayor número de fijaciones de media (FC=1,70; p=0,010) que el grupo 1, a pesar de que éste mantiene la atención durante más tiempo en cada fijación (FD=0,44; p=0,001). El grupo 1, además, muestra un mayor número de fijaciones a la víctima (FC=3,35; p=0,006), con mayor duración en cada fijación (FD=0,54; p=0,000).

En E2 también se aprecia que el grupo 2 presta atención antes al agresor (TFF=0,70; p=0,000), con un mayor número de fijaciones oculares (FC=5,82; p=0,024) y también de manera significativa con respecto al grupo 1, hace lo propio con la compañera de la víctima (TFF=2,19; p=0,005; FC=2,28; p=0,000). El grupo 1 en cambio, dirige antes su atención a la víctima (TFF=1,10; p=0,020) con una mayor duración media (FD=0,25; p=0,000).

A pesar de que en E3 las diferencias significativas entre ambos grupos son puntuales, en E4 sí se observa que el grupo 1 busca ayuda con la mirada, fijándose antes en la compañera de la víctima (TFF=0,20; p=0,000) y la policía (TFF=0,58; p=0,033), destinando a ésta un mayor número de fijaciones (FC=2,47; p=0,050) y una mayor duración de cada fijación al segundo policía (FD=0,44; p=0,001).

> La atención visual a la víctima de la violencia machista es mayor que la obtenida por el agresor, aunque la acción violenta acapara la atención de todos los sujetos

El 69,17% de los participantes (desviación de 0,464) pudo describir el contenido general de la información en el caso de *Use of force* y el 86,67% (desviación de 0,341) en el caso de *Kiya*, a pesar de que los detalles sobre el cuándo, dónde y por qué de la noticia no se concretan en ningún caso, lo que sugiere la necesidad de complementar estos vídeos 360° de periodismo inmersivo con una información que los complete. El interés en buscar la noticia que explica el caso de *Kiya* fue notablemente superior (74,17%; desviación de 0,395) al de *Use of force* (19,17%; desviación de 0,440) y parece que “su mayor realismo”, una mayor “claridad de lo que está pasando” y la “violencia”, “injusticia” o “rabia” sentida ante la

Tabla 2. *Kruskal Wallis* test entre grupos de participantes

E1 - *Use of force*				**E2 - *Kiya* 1**			
AOI	Media FC (Nº)		P-value	AOI	Media FC (Nº)		P-value
	Grupo 1	Grupo 2			Grupo 1	Grupo 2	
AOI 1	3,35	2,67	*0,006	AOI 1	1,67	2,28	*0,000
AOI 2	1,24	1,70	*0,010	AOI 2	2,20	2,66	0,191
AOI 3	1,50	1,43	0,916	AOI 3	5,15	5,82	*0,024
AOI 4	ND	ND	ND	AOI 4	4,32	4,23	0,733
AOI	Media FD (“)		P-value	AOI	Media FD (“)		P-value
	Grupo 1	Grupo 2			Grupo 1	Grupo 2	
AOI 1	0,54	0,39	*0,000	AOI 1	0,33	0,28	0,165
AOI 2	0,44	0,30	*0,001	AOI 2	0,25	0,18	*0,000
AOI 3	0,38	0,43	0,079	AOI 3	0,28	0,23	*0,015
AOI 4	ND	ND	ND	AOI 4	0,27	0,25	0,097
AOI	Media TTF (“)		P-value	AOI	Media TTF (“)		P-value
	Grupo 1	Grupo 2			Grupo 1	Grupo 2	
AOI 1	0,83	0,93	0,063	AOI 1	2,58	2,19	*0,005
AOI 2	1,34	0,84	*0,001	AOI 2	1,10	1,90	*0,020
AOI 3	2,41	2,05	0,214	AOI 3	0,94	0,70	*0,000
AOI 4	ND	ND	ND	AOI 4	1,14	1,35	0,252
E3 - *Kiya* 2				**E4 - *Kiya* 3**			
AOI	Media FC (Nº)		P-value	AOI	Media FC (Nº)		P-Value
	Grupo 1	Grupo 2			Grupo 1	Grupo 2	
AOI 1	1,50	2,25	0,064	AOI 1	2,50	2,81	0,309
AOI 2	1,24	1,58	*0,044	AOI 2	5,87	6,13	0,635
AOI 3	10,45	10,52	0,876	AOI 3	2,47	1,95	*0,050
AOI 4	2,25	2,13	0,443	AOI 4	3,80	4,28	0,241
AOI	Media FD (“)		P-value	AOI	Media FD (“)		P-value
	Grupo 1	Grupo 2			Grupo 1	Grupo 2	
AOI 1	0,20	0,30	*0,016	AOI 1	0,29	0,26	5,79
AOI 2	0,16	0,15	0,599	AOI 2	0,44	0,34	*0,001
AOI 3	0,39	0,31	*0,000	AOI 3	0,21	0,21	0,831
AOI 4	0,26	0,24	0,379	AOI 4	0,24	0,25	0,557
AOI	Media TTF (“)		P-value	AOI	Media TTF (“)		P-value
	Grupo 1	Grupo 2			Grupo 1	Grupo 2	
AOI 1	1,70	2,63	*0,050	AOI 1	2,86	2,62	0,369
AOI 2	1,89	2,23	0,300	AOI 2	1,05	1,11	0,287
AOI 3	0,43	0,44	0,414	AOI 3	0,58	0,61	*0,033
AOI 4	2,10	1,93	0,712	AOI 4	0,20	0,42	*0,000

experiencia inmersiva declarada por los participantes ayuda a cumplir con la finalidad de concienciar sobre el contenido violento y despierta el interés informativo para buscar ese contenido en una noticia. En último lugar, se realizó la prueba de Chi^2 para comprobar las diferencias entre el mayor porcentaje de sujetos que describen el contenido general de la información a partir del vídeo y quienes buscan posteriormente ($\chi^2(2)$= 4,969; p=0,011) sobre los que no, rechazándose H_0 y concluyendo que ambas variables están correlacionadas.

4. Conclusiones

A pesar del continuo descenso de audiencia experimentado por los periódicos en virtud de la información que los jóvenes obtienen de internet y las redes sociales sobre las cuestiones de su interés, la investigación realizada pone de manifiesto la capacidad del periodismo inmersivo para atraer la atención de los jóvenes universitarios españoles y portugueses.

> El 74,17% de los participantes decidió leer la información publicada sobre el hecho narrado en el vídeo 360° sobre violencia machista

Al margen del interés que aporta el periodismo inmersivo para el lector más joven, demostrado por una atención prestada por parte del 100% de los participantes a alguna de las áreas marcadas con contenido violento en cada estímulo, el 86,67% de los participantes ha sido capaz de describir el contenido general informativo del vídeo 360° sobre la violencia machista, decidiendo el 74,17% acceder a la noticia publicada después de su experiencia inmersiva, superando así el enfoque lúdico de los trabajos realizados hasta el momento con los diversos tipos de *juegos serios*.

La capacidad de concienciación de estos contenidos inmersivos violentos era otra de las cuestiones a resolver. A pesar de que la acción violenta es la que atrae la atención principal de los participantes, alcanzando al 100% de los sujetos, acaparando el caso de violencia machista más atención que la agresión policial y las víctimas, más que los agresores. En las escenas en las que las víctimas no se encuentran presentes directamente en la imagen, la atención a la policía, las compañeras de la víctima o la puerta de entrada/salida reflejan un intento visual de socorrer a la víctima. Por tanto, los resultados se encuentran en línea con la capacidad de mejorar la empatía, el cambio social y la defensa de los derechos humanos que la bibliografía científica asignaba a cualquier tipo de *juego serio*, entre los que se encontraría este tipo de periodismo inmersivo.

> El periodismo inmersivo, un revulsivo para que los menores de 24 años dejen de ser el grupo con menor hábito de lectura

Las diferencias entre grupos son significativas únicamente en áreas de interés puntuales. El grupo 2 fija su atención de manera más distribuida entre la víctima, la búsqueda de ayuda y la agresión, aunque los dos grupos enfocan su atención en los momentos de máxima violencia. Sin embargo, la rapidez con la que el grupo 2 fija su atención en el agresor y el número de veces que lo hace es significativamente mayor que en el grupo 1, con una atención más intensamente centrada en la víctima y la ayuda. Estos resultados parecen sugerir una mayor concienciación e implicación por parte de los participantes españoles con las víctimas de la violencia machista, quienes han experimentado un sentimiento de injusticia y rabia.

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The use of *YouTube* by the Spanish press: A model to be defined

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Abstract

The instability in the newspaper business model since the emergence of the Internet disrupted the value chain and has led newspapers to turn to videos as an additional source of revenue. *YouTube* has become the content distribution channel of choice for most newspapers, which benefit from the ability to generate greater traffic in exchange for a blind contract imposed by *YouTube*'s algorithm. Advertising income from this source is still scarce and depends on engagement, previous user experience, video quality, video reputation and numerous other factors. Based on an analysis of 864 videos over three randomly selected weeks, conclusions are reached, and the consequences of the management of the *YouTube* channels of six Spanish newspapers are discussed.

Keywords

YouTube; Business models; Digital journalism; Digital press; Media; Press; Newspapers; Newspaper companies; Newspaper innovation; Engagement; Multimedia; Audiovisual; Online video; Social media; Youtubers; Spain.

1. Introduction

The transformation of the journalism industry's business model has forced newspapers to redefine their strategies regarding the creation, distribution, marketing and promotion of content. Faced with this need to restructure, newspapers have chosen, among other approaches, to seek new sources of revenue through the audiovisual value chain. Given the widespread mobility of information consumption

> 'as part of a pattern of convergence that has generated the broad uptake and use of social media' (**Sheridan**; **Matthews**, 2017, p. 1575),

newspapers have established a presence in this area. In this new and incomplete digital ecosystem,

> 'Spanish media managers consider that *Twitter*, *YouTube* and *Facebook* are the networks that have had the greatest impact on their activities and business' (**Campos-Freire** *et al.*, 2016, p. 453).

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Newspaper companies focus their strategies on these social networks as a way of adapting to the new media model, enabling them to exploit the opportunities of the market of convergence.

Accordingly, newspapers disseminate their content beyond their websites, taking a lead role as producers of news on social networks, where the younger members of the audience primarily choose to seek information (**Casero-Ripollés**, 2012; **Gottfried**; **Barthel**, 2015; **Santín**; **Álvarez-Monzoncillo**, 2017). In addition, newspapers have opted for a wide variety of content, often adapted to a transmedia interactive format in which the roles of readers (the users) and videos (the format) have taken on a level of importance in the digital press that was unthinkable just a few years ago. Text and photography now stand alongside video, and search engines and social networks have become content prescribers.

This trend reflects younger generations' preference for audiovisual language over written language because of its greater simplicity and appeal. As a result, newspaper publishers have devised strategies to attract this younger audience and thereby boost their revenues. Digital migration also entails a reduction of attention time

> 'that affects advertising and classic mass media models' (**Álvarez-Monzoncillo**, 2011, p. 59).

In the battle for this market of attention (**Webster**, 2014), the media strive to be providers not only

> 'of information but also of entertainment and services. Two areas in which, without a doubt, the audiovisual format can develop fully' (**Masip**, 2010).

From the perspective of this new reality in which video and social networks have become major components of newspapers' activity, this article analyses the role of *YouTube* in Spanish newspapers.

2. The vital innovation by the press

Newspapers have witnessed the rapid decline of their two main sources of revenue (advertising and sales) in the wake of the recent financial and economic crisis and the advance of digital development. After several decades, the press is now finally exploiting the Internet's potential, but major questions over the newspaper business model have yet to be answered (**López-García**; **Pereira**, 2010; **Picard**, 2014; **Küng**, 2015). Publishers today face the challenge of increasing their revenues in a number of ways to enhance their competitive advantage. Through vertical paths, companies have explored opportunities at each link in the classic value chain. In addition to these vertical paths, the press has also explored horizontal paths, moving into the value chains of other industries, and even diagonal paths, moving between distant points in different chains (**López-Villanueva**, 2011).

This horizontal diversification includes the creation of information products for brands and the production of videos. In both cases, this content could be posted on the newspaper's website or externally. With this type of initiative, newspapers offer a different type of content, but the orientation is the same as that of the original product. In addition to these approaches, newspapers have also diversified their businesses by embracing e-commerce, organising events associated with current affairs and organising events outside the realms of journalism. Newspapers are no longer businesses that sell advertising alongside news; instead, they generate news beyond the confines of their website and offer other sales and services, seeking new commercial margins in the convergent global market.

In short, innovation is a crucial component of the search for new sources of revenue to ensure survival. However, it is not just a question of innovating for its own sake or posting videos on *YouTube* or the newspaper website. According to Gershon, for innovation to be successful, it must meet certain conditions:

> 'First, the innovation is based on a novel principle that challenges management orthodoxy. Second, the innovation is systemic; that is, it involves a range of processes and methods. Third, the innovation is part of an ongoing commitment to develop new and enhanced products and services' **Gershon** (2014, p. 203).

Innovation in journalism has been studied from different perspectives. These perspectives are closely interrelated and difficult to consider in isolation. Examples include:

- business models, ways of monetising content and financing strategies (**Carvajal**; **García-Avilés**; **González**, 2012; **Campos-Freire**, 2015; **Grubenmann**, 2016);
- the culture of journalism start-ups (**Küng**, 2015; **Carlson**; **Usher**, 2016; **Valero-Pastor**; **González-Alba**, 2018);
- technological issues (**Curran**, 2010; **García-Avilés**; **Carvajal-Prieto**; **Arias-Robles**, 2018; **Anguí-Sánchez**; **Cabezuelo-Lorenzo**; **Sotelo-González**, 2019);
- changes in production processes (**Carlson**, 2007; **Gynnild**, 2014);
- the distribution and marketing of products (**Aguado**; **Martínez-Martínez**, 2008); and
- consumption and readership (**Hujanen**; **Pietikainen**, 2004; **Domingo** *et al.*, 2008).

The production of audiovisual content by the press is related to these areas. Studies in this field (**Bock**, 2012, 2015; **Mitchell**; **Holcomb**; **Vogt**, 2014; **Kalogeropoulos**; **Cherubini**; **Newman**, 2016; **Kalogeropoulos**; **Nielsen**, 2017; **Mayoral-Sánchez**; **Abejón-Mendoza**; **Morata-Santos**, 2016; **Ortells-Badenes**, 2016, **Kalogeropoulos**, 2017; **Hallgren**; **Nylund**, 2018) have shown that the use of videos by the press has grown as technological advances have made it cheaper to create audiovisual material, file sizes have become smaller and download speeds have increased.

There are many reasons why a medium based on textual information and reflection uses videos as a complementary or central news tool. **Kalogeropoulos** and **Nielsen** (2017) affirm that editorial considerations seem minimal and that greater importance is attached to meeting the demands of the readership, complying with the priorities established by *Facebook* and *Google*/*YouTube* for the positioning of information, and seeking a more lucrative approach to advertising. Newspapers often report that news stories accompanied by videos are among the most viewed news items (**García-Gómez**, 2015, p. 436; **Morera-Hernández**, 2017, p. 131). Like the other reports in the newspaper, these videos are seen not only in the pages of the newspaper but also outside the newspaper. Similarly, the managing director of *Media Hotline* has affirmed that

> 'videos that refer to breaking news or highly topical issues generate more traffic than other types of content' (**García-Murga**, 2017, p. 145),

which increases distribution platforms' interest in this format.

In addition to the lucrative nature of videos as an online news format that captures readers' attention, online video advertising is often perceived as less intrusive (*IAB Spain*, 2018). Thus, videos are especially attractive for advertisers and, by extension, for the press. In the European Union, online video advertising is still worth just 10% of television advertising revenue, but it is growing fast (**Fontaine**; **Grece**; **Jiménez-Pumares**, 2018).

Together, these factors make the success of online videos seem unstoppable and mean that newspapers increasingly use videos. It is estimated that around 82% of all Internet Protocol (IP) traffic in 2022 will be in this format (*Cisco*, 2019). In Spain, 95% of Internet users between the ages of 16 and 65 years watch videos online, and, according to *IAB Spain*'s *Online video study 2018* (*Estudio anual de vídeo online 2018*), news and information represent their fifth favourite type of content.

3. The role of *YouTube* as a social network leader

Digital convergence has led to the integration of text, image, sound and video. Consequently, it is increasingly common for videos to complement written news, and the power of images can be unleashed to enhance the level of spectacularisation. *YouTube* clearly seems to be the platform of choice for this integration, given the collaborative spirit with which it was created. Today, *YouTube* is the world's largest and most popular video-sharing community of users. It is the second biggest search engine by number of searchers (after *Google*). People watch one billion hours of *YouTube* videos a day, and 400 hours of video are uploaded to *YouTube* every minute (**Smith**, 2019). Its profitability and revenue are unclear, and the business could be described as opaque. Not in vain, *YouTube*, like other multinational giants, has endeavoured to create barriers between content producers and consumers (**Whittaker**, 2019).

Music, followed by comedy, is the most watched genre of *YouTube* videos. However, in the last few years, *YouTube* has also become an essential social network for news distribution. Studies of *YouTube* from a journalism perspective have focused particularly on the phenomenon of citizen journalism as an alternative form of reporting. *YouTube* has become a key platform in that it provides reports, through images and sound, of major news stories that journalists are not always able to cover. In addition, *YouTube* enables content uploading in real time through live streaming. This service, which provides huge value through instantaneous reporting, was launched in 2011.

In reference to the type of news viewed on *YouTube*, some scholars (**Peer**; **Ksiazek**, 2011, p. 56) have noted that viewers seem to prefer non-formal content (a collaborative journalism style) in the digital news environment to videos that follow traditional production practices. **Peer** and **Ksiazek** (2011) examined the most popular types of news videos hosted on *YouTube*. They found that most followed traditional audiovisual information production practices but often defied traditional standards in terms of sources and impartiality. *YouTube* news is a collective creation, and the forms of news are polarised. The exchange of information and videos on *YouTube* was studied by **Sumiala** and **Tikka** (2015), who stressed that the ritual of objective news is being challenged by *YouTube*, largely through emerging forms of non-professional news and their rituals of subjectivity.

YouTube is becoming a source of information, and the media are increasingly developing their own *YouTube* channels. Collaboration with this platform offers a way of tackling the major problem faced by traditional journalism institutions. **Peer** and **Ksiazek** (2010, p. 47) and **Kalogeropoulos** (2017) have alluded to this problem by explaining that the media are aware that most news videos are not viewed on their websites but rather on social networks. According to the *Reuters Institute* report in 2018, 51% of news videos are viewed outside the news media, and *Facebook* accounts for 33% of views, with *YouTube* accounting for 25% (**Newman** *et al.*, 2018, p. 28).

Virtually all major newspapers have had their own *YouTube*[1] accounts for years, and the collaboration between the press and *YouTube* is becoming closer. In mid-2018, *YouTube* launched the *Google News Initiative* (*GNI*) programme, allocating 25 million US$ to fund innovative journalism projects in the world of online videos. In addition to this specific initiative dedicated to video journalism, the *Digital News Innovation Fund* (*DNI Fund*) has been used by *Google* in recent years to finance projects by publishers to improve audiovisual offerings by newspapers and strengthen their *YouTube* presence. *YouTube* has also launched *YouTube Player*, a platform that gives newspaper publishers greater control over the content they publish.

4. Video profitability and distribution agreements

In journalism, new Internet user activity and the business and regulatory problems of convergence face an inescapable reality:

> 'the emerging value chain shows little sign of generating new revenue' (**Álvarez-Monzoncillo**, 2011, p. 13).

The so-called *wealth of networks* described by **Benkler** (2006) seems to lag behind in the case of the press. There is also cannibalisation between digital and analogue markets, and this business has, metaphorically speaking, gone from dealing in euros to dealing in cents. After several decades, business models have still not stabilised, and they are essentially based on advertising, with subscriptions remaining insufficient in most cases, despite the rise of paywalls in recent years[2].

Against this backdrop of shrinking revenues, a value chain that has been heavily disrupted by the Internet and the unstoppable process of media convergence, newspapers seek revenue from a range of sources, as explained earlier. One way of achieving this goal is through the production of videos and the use of global distribution platforms such as *YouTube*, *Vimeo* and *Dailymotion*. This process of *platformisation* is changing the media industry (**Evens**; **Donders**, 2018, p. 4). Yet therein lies the problem, as the network market has become heavily concentrated in the hands of powerful monopolies (*GAFAM*, *Google*, *Amazon*, *Facebook*, *Apple* y *Microsoft*) under the logic of *the winner takes it all*. Online advertising revenues are growing steadily, but this increase is not being transferred proportionally to newspaper companies; instead, the network giants are taking over advertising, with 84% of global digital advertising spend (excluding the Chinese market) going to *Google* and *Facebook* (*Financial Times*, 2017, citing *GroupM*).

Content on *YouTube* has shown an ability to influence purchasing decisions (**Dehghani** *et al.*, 2016), and brands have expressed an interest in establishing a presence there. Newspapers seek advertising from this alliance, but *YouTube* does not always make things easy for content creators. For newspapers, there are differences depending on whether they operate directly with *YouTube Player* or with other players such as *JWPlayer* or *Arc Video Player*.

YouTube offers advantages to newspapers that use its player. It prioritises these newspapers in its ad auctions and lets them control advertising formats, load ads on videos and directly handle ad purchasing (*Google Spain*, 2016). However, in return, these newspapers cannot differentiate the way they manage the advertising for the videos viewed on their website.

Newspapers that use other players have more freedom in how they manage advertising for the videos viewed on their website, but they surrender control of the type of advertising shown in the videos they upload to *YouTube*. Their relationship is based on a 'blind' agreement, whereby *YouTube* places advertising based on a large number of automated variables processed through its proprietary algorithm. This advertising depends on the user experience in previous searches, the engagement between users, the newspaper and advertisers, the quality of the videos, reputation, subject matter, and so on. *YouTube* even decides on saturation levels. In this context, the price of the cost per thousand impressions (CPT) or cost per view (CPV) is hard to predict. This amount is known only after payment.

The choice of a particular model is a technological strategy that results in not only differences in income but also major differences in distribution. If newspapers use the *YouTube* player, all of their videos are played through this social network, even if they can be viewed on the newspaper's website. Using a different player lets a newspaper ensure that all its videos are viewed exclusively on its website, and only a selection of these videos, which are selected by the newspaper, may be hosted on *YouTube*.

Regardless of the chosen model, advertiser management, to a greater or lesser degree, is still handled by the *Google* subsidiary. This situation makes it difficult for newspapers to achieve economies of scale by including ads on *YouTube*. Newspapers therefore prefer to use their own platforms to distribute their videos. However, they use this social network leader to ensure their videos are distributed by the dominant market operator and to achieve extra revenue in an area where it has captured a large share of the video advertising market. According to a report published at the end of 2018 by the *European Audiovisual Observatory* of the *Council of Europe*, *YouTube* has the biggest share of the advertising market for videos shared online (with 32%), ahead of *Facebook* (**Fontaine**; **Grece**; **Jiménez-Pumares**, 2018).

For there to be some kind of financial remuneration, *YouTube* requires the account to have more than 1,000 subscribers and more than 4,000 hours of accumulated viewing time, which is the case for virtually all newspapers. From thereon in, determining the revenue per thousand visits (RPT) is more complicated because it varies with the audience, viewing time, published content and demand for the inclusion of advertising.

Besides the difficulties in monetising online content, producing videos is also expensive and requires considerable investment by newspapers. The cost of production varies widely, and low-cost videos stand alongside medium-quality videos (with a production cost of close to 250 euros) and higher quality videos that have longer life cycles and can generate greater revenues. In any case, it is a question of cost-benefit analysis.

From a business perspective, the inclusion of videos in newspapers and their distribution on platforms such as *YouTube* can lead to challenges that often relate to the resistance to change and the lack of skills of news professionals (**Hallgren**;

Nylund, 2018, p. 77). There is a need to improve human resource management and the skills of journalists (**Murschetz**; **Friedrichsen**, 2017), as well as the new working environment (**García-Santamaría**; **Barranquero-Carretero**, 2015; **Álvarez-Monzoncillo**; **Suárez-Bilbao**; **De-Haro**, 2016), to build a competitive advantage in the new online information ecosystem. Be that as it may, in the coming years, there will be a battle to control the increase of advertising in news video content between the dominant operator (*YouTube*), specific newspaper channels and new operators that will try to adapt even better to the needs of advertisers and readers (*Amazon*, *Facebook*, *Instagram*, *Netflix* and *Vox* in business). Regulations are also envisaged in all countries to prohibit certain unfair competitive practices linked to the use of algorithms.

> There will be a battle to control the increase of advertising in news video content between the dominant operator (*YouTube*), specific newspaper channels and new operators

5. Aims and method

The core aim of this study is to understand the strategies developed by newspapers for value creation on *YouTube* to increase their revenue. To meet this aim, it is important to know the average number of videos posted daily on *YouTube*, the topics they address, and the quality and style of the videos hosted on the newspapers' *YouTube* channels. The goal is to explain the repercussions that a newspaper's *YouTube* presence has on that newspaper's brand image, considering not only the number of subscribers and videos viewed but also the possible role of influencers, famous journalists or popular youtubers as regular contributors on the channel.

The newspapers analysed in this study are *La vanguardia*, *El país*, *El mundo*, *El confidencial*, *El español* and *Eldiario.es*. Three of these Spanish newspapers are representative of the digital journalism shift from print to the Internet, and three are representative of digital native newspapers that have existed for more than five years. According to *comScore* data (*PrNoticias*, 2019) when defining the sample, these newspapers are leaders in terms of the number of visits in their respective categories, and each of them has its own *YouTube* channel.

The research aims were addressed by conducting a literature review, examining the target of this study and, most importantly, performing content analysis followed by a qualitative adjustment. This method enabled rigorous and systematic analysis of the nature of the videos that the newspapers posted on *YouTube*. An analysis procedure was then designed with the corresponding variables. To design this procedure, the proposals of other authors (**Peer**; **Ksiazek**, 2011; **Mayoral-Sánchez**; **Abejón-Mendoza**; **Morata-Santos**, 2016; **Ortells-Badenes**, 2016) who have addressed similar themes were considered. The variables and categories were adapted to the specific aims of this study. The initial design was tested with a sample of videos from these six newspapers from one week in March 2019. The results highlighted the complexity of the study and showed the need to simplify some of the variables and redefine certain categories more accurately because the types of videos varied greatly. The final variables focus on technical, stylistic and functional aspects of the videos (see Annex 1).

To design the random sample, the *YouTube* channels of these newspapers and the videos published in three non-consecutive weeks in March (17th to 23rd), April (7th to 13th) and May (5th to 11th) 2019 were chosen. The analysis was not based on selecting the most viewed, most popular or most commented videos because such an approach would distort the study sample. The final sample consisted of 864 videos. Of these,

- 361 were published by *El país*
- 277 by *La vanguardia*
- 90 by *El mundo*
- 56 by *El confidencial*
- 55 by *Eldiario.es* and
- 25 by *El español*.

In the second phase, professionals from the sector were interviewed to help interpret the data from another perspective. The experts' input led to the removal of some of the variables linked to advertising because the coding process might have distorted the results.

6. Results of the analysis

The analysis shows that the strategies followed by these newspapers regarding their *YouTube* profiles and the inclusion of videos on their websites are inconsistent and varied. Different players and different ways of linking to *YouTube* are used. Some newspapers, namely *El país*, *La vanguardia* and *Eldiario.es*, use *Google*'s own player (*YouTube Player*), whereas others, namely *El mundo*, *El confidencial* and *El español*, use other players. The choice of player reveals differences in technological strategies, different levels of monetisation and different levels of control over the search for synergies with advertisers.

6.1. Scheduling by regular contributors on the newspapers' *YouTube* channels

El país and *La vanguardia* upload by far the most content to *YouTube*. Both newspapers have made a clear commitment to video content. On average, *El país* uploads 17 videos a day, and *La vanguardia* 13. This number is considerably higher than the number uploaded by *El mundo* (four a day), and the digital native newspapers are even further behind in this measure. Despite having been created for the Internet, these newspapers have a small commitment to *YouTube* content, publishing between one and three videos a day on average. However, the potential to capture revenue does not depend on the number of videos on the channel but rather the degree of professionalisation and reader loyalty. Therefore, it is natural to seek prestigious and well-reputed collaborators in keeping with the editorial line to capture more views.

One of the strategies used to create user loyalty on *YouTube* channels is to design the scheduling in the form of a linear broadcasting grid. Youtubers also schedule the release of their videos to empathise with their followers. Engagement has its own logic and rules (**Chan-Amstel**; **Wolter**, 2018; **Dehghani** *et al.*, 2016), and there is a certain routine in the way videos are uploaded to suit readers' habits. Video uploading peaks on weekdays rather than weekends, when production is substantially lower. Surprisingly, some digital newspapers do not upload any video content on Sundays.

Table 1. Distribution of weekly video production

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Total
18.3%	17.9%	16.3%	19.8%	12.3%	9.1%	6.3%	N. (864) 100%

In addition, the newspapers create playlists with their main content sorted by topic. Doing so creates consumption routines with respect to collaborators to enhance visibility. Most newspapers showcase videos with well-reputed journalists or figures to differentiate themselves from their rivals. Examples include Iñaki Gabilondo's videoblog in *El país* from Monday to Thursday and J. M. Gay de Lièbana's video diary, *E-Konomía*, in *La vanguardia* from Monday to Friday.

Weekly collaborations are also common. On *YouTube*, *La vanguardia* collaborates with Pablo Foncillas, a *TED Talk* speaker who publishes a youtuber-style[3] video on Tuesdays, which explains how digital technology influences value creation.

Around 19% of the videos posted by these six newspapers on *YouTube* are scheduled periodically. *La vanguardia* has the most clearly defined and long-term scheduling strategy. It also has the most daily, weekly and fortnightly collaborations scheduled on its channel. Some of these are directly linked to service journalism. Examples are *Corpore sano*, which deals with health and welfare issues in the style of a consultation, and the fortnightly collaboration with Andrea Vilallonga, an expert in communication and image, who provides advice on how to act in a range of social situations.

El español publishes the fewest videos. However, it also periodically posts offerings such as *La cena de los jaleos* on Saturdays and *El kiosko rosa* on Wednesdays. The language used is aimed at younger readers, and these collaborations reflect the newspaper's position as a leader in collaborations related to society news and gossip.

El país has few collaborations that follow a clear schedule[4]. Besides *El video blog de Iñaki Gabilondo*, which is devoted to political analysis, and *El rincón de los inmortales*, where historical chess moves are analysed, *El país* seems to focus on current affairs to offer videos with short-term scheduling that are linked to a range of journalism situations. This strategy is shared by other newspapers. Current affairs undoubtedly influence the contents of newspaper profiles on *YouTube*. In parallel, newspapers strive to incorporate a scheduling strategy. For example, *El confidencial* offers weekly summaries of the 'Procés' (in relation to the independence movement in Catalonia), and both *La vanguardia* and *El mundo* report weekly on *YouTube* on the *Supervivientes* reality show.

E-Konomía by J. M. Gay de Lièbana
https://www.lavanguardia.com/autores/jose-maria-gay-de-liebana.html

Pablo Foncillas, the anti-guru
https://www.lavanguardia.com/autores/pablo-foncillas.html

Andrea Vilallonga
https://www.youtube.com/playlist?list=PLhkHcc7EKtBb7ZLGwnmu_-QayiA6EuGQS

Image 1. Collaborations in *La vanguardia*

6.2. Technical features of the videos

The favourable strategy of using social networks to distribute content without investing in the production of that content is followed by the press. User-generated content (UGC) has been used parasitically by companies to generate revenue against the founding principles of the Internet. From an editing perspective, the videos uploaded by Spanish newspapers to *YouTube* are generally not elaborate. Almost half (44%) are live broadcasts generally provided by external sources (mainly institutions such as courts or parliamentary headquarters) or are cuts of these images, agency images or images from other sources such as political parties or national law enforcement authorities or forces that require virtually no editing. Besides the selection of the content, the journalist's work is limited to including tags to identify the type of news or the location of the news event. Although these videos include the newspaper logo, the authorship cannot be said to belong entirely to the newspaper.

A similar percentage of the videos (46%) are edited in a way that requires greater involvement from journalists, who tend to narrate the news story using captions. The complexity of the editing is inconsistent, but most videos consist of a basic montage. In general, the journalist plays less of a role in these videos than on television, and the use of voice-over by the journalist is practically non-existent, with only 3% of the videos being narrated this way. The scope of the editing of these videos varies considerably, and the media typically use only images accompanied by music or background sound. The inclusion of statements from key figures in these videos is somewhat limited (24%), and few videos use complex production techniques or graphic art. The use of immersive virtual content or 360º videos is practically non-existent (0.3%). Only *El país* used these techniques during the study period.

Just 10% of the videos are edited in such a way that the journalist or narrator of the story becomes the main element of the video by telling the story to the camera. In these cases, a talking head appears in about 50% of the videos, with the other 50% adopting a more adventurous format, in which the newspapers distance themselves from the traditional language of television. In such cases, the videos also tend to include other types of images that correspond more to the look of a programme or the look adopted by youtubers.

Newspapers seek to squeeze the most out of major news events, whether or not they are their own. This situation sometimes conveys a sense that content is being duplicated. As a general rule, some videos of major events capture the entire event, while other videos offer key statements or moments from that event in instalments.

The perception is that *El país* and *La vanguardia* have made the biggest commitment to audiovisual newspaper content on *YouTube*, not only because they upload the most videos to the social network but also because of the type of editing used on their videos.

The analysis shows that in addition to their variation in quality, the videos hosted by newspapers on *YouTube* vary considerably in duration. Longer videos can be found alongside medium-length or short videos. However, just under half (45%) of the videos are between 31 seconds and 2 minutes long. This duration is similar to the news reports aired on the television news. The exception is the digital native newspaper *El español*, which posts longer videos, with 8 out of 10 of its videos lasting between two and six minutes.

However, this newspaper does not publish what might be called long videos that exceed 30 minutes, something that the other newspapers regularly do on *YouTube*. Around 15% of the videos analysed are over one hour long, and 3.3% last between half an hour and one hour. In all cases, the majority of these videos are live broadcasts, which are not always informative in their entirety.

6.3. Videos at the service of citizens

The increase in newspaper content on *YouTube* has not caused newspapers to abandon their main purpose as sources of information. Just less than 83% of the videos posted on *YouTube* are intended to inform viewers. Only a minority are supposed to be for learning or entertainment.

Table 2. Main purpose of the video

Information	Learning	Entertainment	Miscellaneous	Total
82.7%	3.8%	4.3%	9.2%	864 (100%)

In addition, the style of the videos tends to be formal, which is normally associated with a journalistic style. Only 12.2% of the videos use the informal look of a home video or the casual style of youtubers.

Home videos are rare. Only 4.1% of the videos uploaded by the press to *YouTube* are non-professional videos. *El país* has the highest percentage of this type of video, with 7.2% of the videos uploaded to *YouTube* belonging to the category of home videos edited by the newspaper to increase their information value or improve their appearance. *La vanguardia*, *Eldiario.es* and *El mundo* scarcely use this kind of video. *El confidencial* and *El español* did not upload any such videos during the study period. The data suggest that news collaborations between citizens and the digital press on *YouTube* are minimal. This finding is somewhat surprising given the possibilities for collaboration and the interest of readers in non-formal approaches (**Peer**; **Ksiazek**, 2011, p. 56)

The recurring themes of the videos posted on *YouTube* by these six Spanish newspapers are national politics (38.4%), international politics and society (in the same proportion of 14.7%), culture (7.3%), sport (4.1%) and nature (3%), among others. The difference in approach by each newspaper is also evident. *El español* devotes by far the most videos to society news and gossip; the rest focus on national political issues.

The uploaded videos do not encourage much involvement from readers. A week after being published, 57% of videos had still not managed to attract 20 likes, and only 15% had more than 100. A separate issue is participation via chat feeds generated by some live shows on *YouTube* and the support that some newspapers receive from their subscribers.

6.4. Plays

In general, the videos that the newspapers post on *YouTube* are linked to current events. Therefore, their chances of generating a profit from plays are greatly diminished after 48 to 72 hours, although some videos have a longer life cycle. One week after the videos are posted, the average number of plays is low, with 73.8% of the videos in the sample attracting fewer than 10,000 plays and one in four videos failing to reach 1,000. Competition seems fierce, and most newspaper videos fail to attain high viewing figures, although there are always exceptions.

During the study period, only 1% of the videos had exceeded 200,000 views one week after being posted (see Annex 2). One of these was a citizen-produced viral video[5], four corresponded to a live broadcast or newspaper-edited cuts of institutional images, and only two of these videos required a more elaborate editing process and could be considered videos whose authorship belonged solely to the newspaper.

One of these two videos was produced by a journalist at *El país* with experience in audiovisual production[6]. The video shows the journalist talking to the camera and explaining how scientists have managed to photograph a black hole for the first time. Although this video is linked to current affairs, its purpose is mainly educational, and it could clearly be used to complement the news story but with a longer life cycle. The other was a live stream of an election debate organised by the newspaper *El país* along with another subsidiary of the *Prisa* media group.

Table 3. Percentage of plays within one week of the video's release

	El país	*La vanguardia*	*El mundo*	*El confidencial*	*Eldiario.es*	*El español*	Total
Fewer than 1,000	17.8	29.2	43.3	17.8	37.1	88	28.5
1,001 to 10,000	51.8	50.5	33.3	29.6	46.3	8	45.3
10,001 to 20,000	9.6	8.7	5.5	14.3	3.8	0	8.7
20,001 to 30,000	6.1	3.7	4.4	8.9	7.4	0	5.2
30,001 to 40,000	5.7	1.4	6.7	16.1	1.9	4	4.8
40,001 to 50,000	2.5	0.4	3.3	1.8	0	0	1.6
50,001 to 60,000	2	1.8	1.1	3.6	0	0	1.8
60,001 to 70,000	0.6	0.4	0	0	0	0	0.4
70,001 to 80,000	1.4	1.1	0	5.4	1.9	0	1.4
80,001 to 90,000	0.6	0.4	0	3.6	0	0	0.6
90,001 to 100,000	0.3	0	1.1	3.6	1.9	0	0.6
More than 100,000	1.7	2.5	1.1	12.5	0	0	2.4
Total	100 N = 353*	100 N = 277	100 N = 90	100 N = 56	100 N = 55	100 N =25	100 N = 855*

*Nine videos initially uploaded by *El país* became unavailable after one week.

Viral videos are typically rare, but newspapers are occasionally capable of attracting a high number of plays, thereby generating traffic and revenue quickly, but probably in the short term. Accordingly, some experts affirm that these viral videos are not always useful in the press and fail to create real value for the newspaper (**García-Murga**, 2017, p. 145).

In addition to the intangible value of a newspaper brand, its economic value must also be evaluated. Approximately one in four videos fails to generate any advertising revenue given that for videos with fewer than 1,000 views, *YouTube* does not pay for the ad. To avoid ad saturation, videos do not always include advertising, and the number of plays can only offer an estimate of possible revenue. This revenue must be calculated conservatively because ads will not be served in at least 20% of the videos. In short, this study reveals a high number of low-cost, long-tail videos and few premium videos with the potential for a high number of plays.

Generating a profit from a video whose content is closely aligned with current events is difficult because its short life cycle makes it harder to recover the investment. Accordingly, success in terms of number of plays is greater when the video content is less closely related to current news.

Besides the income earned from the advertising included in their videos, newspapers also resort to brand content, where the use of videos is quite common. In the sample, only the newspapers with print editions have videos that fall into this advertising category. These videos tend to have a higher production cost[7].

7. Discussion and conclusions

The strategy of incorporating videos in the digital editions of newspapers and distributing these videos on their *YouTube* channels to increase revenue is highly complex because of certain factors that add little value in enhancing their competitive advantage. A video's success is measured by the number of views and other factors linked to *YouTube*'s proprietary algorithm, although it usually depends on the video's quality, topic or spectacularisation. Seeking a virtuous circle, newspapers encourage readers to participate by commenting and sharing on social networks to increase readership. The search for revenue through video distribution depends on the reputation of collaborators, employee know-how, the brand and the activity of a community of followers that strengthens value creation and the mix of advertising.

All newspapers devise strategies to schedule their videos and build reader loyalty. The most noteworthy model is probably that of *La vanguardia*, which has the highest number of daily, weekly and fortnightly scheduled collaborations on *YouTube*.

“Some publishers try to capture readers with attractive formats and collaborations with opinion leaders followed by large numbers of followers”

Some publishers try to capture readers with attractive formats and collaborations with opinion leaders followed by large numbers of followers. Others opt for a more information-centred approach, focusing on educational videos linked to current events with, if possible, a long life cycle that allows for first- and second-time views (e.g. *El confidencial*). The most common trend is for newspapers to combine these two strategies. Informative videos are placed alongside audiovisual content that is more entertaining or educational than purely informative. In general, different looks and styles are used in the videos uploaded by the press to *YouTube*. Low-cost videos are posted alongside collaborations with a higher production cost. Every newspaper seeks a differentiating factor that makes it more attractive than its competitors and helps it grow its market share.

The Internet generally demands differential content to attract a high number of plays. In this respect, Spanish newspapers have plenty of room for improvement. One week after being uploaded, 73.8% of videos had fewer than 10,000 views, and one in four videos had failed to attract 1,000 views on *YouTube*. In addition, almost half of the content on their channels is low-value content sourced from agencies or institutions. The favourable strategy of using social networks to distribute content without investing in production has been imitated by the press. From an editing viewpoint, the videos that Spanish newspapers upload to *YouTube* are generally not very sophisticated. Although they include the newspaper's logo, the authorship cannot be said to belong entirely to the newspaper.

Most Spanish newspapers have created a *YouTube* channel. This alliance with the dominant business in this area gives them a greater chance of visibility, although they often lose control over advertising and the possibility of creating economies of scale with advertisers.

“One week after being uploaded, 73.8% of videos had fewer than 10,000 views, and one in four videos had failed to attract 1,000 views on *YouTube*”

Brand content can be found on the *YouTube* channels of the analysed newspapers. This approach is mostly used by non-native publications. Advertisers probably place greater trust in the larger print newspapers for their campaigns. This model is particularly lucrative and attractive for newspapers because it gives them access to a steady stream of income that does not normally depend so heavily on the number of plays or algorithms.

The videos produced by the newspapers are intended for their own website, but a second outlet is provided by *YouTube*. The revenues obtained by newspapers are a small part of their revenue structure, but it allows them to improve their brand positioning with search engines.

The situation of the sampled newspapers varies considerably. Some have exclusive agreements and others have 'blind' contracts. The CPT (cost per thousand impressions) is usually low and ranges from 1 to 4 euros in the Spanish press. Newspapers rely on low-cost videos and struggle to differentiate themselves from the competition, especially through their news content. It seems that further investment in producing better quality videos and enhancing original content is essential if newspapers wish to improve their relationships with *YouTube*, their readers and their advertisers.

In the coming years, the converging market will grow because young readers increasingly prefer videos to written text. It is essential for newspapers, which have seen their revenues shrink at an alarming rate, to seek greater engagement with their readers. To do so, they must improve their video production and distribution strategies as a key form of innovation to survive in the digital ecosystem dominated by the tech giants.

“The profitability of the press on *YouTube* is for the moment scarce and unequal: private agreements with large headers coexist with other “blind” agreements where profitability will be largely determined by the algorithm”

8. Notes

1. *The Guardian*, *Le Monde*, *Le Figaro*, *Süddeutsche Zeitung*, *The Washington Post* and *The New York Times* created their *YouTube* accounts in 2006. These newspapers were followed by *La vanguardia*, *Die Welt* and *Corriere della Sera* in 2007 and *El país* in 2008, among many others.

2. Two thirds of the newspapers in the United States and Europe used paywalls in 2017 (**Simon**; **Graves**, 2019).

3. Youtubers use colloquial language and inclusive styles to attract viewers. Spoken narration is also mixed with other forms of expression such as graphics, sound, text and performance (**Ardèvol**; **Márquez**, 2018).

4. Some of their regular collaborations do not follow a specific release schedule.

5. Viral content is online content that spreads extensively and rapidly as users share it, particularly through social networks.

6. Bruno Martin, head of the *Darwin, te necesito* audiovisual series at *El país*, uses an informal look and youtuber-style approach to address scientific topics to separate the facts from the myths.

7. *Las giardinetto sessions* in *La vanguardia* and *Mujeres inspiradoras by Accenture* in *El mundo* are notable examples from the study period.

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Annex 1

Variables used in the analysis

Video identification
The videos used in the analysis were identified by their title, URL, newspaper and date of publication.
Technical characteristics
Video editing: A scale ranging from 1 to 6 was used. 1. The lowest level of editing, which corresponded to live feeds provided by another source or clean cuts of images provided by others that either were not edited or were only edited to identify the source. 2. May be sourced from elsewhere, but more sophisticated editing was used. The video was narrated using captions to tell the story and/or background music was added. This category included videos with still images using simple editing that could be performed on a tablet. 3. Montage of images and statements from key figures or editing of various statements from key figures with a clear narrative. 4. In-house editing or talking head. Two levels considered. 5. Videos with elaborate production, graphic art and special programmes or long interviews in which several cameras and elaborate editing were used. 6. 4K videos, 360° videos, immersive techniques, . . . **Advertising**. An assessment was performed to determine whether advertising was served in the first view of the video and what type of advertising was used: *pre-roll*, *mid roll*, *post-roll* or superimposed banner. An assessment was also performed to decide whether it was a *branded video.*
Features of style or content
Duration: Length of video. **Format**: The following variables were considered: Traditional. Three possibilities. 1A. With voice over. 1B. Without voice over but with ambient sound or background music including narration with captions. 1C. Other. Only voice and image (statements from key figures). Two possibilities. 2A. One. 2B. Several. Only images with no captions. Two options: 3A. Edited. 3B. Unedited. Broadcast of a programme or event organised by the newspaper. Other: . . . **Frequency**: Whether video was part of a series. **Style**: Formal (journalistic or non-journalistic) or informal (amateur/scrappy YouTuber style or other) **Topic**: General or specific. **Genre**: Information (news, report, interview, . . .), opinion. **Function**: Informative, educational, entertaining or various. **Core of the video**: In-house, agency, institutional feed, other media, other.
Interaction prompted by video
Whether there was chat interaction. Number of views, comments, likes and dislikes one week after upload.

Annex 2

Videos from the study sample that exceeded 200,000 plays one week after upload

Title	URL	Newspaper Date uploaded	Origin
Debate de El país con los candidatos a la alcaldía de Madrid *[Debate in* El país *with the candidates for mayor of Madrid]*	*https://www.youtube.com/watch?v=sOaDcLU9sdU*	*El país* 6 May 2019	Own event
La primera imagen jamás tomada de un agujero negro *[The first ever image of a black hole]*	*https://www.youtube.com/watch?v=tfKnjyYmtMI*	*El país* 10 April 2019	Own production
Cierran un gallinero por "molestar" a un hotel rural | Reacción de Nel Cañedo *[Henhouse closed for "bothering" a rural hotel | Reaction by Nel Cañedo]*	*https://www.youtube.com/watch?v=zCWi-XGyRxo*	*El país* 7 May 2019	Citizen
Durísima bronca del juez Marchena a la abogada de Cuixart: "Yerra usted en su estrategia defensiva" *[Harsh words from judge Marchena to Cuixart's lawyer: "You're mistaken in your defence strategy"]*	*https://www.youtube.com/watch?v=9Kw4K4xbc6s*	*El confidencial* 6 May 2019	
9 lecciones magistrales de Marchena en el juicio del 'procés' *[9 masterclasses by Marchena in the 'procés' trial]*	*https://www.youtube.com/watch?v=jxZW1whOKbI*	*El confidencial* 18 March 2019	
Un hombre lanza unas octavillas frente al féretro de Rubalcaba *[A man throws a handful of pamphlets at Rubalcaba's coffin]*	*https://www.youtube.com/watch?v=vYv8mAzHh5I*	*La vanguardia* 11 May 2019	Institutional images
Directo: Capilla ardiente de Alfredo Pérez Rubalcaba en el congreso 10 de mayo *[LIVE: Alfredo Pérez Rubalcaba's funeral ceremony in Congress on 10 May]*	*https://www.youtube.com/watch?v=TRszEtj5TTw*	*El país* 10 May 2019	
El lío del Guardia Civil en el juicio al procés *[Confusion of a Guardia Civil in the procés trial]*	*https://www.youtube.com/watch?v=iJRgrCwC7DU*	*La vanguardia* 19 May 2019	

Percepción de docentes universitarios, estudiantes, responsables de innovación y periodistas sobre el uso de inteligencia artificial en periodismo

Perception of teachers, students, innovation managers and journalists about the use of artificial intelligence in journalism

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Resumen

Se analiza la percepción que existe en el sector profesional y académico sobre el uso de inteligencia artificial en periodismo. El trabajo se ha desarrollado a lo largo de once meses mediante entrevistas a responsables de innovación de varios medios nacionales (N=10) y a docentes universitarios (N=10) y cuestionarios a periodistas (N=251) y a estudiantes de Periodismo y Comunicación Audivosiual (N=194). Los resultados muestran una coincidencia en ambos discursos en que esta tecnología no tendrá un impacto negativo sobre el mercado laboral periodístico. También existe consenso en que la calidad de las noticias automatizadas presenta algunas carencias importantes, así como en la necesidad de apostar por una sólida formación de los periodistas que integre el uso de las tecnologías emergentes.

Palabras clave

Inteligencia artificial; IA; Periodismo; Periodistas; Periodistas robots; Periodismo algorítmico; Periodismo automatizado; Periodismo computacional; Periodismo de alta tecnología; Tecnologías emergentes; Tecnologías de la información y la comunicación; Profesión.

Abstract

The perception that exists in the professional and academic sector about the use of artificial intelligence in journalism is analyzed. The work has been developed over eleven months through interviews with heads of innovation from several national media (N=10) and university professors (N=10) and questionnaires to journalists (N=251) and students of Journalism and Audiovisual Communication (N=194). The results show a coincidence in both discourses in that this technology will not have a negative impact on the journalistic labor market. There is also a consensus that the quality of

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automated news presents some important shortcomings, as well as the need to bet on a solid training of journalists that integrates the use of emerging technologies.

Keywords
Artificial intelligence; AI; Journalism; Journalists; Robot journalists; Robot journalism; Robojournalism; Algorithmic journalism; Automated journalism; High-tech journalism; Emerging technologies; Information and communications technologies; Profession.

1. Introducción

Hace cuatro décadas que los ordenadores aparecieron en las redacciones (**Túñez-López**; **Toural-Bran**; **Cacheiro-Requeijo**, 2018). Desde entonces la tecnología se ha adueñado de un espacio reservado a teletipos, máquinas de escribir y a la destreza en el oficio de los periodistas, lo que ha supuesto profundos cambios en un entorno en el que las condiciones cambian antes de que las formas de actuar lleguen a convertirse en hábitos (**Bauman**, 2017). Una tecnología supera a la anterior sin apenas tiempo para su aprovechamiento (**Lozano**, 2017) y sin que se atisbe un período de estabilidad social y profesional en los medios de comunicación (**Salaverría**, 2019), lo que hace replantearse continuamente el concepto de periodismo y su práctica (**Casals-Carro**, 2006).

Las labores de la era de la imprenta y de internet son de otro tiempo y las empresas periodísticas deben reinventarse si quieren seguir existiendo (**Fernández-Barrero**, 2018). Innovar ya no es una opción, la clave está en cómo hacerlo con éxito (**García-Avilés**, 2018).

La inteligencia artificial (IA, en adelante) ya ocupa en las redacciones un terreno dominado por las personas (**Vállez**; **Codina**, 2018), con el argumento de que aumenta la producción de contenidos (**Kim** *et al.*, 2007; **Papadimitriou**, 2016), mejora la precisión (**Graefe**, 2016; **Silverman**, 2013) y brinda un panorama alentador para un periodismo innovador de calidad (**Marconi**; **Siegman**, 2017).

Se trata de sistemas informáticos alimentados por el periodista mediante datos y algoritmos para generar automáticamente informaciones comprensibles para la audiencia a partir de una estructura y una fórmula previamente programadas (**Barrat**, 2013; **Bunz**, 2010; **Harcup**, 2014), por lo que su uso ha afectado a las rutinas de los redactores, mecanizando sus funciones de búsqueda, clasificación o tratamiento informativo (**Diakopoulos**, 2019; **Lemelshtrich**, 2018; **Lindén**, 2017). Esta tendencia ya se usa en los países anglosajones, donde la denominan *robojournalism* (**Burrell**, 2016; **Carlson**, 2015; **Dawson**, 2010; **Lee**; **Kim**, 1998; **Matsumoto** *et al.,* 2007; **Van-Dalen**, 2012), aunque **Anderson** (2013) y **Bercovici** (2010) prefieren hablar de “periodismo algorítmico”; **Caswell** y **Dörr** (2018) de “periodismo automatizado” y **Clerwall** (2014) y **Karlsen** y **Stavelin** (2014) de “periodismo computacional”. Esta denominación es compartida en España por **Vállez** y **Codina** (2018), mientras que **Túñez-López**, **Toural-Bran** y **Valdiviezo-Abad** (2019) optan por utilizar la expresión “periodismo artificial” y **Salaverría** (2014) la de “periodismo de alta tecnología”.

El sector periodístico es consciente de que debe adaptarse a los nuevos tiempos y aplicar esta técnica a los métodos tradicionales de redacción de noticias (**Hansen** *et al.,* 2017), ya que permitirá a los redactores alejarse de las tareas más repetitivas y rutinarias y desarrollar otras más creativas y que aporten valor al trabajo periodístico (**Ford**, 2013). Su uso, por tanto, continuará en los próximos años (**Eudes**, 2014; **Newman**, 2018), a pesar de sus limitaciones tecnológicas (**Dörr**, 2016), de los riesgos éticos (**Weeks**, 2014), empresariales y laborales (**Murcia-Verdú**; **Ufarte-Ruiz**, 2019), y de las dudas que genera sobre la autoría (**Montal**; **Reich**, 2017; **Thurman**; **Doerr**; **Kunert**, 2017) y la calidad de los contenidos (**Sandoval-Martín** *et al*., 2019). Además, existe el miedo de que esta herramienta supla a redactores y origine una crisis de desempleo (**Bostrom**, 2014; **Brynjolfsson**; **McAfee**, 2014; **Cid**, 2017; **Villoro**, 2015), en un momento en el que la profesión comienza a respirar después de una profunda crisis económica.

Sin embargo, **Cerezo** (2018), **Renó** (2018), **Salaverría** (2016) y **Túñez-López** y **Toural-Bran** (2018) consideran que no existe un peligro real de extinción de la profesión, sino un proceso de cambios y ajustes. Para **Sancho-Caparrini** (2018) lo que está claro es que su uso va a cambiar radicalmente, y ya ha empezado, la forma en que enfrentamos y resolvemos algunos problemas.

El objetivo de esta investigación es analizar la percepción que existe en el sector profesional (periodistas y responsables de medios) y en el académico (docentes y estudiantes) sobre el uso de la IA en el periodismo. El trabajo recurre a la metodología cuantitativa y cualitativa y parte de las siguientes hipótesis:

H1. La percepción de periodistas, responsables de medios, docentes y estudiantes es que el uso de esta tecnología emergente en las redacciones no tendrá un impacto negativo sobre el mercado laboral periodístico, ya que los robots no sustituirán totalmente a los redactores, aunque sí colaborarán en muchas tareas.

H2. Estos colectivos consideran que la calidad periodística de las noticias automatizadas muestra algunas carencias importantes. Esta herramienta se utiliza en informaciones breves que no necesitan mucho análisis y se nutren principalmente de datos, como los temas deportivos y financieros.

H3. El sector profesional y el académico sostienen que la creciente aplicación de la IA al periodismo plantea una serie de oportunidades, pero también existen desafíos, como la necesidad de apostar por una sólida formación de los periodistas que integre el uso de las tecnologías emergentes.

2. Origen y uso de la IA en los medios

Russell y **Norvig** (2003) fijan el origen de la IA en los avances que Turing logró durante la II Guerra Mundial en la decodificación de mensajes. El término se empleó por primera vez en 1950. En la década siguiente, las aplicaciones se centraron en los juegos de estrategia, entrando posteriormente en un período de "frío invierno" mientras continuaban los avances tecnológicos (**Sancho-Caparrini**, 2018), que posibilitarían una intensificación de las investigaciones a partir de los 80 (**Van-der-Kaa**; **Krahmer**, 2014). Desde ese momento, poco a poco, estos trabajos se fueron aplicando en los años sucesivos a sistemas expertos, especialmente desde comienzos de siglo. Sin embargo, no fue hasta 2007 cuando tuvo su despegue definitivo (**Salazar**, 2018), en unos casos para satisfacer la amplia demanda de información (**Podolny**, 2015); en otros, con el fin de reducir el coste de producción (**Coddington,** 2015).

> Hay que apostar por una sólida formación de los periodistas que integre el uso de las tecnologías emergentes

Los Angeles Times fue el pionero en aplicar la IA. En 2014 publicó una noticia elaborada por *Quakebot*, un software desarrollado por Schewencke que, conectado a los datos del *United States Geological Survey*, escribía automáticamente textos sobre movimientos sísmicos en base a una plantilla (**Flores-Vivar**, 2018). Ese mismo año *Associated Press* comenzó a difundir noticias sobre informes trimestrales de empresas generados por el programa *Wordsmith* (**Brandom**, 2014; **Lichterman**, 2017). Pronto les siguieron *The Washington Post* (contenido deportivo y de finanzas), *The New York Times* (deportes), *Forbes* (economía y deportes), *Big Ten Network* (deportes y finanzas), *Reuters* (deportes), *ProPublica* (calidad de la educación estadounidense) y los medios locales *Local labs*, *Hoodline* y *Hereford Times* (servicios y sucesos). Por su parte, el diario digital *Quartz* elaboró una guía para ayudar al periodista a usar la IA (**Lecompte**, 2015; **Sandle**, 2018).

En Brasil, **Monnerat** (2018) hace referencia a un robot periodista que informa sobre la ley de la Cámara. En China, el *Southern metropolis daily* experimentó con el robot *Xiao Nan* (**Martin**, 2017) y la agencia *Xinhua* creó a *Jia Jia*, capaz de hacer entrevistas. En Japón, *The Shinano mainichi shimbun* utiliza una solución automatizada para sumarizar noticias y, en Corea, *The financial news* publica noticias automatizadas sobre el mercado de valores (**Jung** *et al.*, 2017).

En Europa, los medios británicos que utilizan la IA son: *The guardian* (deportes y finanzas), *BBC* (noticias locales) y *The telegraph* (deportes) (**Gani**; **Haddou**, 2014). También destaca *Radar*. *Reporters and data and robots*, que cuenta con la financiación de *Google* y es desarrollada por la agencia de noticias *Press Association.*

La *University of Oxford* y el *Reuters Institute* citan en su informe anual de predicciones 2019 algunos ejemplos de los medios públicos audiovisuales de Europa que apuestan por la IA. En concreto:

- la *BBC* está realizando un algoritmo de servicio público para alfabetizar a la audiencia en el uso de algoritmos y en el modo de personalizar las aplicaciones de forma correcta;
- la compañía de radiodifusión pública de Finlandia, *Ylesradio* (*YLE*), ha llevado a cabo *Voitto*, la primera aplicación que usa un asistente inteligente para establecer un diálogo continuo con los usuarios, con el que genera unas 100 historias y 250 ilustraciones por semana.

Ambas iniciativas se enmarcan en la tendencia de las radiodifusoras públicas europeas de orientar su departamento de innovación hacia la automatización como un espacio de futuro que están explorando.

Los periódicos alemanes también apuestan por la escritura automatizada: *Der spiegel*, *Neue Osnabrücker zeitung*, *Weser-kurier*, *Radio Hamburg fussifreunde* y *Fupa.net* para deportes, *Handelsblatt* para economía y *Berliner morgenpost* para informar sobre la contaminación en Berlín.

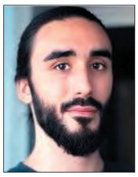
En Francia, *Le monde* utilizó la IA para informar sobre las elecciones de 2015 (**Sánchez-Gonzales**; **Sánchez-González**, 2017), y el diario sueco *Svenska dagbladet* la usa para crear portadas personalizadas de su web (**Stern**, 2017).

Las agencias de comunicación también difunden contenidos automatizados. **Túñez-López**, **Toural-Bran** y **Cacheiro-Requeijo** (2018) concretan que *DPA* (Alemania), *ANP* (Holanda), *STT* (Finlandia), *AFP* (Francia), *APA* (Austria), *Ritzau* (Dinamarca), *Lusa* (Portugal), *NTB* (Noruega) y *TT* (Suecia) trabajan con IA para distribuir contenidos.

El sistema mediático español no ha sido ajeno a esta tendencia. Algunas delegaciones de la *Agencia Efe* trabajan con sistemas de tratamiento automatizado de datos (**Fanta**, 2017), al igual que *El país,* que creó un software para elaborar noticias automáticas para *Facebook Messenger* (**Southern**, 2017) y actualmente aplica la IA a la gestión de los comentarios de sus lectores digitales. En paralelo, *Vocento* cuenta con *Medusa*, que reporta automáticamente noticias sobre 800 playas españolas y las estaciones de esquí de España, Andorra y el Pirineo francés. Y *El confidencial* creó *Ana fútbol*, que automatiza piezas deportivas. También hay proyectos que se centran en la difusión de información a través de programas de mensajería o redes sociales, como el generado por *Politibot* para las elecciones generales de 2016.

Al margen de los medios, la *startup Narrativa Inteligencia Artificial* creó junto a la *Universidad de Alcalá de Henares* a *Gabriele*, que redacta alrededor de 20.000 piezas periodísticas semanales en tiempo real para el ámbito editorial. Este tipo de empresas ya existe en Alemania (*2txt*, *Aexea*, *AX Semantics*, *Refresco*, *Text-on*, y *Textomatic*), China (*Tencent*), Estados Unidos (*Automated Insights, Bloomberg*, *Linguastat* y *Narrative*), Francia (*Labsense*, *Syllabs*, *Science*, *OnlyBoth* y *Yseop*), Reino Unido (*Arria*), Israel (*Articoolo*), Japón (*Fujitsu*) o Suecia (*United Robots*).

Tabla 1. Muestra de docentes y periodistas entrevistados

Profesores y responsables en medios españoles	
Docente / Universidad	**Responsable / Medio**
 María Angulo-Egea *Universidad de Zaragoza*	 Borja Bergareche Exresponsable de *VocentoLab* (ahora en *Kreab España*)
 Ángeles Fernández-Barrero *Universidad de Sevilla*	 José Luis Fernández-Checa Subdirector de Contenidos Digitales de la *Agencia Efe*
 Patricia Durántez-Stolle *Universidad de Valladolid*	 Isaías Blázquez-Rosales Director de contenidos digitales de *Castilla-La Mancha Media*
 José María Herranz-De-la-Casa *Universidad de Castilla-La Mancha*	 Irene Gómez-Peña Directora de desarrollo de audiencias del grupo *Henneo*
 Francisco Javier Paniagua-Rojano *Universidad de Málaga*	 Montserrat Lluís-Serret Subdirectora de Contenidos, Innovación y Desarrollo de *COPE*
 Carlos Toural-Bran *Universidad de Santiago de Compostela*	 Daniel Muñoz-Guerrero Desarrollo de Negocio de *El confidencial*
 María Vállez-Letrado *Universidad Pompeu Fabra*	 María Ramírez Directora de Estrategia de *eldiario.es*
 José Luis Zurita-Andión *Universidad de La Laguna*	 Miriam Hernanz Subdirectora de *RTVLab* y *Nuevas Narrativas Interactivas*
 María Olga Pérez-Arroyo *Universidad Complutense de Madrid*	 Marilín Gonzalo Coordinadora del Área Digital de *Newtral*
 Ainara Larrondo-Ureta *Universidad del País Vasco*	 Javier Padilla Director de Tecnología de *El desmarque*

3. Metodología

El diseño de esta investigación parte de la revisión sistemática de la bibliografía científica, que forma parte de la investigación secundaria (**Codina**, 2017), y que permitió conocer las principales aportaciones al estado de la cuestión (**Ramírez-Montoya**; **García-Peñalvo**, 2018). Además, se optó por la triangulación metodológica de técnicas cualitativas y cuantitativas (**Gaitán-Moya**; **Piñuel-Raigada,** 1998), que según **Soler-Pujals** y **Enríque-Jiménez** (2012), consiste en contrastar información entre distintas fuentes para obtener una contextualización suficiente de los fenómenos estudiados.

En primer lugar, se realizaron entrevistas semiestructuradas en profundidad a diez responsables de departamentos de innovación de medios nacionales (tabla 1). Las entrevistas se realizaron cara a cara entre los meses de enero y mayo de 2019 y abordaban los asuntos más relevantes sobre el objeto de estudio. La elección de esta muestra responde a la responsabilidad de estos profesionales en el campo del periodismo y la innovación (**Ufarte-Ruiz**; **Peralta-García**; **Murcia-Verdú**, 2018). De igual modo, se ha entrevistado a diez profesores de universidades españolas (tabla 1), cuya selección responde a criterios de conocimiento y relevancia investigadora (muestra intencional) basados en nuestra red de colaboración profesional (**Humanes-Humanes**; **Roses-Campos,** 2014). Estas entrevistas se realizaron online entre diciembre de 2018 y enero de 2019.

En ambos casos, la muestra es de diez entrevistados porque fue el número suficiente para alcanzar el punto de saturación, entendido como el momento a partir del cual puede darse por completado el trabajo de campo al repetir los entrevistados lo dicho por los anteriores (**Callejo**, 1998).

Además de las entrevistas, el trabajo de campo también incluyó técnicas cuantitativas. Por un lado, se difundió un cuestionario online entre enero y mayo de 2019 a 251 periodistas. Esta muestra fue elegida de forma aleatoria y está formada por profesionales que ocupan diferentes puestos en la elaboración de contenidos y la gestión de iniciativas en la Red. La finalidad era conocer su postura sobre el uso de la IA en el periodismo (tabla 2).

Por otro lado, se envió otro cuestionario online entre marzo y abril de 2019 a 194 estudiantes de Periodismo y Comunicación Audiovisual de varias universidades españolas para ofrecer un mayor número de enfoques. Para su selección, se aplicó la técnica del muestreo no probabilístico por conveniencia (**Perlado-Lamo-de-Espinosa**; **Papí-Gálvez**; **Bergaz-Portolés**, 2019). En la encuesta participaron estudiantes de varios cursos para comprobar si las percepciones varían en función de los conocimientos adquiridos a lo largo del grado (**Casero-Ripollés**; **Ortells-Badenes**; **Doménech-Fabregat**, 2013) (tabla 3).

Los dos cuestionarios fueron validados previamente por expertos. Según **Cabero-Almenara** y **Llorente-Cejudo** (2013), este procedimiento consiste en solicitar a una serie de personas un juicio sobre un aspecto concreto. De esta forma, la presente investigación contó con la participación de cinco evaluadores cuya selección se realizó de forma aleatoria y casuística, intentando que estuviesen representados académicos y profesionales. El objetivo era conseguir un instrumento de análisis con un grado alto de fiabilidad.

Tabla 2. Distribución de la muestra de periodistas encuestados

Ficha técnica de la muestra encuestada				
Medio de comunicación	**Periodistas**			
Prensa	Hombres		Mujeres	
	N	37	N	28
	%	56,9%	%	43,1%
				Muestra: 65 periodistas (25,9%)
Gabinetes de comunicación	Hombres		Mujeres	
	N	39	N	56
	%	41,1%	%	58,9%
				Muestra: 95 periodistas (37,8%)
Radio	Hombres		Mujeres	
	N	14	N	13
	%	51,9%	%	48,1%
				Muestra: 27 periodistas (10,8%)
Televisión	Hombres		Mujeres	
	N	9	N	13
	%	40,9%	%	59,1%
				Muestra: 22 periodistas (8,8%)
Digitales, revistas y editoriales	Hombres		Mujeres	
	N	28	N	14
	%	66,7%	%	16,7%
				Muestra: 42 periodistas (16,7%)
				Muestra total: 251 periodistas (100%)

Tabla 3. Distribución de la muestra de estudiantes encuestados

Centro	Alumnado			
Universidad Carlos III	Hombres		Mujeres	
	N	9	N	28
	%	24%	%	76%
				Muestra: 37 estudiantes (19,1%)
Universidad de Málaga	Hombres		Mujeres	
	N	16	N	17
	%	48%	%	52%
				Muestra: 33 estudiantes (17%)
Universidad Miguel Hernández	Hombres		Mujeres	
	N	10	N	9
	%	53%	%	49%
				Muestra: 19 estudiantes (9,8%)
Universidad de Sevilla	Hombres		Mujeres	
	N	9	N	8
	%	53%	%	47%
				Muestra: 17 estudiantes (8,7%)
Universidad Católica San Antonio de Murcia	Hombres		Mujeres	
	N	2	N	4
	%	33,%	%	66,7%
				Muestra: 6 estudiantes (3,1%)
Universidad de Castilla-La Mancha	Hombres		Mujeres	
	N	24	N	20
	%	55%	%	45%
				Muestra: 44 estudiantes (22,7%)
Universidad de Valencia	Hombres		Mujeres	
	N	2	N	10
	%	17%	%	83%
				Muestra: 12 estudiantes (6,2%)
Universidad de Zaragoza	Hombres		Mujeres	
	N	13	N	13
	%	50%	%	50%
				Muestra: 26 estudiantes (13,4%)
				Muestra total: 194 estudiantes (100%)

Con esta combinación metodológica se visualiza el problema de investigación desde diferentes ángulos, se evitan sesgos y fallas metodológicas para optimizar la validez y la consistencia de los hallazgos (**Okuda-Benavides**; **Gómez-Restrepo**, 2005). Siguiendo las investigaciones de **Yin** (1981) sobre estudios de casos, este trabajo no pretende realizar una generalización estadística, sino analítica, debido a que busca un patrón de comportamientos y no una enumeración de frecuencias de la muestra (**Villareal-Larrinaga**; **Landeta-Rodríguez**, 2010).

4. Resultados

4.1. El robot como ayudante en la redacción

El 88% de los periodistas considera que la IA ofrece ventajas para la profesión y un 80% opina que ayudará en muchas tareas. En una línea similar se encuentra la percepción de los estudiantes de Periodismo y Comunicación Audiovisual: el 95% está convencido de que los robots colaborarán en la redacción, aportando ventajas al periodista (74%). Sin embargo, estudiantes (76%) y periodistas (89%) tienen claro que las máquinas nunca llegarán a sustituir totalmente a los redactores (gráfico 1).

> La calidad de las informaciones automatizadas muestra carencias importantes de falta de contraste, ausencia de interpretación, inexistencia de humanidad y sensibilidad e incorrecta redacción

Herranz-De-la-Casa, Zurita-Andión y Pérez-Arroyo también consideran que la IA no reemplazará a los periodistas, y piensan que mejorará el producto final. Por su parte, Vállez-Letrado matiza que esta tecnología

> "no puede llegar a alcanzar el grado de independencia y de nivel intelectual que requiere el trabajo de un periodista".

Gráfico 1. Respuesta de periodistas y estudiantes a la pregunta: ¿Reemplazarán totalmente los robots a los periodistas en las redacciones?

Larrondo-Ureta y Toural-Bran creen que afectará negativamente a la creación de puestos de trabajo en la medida en que los robots asuman funciones mecánicas, como el procesamiento de grandes cantidades de datos, pero nunca sustituirán totalmente a los periodistas en las redacciones. Durántez-Stolle también fía a la estrategia empresarial el mantenimiento de los puestos de trabajo y sostiene que la IA puede hacer que el redactor se dedique a la investigación, al reporterismo de calle y a recuperar el periodismo de calidad. Fernández-Barrero y Paniagua-Rojano piensan que lo importante es adaptarse a los cambios que impone esta nueva realidad, que en opinión de Angulo-Egea, supondrá una "gran reestructuración" en las redacciones, pero nunca la desaparición total del periodista (tabla 4).

Bergareche, Ramírez, Blázquez, Gonzalo y Gómez-Peña explican que las noticias automatizadas siempre necesitarán la supervisión humana, por lo que no desplazarán a los periodistas de las redacciones. "La IA se ha implantado para ayudar a los redactores, que son los que aportan valor al oficio", matiza Hernanz. Por su parte, Padilla es consciente de que cada vez más medios apuestan por el uso de robots en las redacciones, aunque opina que los buenos periodistas y los que se adapten al nuevo entorno tendrán trabajo muchos años. En este escenario, Lluís-Serret argumenta que los profesionales deberán centrar sus esfuerzos en "salir a la calle y encontrar la noticia". También en "analizar" la información y "reflexionarla", según Muñoz-Guerrero y Fernández-Checa (tabla 4).

Tabla 4. Respuesta de docentes y responsables de innovación a la pregunta: ¿Reemplazarán totalmente los robots a los periodistas en las redacciones?

Docentes universitarios			Responsables de innovación		
	Sí	No		Sí	No
Angulo-Egea		X	Bergareche		X
Fernández-Barrero		X	Fernández-Checa		X
Durántez-Stolle		X	Blázquez		X
Herranz-De-la-Casa		X	Gómez-Peña		X
Paniagua-Rojano		X	Lluís-Serret		X
Toural-Bran		X	Muñoz-Guerrero		X
Vállez-Letrado		X	Ramírez		X
Zurita-Andión		X	Hernanz		X
Pérez-Arroyo		X	Gonzalo		X
Larrondo-Ureta		X	Padilla		X

4.2. Límites de la IA en periodismo

El 90% de los profesionales considera que la calidad de las noticias automatizadas muestra algunas carencias relativas a

- falta de contraste (64%);
- ausencia de interpretación (38%);
- inexistencia de humanidad y sensibilidad (28%);
- incorrecta redacción (39%).

Por su parte, los estudiantes (95%) estiman que las noticias realizadas por robots no son fiables, debido a la ausencia de humanidad y sensibilidad (81%). Por detrás aparecen la falta de contraste y verificación (56%) y las carencias en la redacción (29%) (gráfico 2).

Desde el ámbito académico, Pérez-Arroyo pone el acento en la falta de implicación social y la gran pérdida del ingrediente del interés humano, mientras que Larrondo-Ureta destaca que la información periodística está "llena de matices de todo tipo" que una máquina no puede alcanzar. En este sentido, Fernández-Barrero recuerda que la imposibilidad de captar sentimientos y de transmitir emociones, unidas a la falta de capacidad interpretativa, son las principales razones que limitan el trabajo de los robots.

Paniagua-Rojano también considera que los bots no tienen valores, por lo que "existen riesgos éticos", y Vállez-Letrado señala que la IA no alcanza el nivel intelectual que requiere el trabajo de un periodista. Por su parte, Herranz-De-la-Casa apunta al componente emocional y a la subjetividad, algo que no está al alance de un algoritmo. Por eso, Durántez-Stolle y Zurita-Andión opinan que las empresas no pueden caer en la tentación de hacer noticias automatizadas y dar un producto de baja calidad. No obstante, el uso de la IA en periodismo dependerá de cómo se gestione o para qué se utilice, como puntualizan Angulo-Egea y Toural-Bran (tabla 5).

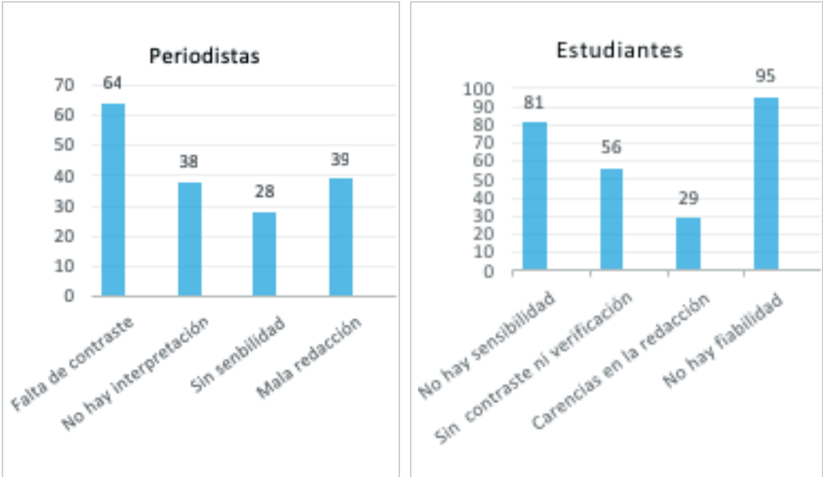


Gráfico 2. Respuesta de periodistas y estudiantes a la pregunta: ¿Qué límites tienen la IA en el periodismo?

Tabla 5. Respuesta de los docentes universitarios a la pregunta: ¿Qué límites tienen la IA en el periodismo?

	Interés humano	Implicación social	Múltiples matices	Interpretación	Valores/Ética	Nivel intelectual	Componente emocional	Subjetividad	Baja calidad	Depende del uso
Angulo-Egea										X
Fernández-Barrero	X			X						
Durántez-Stolle									X	
Herranz-De-la-Casa	X						X	X		
Paniagua-Rojano					X					
Toural-Bran										X
Vállez-Letrado						X				
Zurita-Andión									X	
Pérez-Arroyo	X	X								
Larrondo-Ureta			X							

Lluís-Serret, Muñoz-Guerrero, Ramírez, Blázquez y Gonzalo creen que las máquinas nunca tendrán "criterio informativo" ni "emocional", por lo que a los periodistas les corresponderá "aportar un valor a los textos", según Gómez-Peña y Hernanz, y "reflexión informativa", en opinión de Fernández-Checa. Para Bergareche, la IA "no tiene conciencia", por lo que se aplicará principalmente a los contenidos basados en datos, como los temas deportivos y financieros. Sin embargo, Padilla tiene claro que estos límites y carencias se superarán (tabla 6).

Tabla 6. Respuesta de los responsables de innovación a la pregunta: ¿Qué límites tienen la IA en el periodismo?

	Criterio informativo	Emocional	Conciencia	No tiene límites
Bergareche			X	
Fernández-Checa	X			
Blázquez	X	X		
Gómez-Peña	X			
Lluís-Serret	X	X		
Muñoz-Guerrero	X	X		
Ramírez	X	X		
Hernanz	X			
Gonzalo	X	X		
Padilla				X

4.3. Formar y educar para el futuro

Para Lluís-Serret, Gonzalo y Hernanz, los futuros periodistas deben adquirir nuevas competencias y habilidades derivadas de la tecnologización, como el manejo de datos, mientras que Muñoz, Padilla, Blázquez y Fernández-Checa apuestan por una especialización en posicionamiento web y social media. Bergareche añade que también deben tener conocimientos de marketing digital y dominar los géneros visuales de la información. Sin embargo, Ramírez y Gómez-Peña subrayan que lo importante es que sean buenos reporteros (tabla 7).

Tabla 7. Respuesta de los responsables de innovación a la pregunta: ¿Nuevos requerimientos profesionales?

	Conocimientos tecnológicos	**Posicionamiento web y medios sociales**	**Marketing digital y géneros visuales**	**Buen reporterismo**
Bergareche			X	
Fernández-Checa		X		
Blázquez		X		
Gómez-Peña				X
Lluís-Serret	X			
Muñoz-Guerrero		X		
Ramírez				X
Hernanz	X			
Gonzalo	X			
Padilla		X		

Esta postura es compartida por Larrondo-Ureta y Zurita-Andión, que especifican que en el entorno digital se produce una hibridación entre las cualidades clásicas del periodista y las tecnologías emergentes. En este escenario, Herranz-De-la-Casa y Paniagua-Rojano ven imprescindible que los periodistas se adapten al nuevo entorno y las universidades enfoquen sus planes de estudio a esta realidad. “Lo importante es que los textos periodísticos nunca pierdan calidad”, añade Pérez-Arroyo. Por eso Angulo-Egea y Vállez-Letrado apuestan por perfeccionar aquellas tareas que el hombre hace mejor que la máquina. En paralelo, Fernández-Barrero opina que los nichos de empleo más pujantes en los próximos años serán los relacionados con las nuevas posibilidades que ofrece el entorno digital. De ahí que Toural-Bran afirme que la tecnología afecta positiva o negativamente en la medida en que los profesionales que la usan y aplican son conocedores de sus características. En cualquier caso, se trata de una tecnología incipiente que todavía tiene mucho recorrido por delante, como puntualiza Durántez-Stolle (tabla 8).

Tabla 8. Respuesta de los docentes universitarios a la pregunta: ¿Nuevos requerimientos profesionales?

	Buen reporterismo	**Tecnologías emergentes**	**Adaptarse al nuevo entorno**	**Calidad**	**Potencial frente a maquinas**
Angulo-Egea					X
Fernández-Barrero			X		
Durántez-Stolle		X			
Herranz-De-la-Casa			X		
Paniagua-Rojano			X		
Toural-Bran		X	X		
Vállez-Letrado					X
Zurita-Andión	X	X			
Pérez-Arroyo				X	
Larrondo-Ureta	X	X			

Sin embargo, el 79% de los estudiantes no ha recibido formación universitaria sobre la IA. De ellos, un 63% está en 4º curso. Por su parte, 59% de los periodistas reconoce que el medio de comunicación para el que trabaja no cuenta con aplicaciones y programas de IA (gráfico 3).

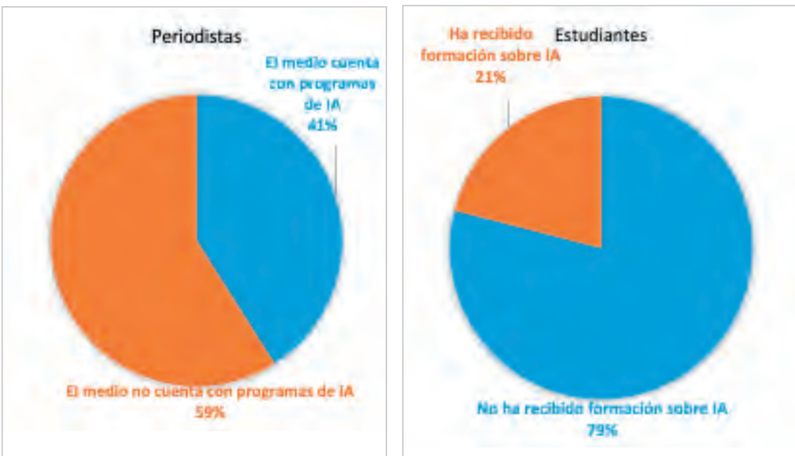


Gráfico 3. Percepción de periodistas y universitarios sobre el estado de la IA

5. Discusión y conclusiones

La investigación permite dar por conseguido el objetivo planteado inicialmente de analizar la percepción que tiene el sector profesional y académico sobre el uso de la IA en periodismo. Se confirma la primera hipótesis, pues los docentes

(10), periodistas (89%), estudiantes (76%) y responsables de innovación en los medios (10) no creen que los robots sustituyan totalmente a los redactores, y creen que colaborarán en muchas tareas, sobre todo en las más mecánicas. Son respaldadas las teorías de **Cerezo** (2018), **Renó** (2018), **Salaverría** (2016) y **Túñez-López** y **Toural-Bran** (2018), que consideran que no existe un peligro real de extinción de la profesión, sino un proceso de cambios y ajustes. El futuro, por tanto, se perfila como un binomio entre la máquina y el periodista. Por eso, **Cosoy** (2017) y **Cervera** (2017) insisten en que los redactores deben dejar de ver al software como un enemigo y entenderlo como una herramienta que les facilita el trabajo. Les recomiendan además que aprendan con celeridad a manejar estos sistemas, con el fin de mejorar su forma de hacer periodismo.

> Docentes, periodistas, estudiantes y responsables de innovación creen que los robots no sustituirán a los redactores en los medios, y que colaborarán en muchas tareas, sobre todo en las más mecánicas

Se corrobora la segunda hipótesis: el 88% de los periodistas afirma que la calidad de las informaciones automatizadas muestra algunas carencias importantes relativas a la falta de contraste (64%), la ausencia de interpretación (38%), la inexistencia de humanidad y sensibilidad (28%) y la incorrecta redacción (39%). Además, un 95% de los estudiantes estima que no son fiables por la ausencia de humanidad y sensibilidad (81%), mientras que los docentes inciden en la falta de implicación social y de interés humano, y los responsables de innovación, en los criterios informativos, emocionales y reflexivos. La IA se utiliza en informaciones breves que no necesitan mucho análisis y se nutren principalmente de datos. Como consecuencia, quedan descartados del ámbito de aplicación de la IA todos los géneros periodísticos de interpretación y opinión.

En paralelo, el 79% de los estudiantes no ha recibido formación universitaria sobre IA, por lo que docentes (10) y responsables de innovación (9) apuestan por una sólida capacitación de los futuros periodistas que integre el uso de las tecnologías emergentes (Hipótesis 3). Además, el 59% de los periodistas reconoce que el medio de comunicación para el que trabaja no cuenta con aplicaciones y programas de IA. Los medios deben apostar por la innovación y las facultades de Comunicación y Periodismo por adaptar sus planes de estudio a las nuevas necesidades del mercado laboral, en el que las tecnologías marcan las transformaciones, sin descuidar los fundamentos periodísticos que se han sedimentado a lo largo del tiempo (**López-García**, 2012; **López-García**; **Rodríguez-Vázquez**; **Pereira-Fariña**, 2017; **Palomo**, 2013).

La cuestión estudiada no se agota en esta investigación, sino que reafirma que se trata de un debate abierto y en evolución. Este trabajo, a pesar de corroborar las tres hipótesis de partida, cuenta con ciertas limitaciones y deja abiertas posibilidades para futuros estudios. Una muestra más amplia habría posibilitado la extracción de más condiciones extrapolables a la totalidad del mercado, de la misma forma que la inclusión de opiniones de ámbito internacional ayudaría a comparar el desarrollo de estas iniciativas en España con el de otros países.

> Los periodistas deben dejar de ver al software como un enemigo y entenderlo como una herramienta que les facilita el trabajo

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Investigación, desarrollo e innovación en el sector empresarial español: dificultades para su implementación

Research, development and innovation in the Spanish business sector: difficulties for its implementation

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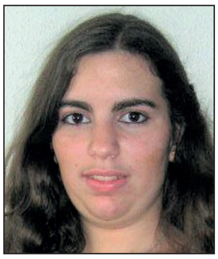

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Resumen

Para conocer las dificultades percibidas y reales de la empresa en España en la implementación de la I+D+i por el tejido empresarial, vamos a partir de la visión que tienen los empleados sobre la facilidad o dificultad de sus empresas a la hora de hacer investigación y desarrollo y, por tanto, innovación. En este trabajo analizamos los aspectos más destacados de la encuesta elaborada bajo los auspicios del "Proyecto de investigación cultura científica: percepción y actitudes ante la ciencia y la innovación en el sector empresarial español" financiado por el *Ministerio de Economía y Competitividad* de España. Los resultados obtenidos adelantan que la educación y la promoción de una actitud innovadora son la base para conseguir un desarrollo exitoso empresarial ya que hoy la innovación resulta uno de los pilares clave del mantenimiento y supervivencia de las empresas.

Palabras clave

Investigación; Desarrollo; Innovación; Educación en innovación; I+D+i; Industrias; Sectores industriales; Percepción de la ciencia; Actitudes; Barreras; Cultura científica; Empresas españolas; Estadísticas; España.

Abstract

To know the perceived and real difficulties of the company in Spain in relation to the implementation of R+D+i by the Spanish business, we start from the vision that employees have about the ease or difficulty of their companies at the time of doing research and development and therefore, innovation. In this paper we analyze the highlights of the survey prepared under the auspices of the "Scientific Culture Research Project: perception and attitudes towards science and innovation in the Spanish business sector" funded by the Ministry of Economy and Competitiveness. The results obtained advance that education and the promotion of an innovative attitude are the basis for achieving a successful business development since innovation is one of the key pillars of the maintenance and survival of companies today.

Keywords

Research; Investigation; Development; Innovation; Innovation education; RDi; R&D; Industries; Industrial sectors; Perception of science; Attitudes; Barriers; Scientific culture; Spanish companies; Statistics; Spain.

1. Introducción

El éxito y en muchos casos la supervivencia de una empresa depende del esfuerzo que ésta dedica a la innovación, la competitividad, la eficacia y a la gestión. Mejorar la estrategia comparativa en estos ámbitos se hace imprescindible.

Según la *Cámara de Comercio de España*, para ser efectiva la competitividad debe sustentarse en la innovación:

> "La innovación es el medio a través del cual se crean nuevos recursos generadores de riqueza o dotan a los recursos existentes de mayor potencial para crearla, es una clara respuesta a los desafíos económicos actuales, particularmente a la hora de competir en un mundo globalizado, sin fronteras. Sin embargo, uno de los problemas más acuciantes de nuestro país es el reducido número de empresas y emprendedores que basan su competitividad en innovación" (*Cámara de Comercio de España*, 2017).

Esta afirmación de la *Cámara de Comercio de España* sobre sus propios miembros resulta un hecho constatable cuando se analizan las encuestas nacionales e internacionales sobre la innovación en el sector empresarial español.

> "Cuando se analiza en las series estadísticas de innovación, generadas por el *INE*, el peso de las empresas innovadoras en el conjunto, llama la atención cómo en los últimos años desciende paulatinamente el número de las pymes que se consideran innovadoras, en contraste con el alza que registra dicha consideración entre las grandes empresas. Esta información nos pone ante la evidencia no sólo de que la presencia de la innovación es algo aún lejano para la mayoría de las empresas, sino también de que diversos factores están retrayendo la penetración de la innovación precisamente en el tejido más potente en la economía española, las pymes" (**González-Hermoso-de-Mendoza**; **Sánchez-López**, 2010, p. 255).

Consecuentemente, podemos observar cómo el valor de la innovación en el sector empresarial no es algo cercano ni inmediato y es que según el *Manual de Frascati* la I+D comprende

> "el trabajo creativo llevado a cabo de forma sistemática para incrementar el volumen de conocimientos, incluido el conocimiento del hombre, la cultura y la sociedad, y el uso de esos conocimientos para crear nuevas aplicaciones" (*OCDE*, 2003).

Sobre la base de estas definiciones de I+D+i trataremos de examinar las variables culturales que influyen en las actividades del sector empresarial en materia de I+D y en su comportamiento innovador, para posteriormente analizar las dificultades y obstáculos percibidos para implementarla en las empresas a través de los datos obtenidos por el proyecto de investigación *Cultura científica empresarial*.

La motivación de este trabajo se centra en la constatación de que el sector empresarial ha cobrado un creciente papel en la escena de los planes y políticas públicas de ciencia y tecnología, tanto nacionales como europeas.

> "Este hecho contrasta en la práctica con un escenario en el que se ha detectado la denominada brecha entre investigación y mercado. Este fenómeno está definido por una escasa participación empresarial en la financiación y ejecución de la I+D+i, especialmente en la modalidad de cooperación con el sector público, y falta de estrategias para la apropiación por parte de las empresas del conocimiento generado por universidades y centros públicos de investigación" (**López-Navarro** *et al.*, 2016).

Como hipótesis de partida se ha podido constatar que

> "numerosas fuentes avalan con datos cuantitativos este escenario. Se trata fundamentalmente de medidas resultantes de enfoques economicistas, orientados a medir la cantidad de dinero que emplean las empresas con fines de I+D+i, el número de contactos con universidades o las patentes registradas, por ejemplo" (*Grupo de Investigación en Evaluación y Transferencia Científica*, 2017).

En el proyecto se planteó la necesidad de complementar estos datos con un análisis de la percepción del sector empresarial que aportase conocimiento sobre los aspectos sociológicos que no se han cubierto hasta la fecha:

> "el presente proyecto ha partido de la hipótesis de que la percepción de la ciencia y la innovación, así como la cultura científica empresarial, están relacionadas con este tipo de comportamientos que tienen que ver con las actividades innovadoras, tiene como objetivo examinar las variables subjetivas y culturales que influyen en las actividades del sector empresarial en materia de I+D+i y en su comportamiento innovador. Se pretende estudiar cuál es la percepción de la ciencia, la tecnología y la innovación en el sector empresarial y cuáles son las actitudes y motivaciones de las empresas españolas hacia la financiación y ejecución de la I+D+i (tanto interna como en cooperación con el sector público) así como los principales obstáculos para la apropiación de conocimiento científico" (*Grupo de Investigación en Evaluación y Transferencia Científica*, 2017).

En los últimos años el campo de los estudios de la percepción social de la ciencia y la tecnología ha experimentado importantes cambios, siendo destacable señalar la *Encuesta de percepción social de la ciencia* de la *Fundación Española Para la Ciencia y la Tecnología* (*Fecyt*, 2018) y los *Eurobarómetros de ciencia y tecnología* de la *Comisión Europea* (*Comisión Europea*, 2005a; 2005b; 2007; 2010b).

La divulgación científica tiene poca trayectoria histórica en los programas nacionales de investigación y desarrollo. Sin embargo, el gobierno español está poniendo de su parte para revertir esta situación (*Fecyt*, 2007), como demuestra la definición de:

- una Acción Estratégica para la divulgación de la ciencia y la tecnología dentro del área de investigación básica no orientada en el *Plan Nacional de I+D+i 2000-2003*, cuya continuidad se establece en el *Plan Estatal de Investigación Científica y Técnica y de Innovación 2017-2020*, actualmente en vigor;
- *Estrategia española de ciencia y tecnología y de innovación 2013-2020* sobre el fomento de la cultura científica y tecnológica de la sociedad (*Ministerio de Ciencia, Innovación y Universidades*, 2019b);
- políticas en relación con el *Programa marco de investigación e innovación* de la Unión Europea, *Horizonte 2020* (H2020) que cubre el período 2014-2020, financia proyectos de investigación e innovación de diversas áreas temáticas en el contexto europeo (*Ministerio de Ciencia, Innovación y Universidades*, 2019a), y que cuenta con un presupuesto de 74.800 millones de euros (*Comisión Europea*, 2010c).

Adentrándonos en el ámbito empresarial objeto de estudio partimos de la *Encuesta sobre innovación en las empresas* realizada por el *Instituto Nacional de Estadística* (*INE*) que tiene como principal objetivo ofrecer información directa sobre el proceso de innovación en las empresas (*INE*, 2019). A este respecto, y teniendo en cuenta que nuestro objetivo es conocer la innovación en las empresas españolas, es fundamental mencionar también el *Índice mundial de innovación* de 2019, publicado por la *Organización Mundial de la Propiedad Intelectual*, que clasifica y desglosa el desempeño en innovación de las economías mundiales anualmente (**Dutta**; **Lanvin**; **Wunsch-Vincent**, 2019); así como el *Índice de competitividad global* de 2018 elaborado y publicado anualmente desde 1979 por el *Foro Económico Mundial* (*World Economic Forum*, 2019).

> "La I+D (investigación científica y desarrollo tecnológico) y la innovación son valores estratégicos con importantes y muy diversas repercusiones para las sociedades actuales. Los datos disponibles insisten en demostrar que las economías más dinámicas y exitosas, las que han conseguido acelerar sus tasas de crecimiento y abrir una brecha tecnológica respecto a los países menos activos, pero también las que están consiguiendo aumentar los provechos para sus ciudadanos, no son precisamente las que compiten en base a la reducción de costes y salarios, a las políticas de austeridad y recortes, sino invirtiendo en formación y en conocimiento, en investigación y en innovación. No es que los países más ricos inviertan más en ciencia y en investigación, sino que los que invirtieron en ciencia e investigación son ahora los más ricos, en términos económicos y sociales" (**Rey-Rocha** *et al.*, 2018).

2. Metodología

El presente trabajo parte de la encuesta *Cultura científica empresarial* y se adentra en la percepción de la ciencia y la innovación por la empresa española en general. Tiene como objetivo examinar las dificultades para implementar la innovación, los obstáculos para invertir e implementar la I+D, así como los factores que afectan a la innovación en España desde la perspectiva de las empresas españolas. Es decir, se han examinado las variables que influyen en las actividades del sector empresarial en I+D+i y en su comportamiento innovador para determinar cuáles son las motivaciones de las empresas españolas hacia la ejecución de las políticas de I+D+i. Destacaremos además los aspectos más relevantes de las fuentes de información, para estudiar el conocimiento científico desde la cultura científica empresarial como parte de la información y documentación. La encuesta en cuestión es: *Cultura científica empresarial en España 2016. Cultura científica, percepción y actitudes ante la ciencia y la innovación en el sector empresarial español*; encuesta *CCe* (**Rey-Rocha**; **López-Navarro**, 2016; *Cultura Científica Empresarial*, 2017; **Rey-Rocha** *et al.*, 2018) del proyecto de investigación *Cultura científica empresarial*; *Proyecto CCe* (Proyecto CSO2014-53293-R)[1]. Se articula en torno a la realización de una encuesta telefónica con cuestionario estructurado de percepción de la ciencia dirigida a empresas nacionales seleccionadas a partir de la base de datos *SABI* (*Sistema de análisis de balances ibéricos*) a fecha diciembre de 2014, que se llevó a cabo del 20 de septiembre al 11 de octubre de 2016[2].

Según los datos de la propia encuesta *CCe* (**Rey-Rocha** *et al.*, 2018) el tamaño muestral es de 707 casos, seleccionados mediante un diseño por conglomerados y estratificado por: tamaño (microempresas, pymes y grandes empresas) y sector de actividad[3], cuyo error muestral es de ±3,7%. La encuesta se centra en el sector empresarial, pero incluyendo profesionales con distinto grado de relación, responsabilidad y capacidad de decisión en relación con la I+D+i.

Tabla 1. Universo objeto de la encuesta (datos encuesta *CCe*)

		Tamaño de la empresa (número de empleados)				
		Micro empresa <10	**Pequeña empresa 10-49**	**Mediana empresa 50-249**	**Gran empresa 250 o más**	**TOTAL**
Sector	Agricultura	11.985	2.962	331	48	15.326
	Industria	39.330	16.010	3.074	579	58.993
	Energía	2.331	652	185	93	3.261
	Construcción	51.998	7.738	690	120	60.546
	Servicios	255.485	48.465	7.445	1.660	313.055
Total		361.129	75.827	11.725	2.500	451.181

El cuestionario, específicamente diseñado para su administración vía telefónica, se compone de:

a) Veinte preguntas que recogen información sobre las cuatro dimensiones identificadas por el *Manual de Antigua: Indicadores de percepción pública de la ciencia y la tecnología* (*Ricyt*, 2015):

- institucional de la ciencia y la tecnología;
- hábitos informativos y culturales sobre ciencia y tecnología;
- actitudes y valores en relación con ciencia y tecnología;
- apropiación de la ciencia y la tecnología.

b) Datos sociodemográficos de la persona informante: sexo, edad, nivel de estudios y cargo en la empresa.

c) Tres preguntas sobre las características estructurales de la empresa y su relación con el entorno.

Vamos a analizar a través de los datos de dicha encuesta, el significado que tiene la innovación en el espacio físico y temporal demarcado por la misma. Además, nos apoyamos en otros estudios sobre la percepción de la ciencia como son los de **Wynne** (1991); **Einsiedel** (2000); **Eizaguirre** (2009) y **López-Navarro** *et al*. (2016).

3. Dificultades para implementar la innovación en España desde la encuesta *CCe*

Para conocer las dificultades percibidas y encontradas en relación con la implementación de la I+D+i por el tejido empresarial español, debemos partir de la visión que tienen los empleados sobre la facilidad o dificultad de sus empresas para hacer investigación y desarrollo y por tanto innovación. En este trabajo aceptamos la muestra seleccionada por la encuesta elaborada bajo los auspicios del proyecto de investigación *Cultura científica: percepción y actitudes ante la ciencia y la innovación en el sector empresarial español*"; en adelante *Proyecto CCe* (2017); en la que se realizaron 707 entrevistas a empleados de empresas españolas, considerándola lo suficientemente amplia y representativa como para que los valores obtenidos nos permitan hacer una extrapolación al resto de la cultura científica de las empresas españolas.

Así, en la encuesta elaborada por el *Proyecto CCe* se pregunta: ¿Cree usted que, para las empresas, hacer investigación y desarrollo o I+D en España es muy fácil, bastante fácil, bastante difícil o muy difícil? A esta pregunta; y tomando los datos totales; observamos cómo el 47,8% de los encuestados cree que es bastante difícil hacer investigación y desarrollo en España. Pero, es más, el 71,4% de los encuestados respondió que es bastante o muy difícil para las empresas hacer I+D en España frente al 9,3% de los que sí creen que es bastante fácil (gráfico 1).

La primera dificultad a la que se enfrentan las empresas en España es la creencia de sus directivos de que en su empresa es difícil hacer investigación y desarrollo y por tanto innovación. Y si los directivos no desarrollan de forma inicial una política de I+D+i porque lo consideran en general y en su empresa en particular bastante o muy difícil, resultaría sorprendente que esta empresa contara con un plan estratégico de I+D+i. Actualmente y debido a que vivimos en un entorno empresarial muy competitivo, los organigramas de las empresas están cambiando, no sólo en relación con las funciones y responsabilidades que cada dirección o equipo directivo asume, sino también en la forma en la que nos referimos a esos cargos a través, por ejemplo, de tecnicismos y neologismos[4].

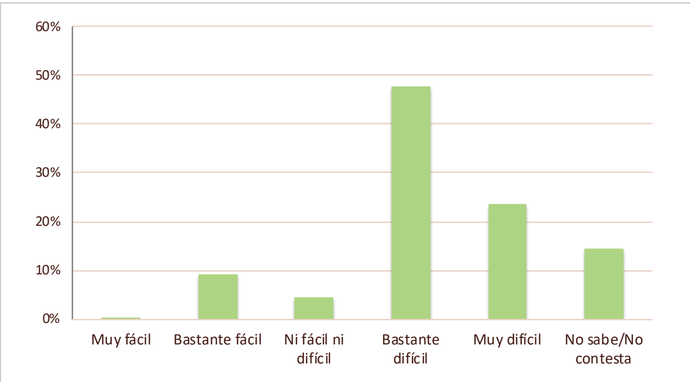

Gráfico 1. ¿Cree usted que, para las empresas, hacer investigación y desarrollo o I+D en España es muy fácil, bastante fácil, bastante difícil o muy difícil? (datos encuesta *CCe*).

La encuesta *CCe* nos muestra esta percepción de complejidad a la hora de implementar la I+D+i entre los puestos organizativos. Para el 44,9% de los directores generales, el 66,7% de los directores técnicos y el 47,8% de los directores de producción, fábrica e instalaciones es bastante difícil hacer I+D. También es considerado bastante difícil con un 72,3% para los propios responsables de investigación.

Entre los resultados por sectores de actividad empresarial la conclusión común es que para todos los sectores es bastante o muy difícil hacer I+D en España (gráfico 2). Estos resultados los debemos poner en relación con el nivel de estudios de los encuestados. Se comprueba que a mayor nivel de es-

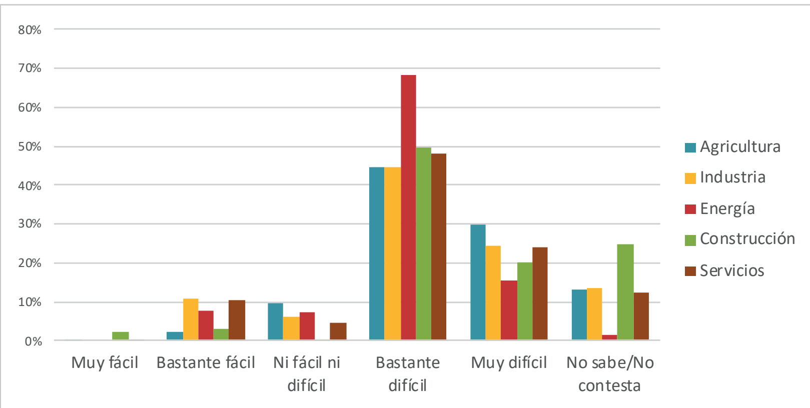

Gráfico 2. ¿Cree usted que, para las empresas, hacer investigación y desarrollo o I+D en España es muy fácil, bastante fácil, bastante difícil o muy difícil? Sector (datos encuesta *CCe*).

tudios se percibe menor complejidad para la implantación de políticas de I+D en la empresa. De hecho, es llamativo cómo el nivel de estudios es un factor que afecta de forma determinante la I+D+i empresarial ya que como se observa en el gráfico 3, más del 50% de los encuestados con un nivel de estudios universitario creen que es bastante difícil hacer I+D en su empresas, mientras que los empleados con un nivel de estudios primarios y medios han preferido optar mayoritariamente por la opción "no sabe" acerca de la dificultad de implementar la I+D+i en las empresas a la hora de responder a la misma pregunta (gráfico 3).

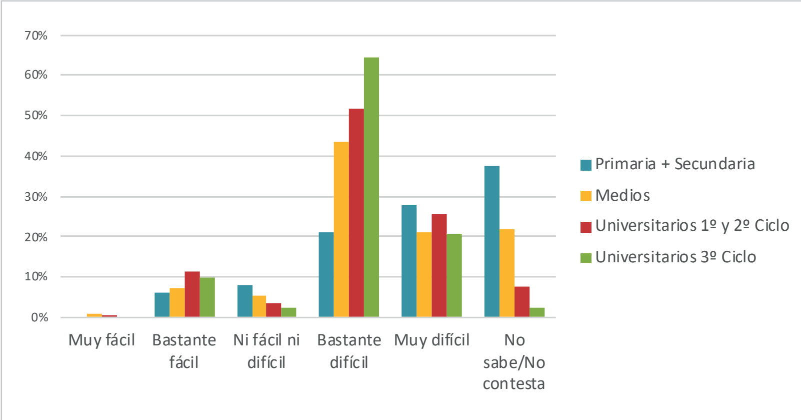

Gráfico 3. ¿Cree usted que, para las empresas, hacer investigación y desarrollo o I+D en España es muy fácil, bastante fácil, bastante difícil o muy difícil? Estudios (datos encuesta *CCe*).

Una vez identificadas las creencias de los encuestados sobre la implementación de la I+D+i, y teniendo en cuenta que la mayoría considera que en España es bastante o muy difícil hacer I+D+i, pasaremos a ver más de cerca las dificultades percibidas por estos mismos entrevistados sobre el porqué de su no implementación través de la siguiente pregunta de la encuesta: ¿Cuáles son los motivos principales por los que su empresa nunca ha intentado abordar actividades de investigación, desarrollo e innovación, o I+D+i?

Lo primero que observamos es que la falta de conocimiento y de los recursos técnicos suficientes (3,0%) es una dificultad real en las empresas que no han intentado nunca abordar actividades de I+D+i (gráfico 4).

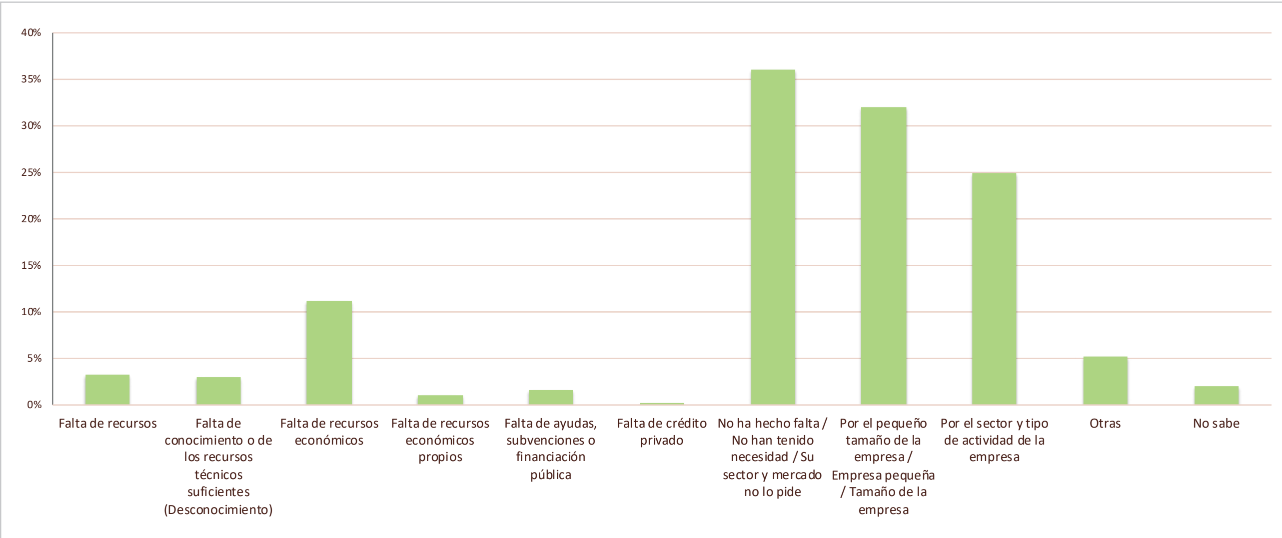

Gráfico 4. ¿Cuáles son los motivos principales por los que su empresa nunca ha intentado abordar actividades de investigación, desarrollo e innovación, o I+D+i? (datos encuesta *CCe*).

Llama la atención que la falta de recursos económicos –ya sean propios, públicos o privados– no es el principal escollo para la no implementación de la I+D+i en su empresa. También son factores determinantes que afectan a la I+D y más concretamente a la no innovación, los que están relacionados directamente con el sector de la empresa y el tipo de actividad que desempeñan (36,0% y 24,8% respectivamente) así como con el tamaño de la empresa y el número de empleados a su cargo (31,9%). Por lo que podemos apuntar así mismo que el tamaño de la empresa y el sector en el que trabajan y llevan a cabo sus actividades son factores determinantes para la no implementación de la I+D+i, y no son tan determinantes la falta de medios o recursos económicos y financieros. Las grandes empresas de sectores más científicos y tecnológicos son las que implementan I+D+i entre sus objetivos (tabla 2).

En este punto, y una vez identificadas las dificultades por las cuales no se ha implementado la I+D+i, vamos a analizar cuál es su grado de implicación en la innovación: ¿Hasta qué punto se considera usted interesado/a en los avances en la ciencia y tecnología aplicados a su sector? (gráfico 5).

Esta pregunta es fundamental porque a partir del interés que muestren los encuestados hacia los avances en la ciencia y la tecnología aplicados a su sector, podemos acercarnos a la su percepción de cómo la ciencia y la tecnología pue-

Tabla 2. ¿Cuáles son los motivos principales por los que su empresa nunca ha intentado abordar actividades de investigación, desarrollo e innovación, o I+D+i? Sector y tamaño empresa (datos encuesta *CCe*).

		¿Cuáles son los motivos principales por los que su empresa nunca ha intentado abordar actividades de investigación, desarrollo e innovación, o I+D+i? %										
		Falta de recursos	**Falta de conocimiento o de los recursos técnicos suficientes (Desconocimiento)**	**Falta de recursos económicos**	**Falta de recursos económicos propios**	**Falta de ayudas, subvenciones o financiación pública**	**Falta de crédito privado**	**No ha hecho falta / No han tenido necesidad / Su sector y mercado no lo pide**	**Por el pequeño tamaño de la empresa / Empresa pequeña / Tamaño de la empresa**	**Por el sector y tipo de actividad de la empresa**	**Otras**	**No sabe**
Sector	Agricultura	6,2		20,8				25,3	39,3	10,7	12,3	
	Industria	4,1	6,2	16,0	2,1	2,1	2,1	28,9	24,2	26,9	8,2	
	Energía	0,7		12,1				36,4	22,8	38,7		0,7
	Construcción		5,5	21,2	4,5	0,1		23,8	47,1	17,0		0,0
	Servicios	3,9	2,0	7,0		2,0		41,3	28,6	27,3	5,9	3,1
Tamaño de la empresa	Menos de 10 empleados	3,6	3,1	10,5	1,2	1,7	0,3	35,6	33,6	24,3	5,8	1,4
	De 10 a 50 empleados		2,4	19,1				38,4	16,7	26,8		8,9
	De 50 a 250 empleados			5,2		2,6		59,6	5,2	59,7		
	Más de 250 empleados	4,0		4,0				5,7		76,7		9,6

de favorecer el desarrollo empresarial. Podemos ver que el 70,7% de los encuestados sí que está bastante o muy interesado en los avances en la ciencia y tecnología de su sector empresarial.

Si vemos estos porcentajes por sectores empresariales las diferencias son considerables. Como ya hemos señalado, uno de los factores que afectan a la innovación es el sector empresarial en el que se encuadra la empresa, así como el tamaño de la misma (gráfico 4).

Por sectores podemos comprobar que el sector de la construcción es el que menos está interesado en los avances científico-tecnológicos que afectan la implementación de la I+D+i. Por el contrario, el sector energético es el más interesado en estos avances y por tanto el que más posibilidades tiene de implementar una política de I+D+i (gráfico 6). Como hemos visto hasta aquí, el sector, el tamaño de la empresa y la formación de sus directivos inciden directamente en el desarrollo de políticas de innovación empresariales además otra serie de esfuerzos. El estar interesado en los avances de la ciencia y a tecnología es el punto de partida para ello, ya que la

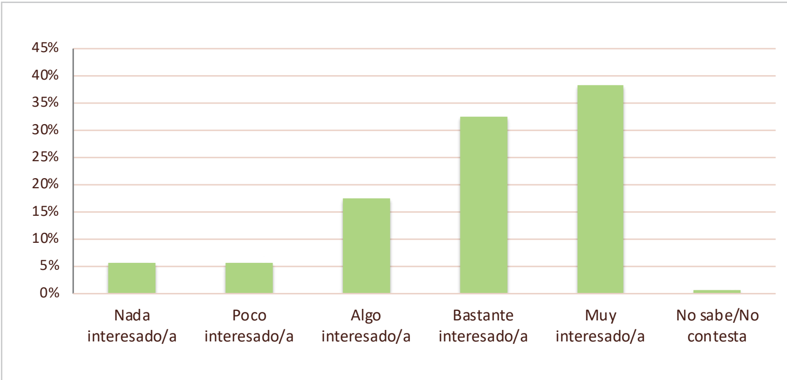

Gráfico 5. ¿Hasta qué punto se considera usted interesado/a en los avances en la ciencia y tecnología aplicados a su sector? (datos encuesta *CCe*).

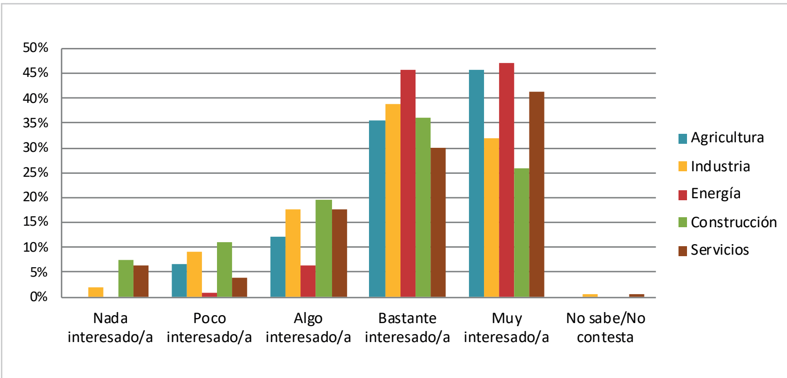

Gráfico 6. ¿Hasta qué punto se considera usted interesado/a en los avances en la ciencia y tecnología aplicados a su sector? Sector (datos encuesta *CCe*).

innovación consiste en ser capaces de convertir los resultados de las investigaciones científico-técnicas en servicios y productos nuevos y mejores, a fin de seguir siendo competitivos en el mercado mundial (**Gouardères**, 2019).

Este hecho se constata también en las empresas con un número de empleados mayor, siendo las que más interesadas están en los avances de la ciencia y tecnología aplicados a su sector empresarial. Comprobamos cómo el 43,2% de las empresas de más de 250 empleados están muy interesadas en estos avances científico tecnológicos cifra que se eleva hasta el 82,0% si tenemos en cuenta que estas mismas empresas están bastante o muy interesadas en estos avances de su sector. Lo mismo sucede con las empresas que cuentan en su plantilla con 50 a 250 empleados, ya que el 82,4% de los trabajadores de este tamaño de empresa han contestado que están bastantes o muy interesados en los avances de la ciencia y la tecnología aplicados a su sector. Al contrario, podemos observar que, a menor número de empleados, menor es el interés por estos avances (gráfico 7).

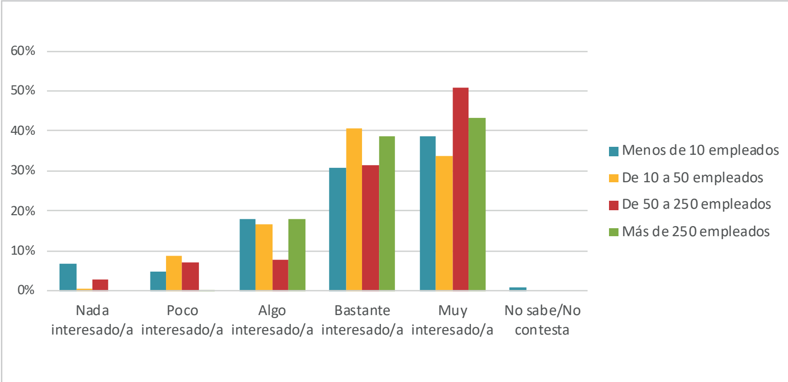

Gráfico 7. ¿Hasta qué punto se considera usted interesado/a en los avances en la ciencia y tecnología aplicados a su sector? Tamaño (datos encuesta *CCe*).

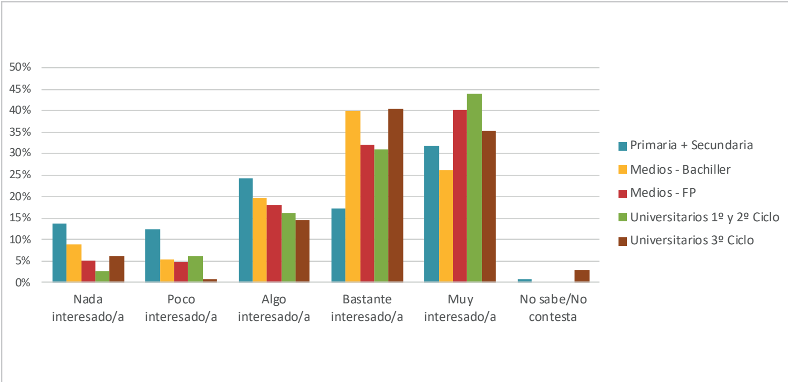

Gráfico 8. ¿Hasta qué punto se considera usted interesado/a en los avances en la ciencia y tecnología aplicados a su sector? Estudios (datos encuesta *CCe*).

Llegados a este punto destacamos el factor formación y el nivel de estudios cómo determinantes para la implementación de la I+D+i en las empresas como hemos podido constatar a través de la encuesta *CCe*.

Desde la motivación inicial incide de manera evidente el nivel de estudios. A más alto nivel de estudios mayor interés en los avances de la ciencia y la tecnología. Y es que, mientras el 36,4% de los encuestados que tienen estudios de nivel secundario (primaria más secundaria) están poco o algo interesados en los avances científico-tecnológicos, el porcentaje va descendiendo hasta el 15,1% de los encuestados con un nivel de estudios universitarios de tercer ciclo. En sentido contrario, el porcentaje de encuestados que están bastante o muy interesados en los avances de la ciencia y la tecnología y que tienen un nivel de estudios universitarios es muy elevado. El 75,1% con estudios universitarios de primer y segundo ciclos y el 75,7% con estudios universitarios de tercer ciclo, lo que indica que a mayor nivel de estudios mayor interés en los avances de la ciencia y tecnología aplicados a su sector, concediendo mayor importancia a la I+D+i para el desarrollo de la propia empresa (gráfico 8).

Esta relación es importante en el cargo que ocupan los encuestados, ya que suele coincidir un mayor nivel de estudios con una más alta responsabilidad en la empresa donde trabajan (tabla 3).

4. Obstáculos para invertir e implementar la I+D+i en España

A partir de la encuesta *CCe* vamos a tener en cuenta cuáles son los principales obstáculos a los que se enfrentan las empresas españolas a la hora de invertir e implementar la I+D+i, analizando las respuestas de los encuestados a la pregunta sobre los beneficios de implementar la I+D+i en su empresa.

Implementar la I+D+i se percibe como un obstáculo en sí mismo al que se enfrentan las empresas, ya que el 38,7% de los encuestados están bastante o muy de acuerdo con la afirmación que para poder llevar a cabo una correcta implementación de I+D+i hace falta una inversión muy arriesgada con un alto grado de incertidumbre (gráfico 9).

No obstante, esta primera inversión arriesgada que supone un obstáculo para dar el primer paso, luego es vista como bastante o muy beneficiosa a largo plazo por el 77,6% de los encuestados. Entre los encuestados se percibe que, aunque implementar I+D+i en la empresa supone un obstáculo por la inversión inicial, posteriormente también da a esas empresas una ventaja competitiva, mejorando su desarrollo en el mercado. De hecho, más del 84% de los encuestados está bastante o muy de acuerdo con estas dos afirmaciones (gráfico 9).

Los encuestados asumen que la inversión que realizan sus empresas para implementar la I+D+i es muy arriesgada y con un alto grado de incertidumbre ya que ellos ven que las ayudas y subvenciones que existen no son apropiadas

Tabla 3. Cargo en la empresa en relación con sus estudios (datos encuesta *CCe*)

		¿Qué cargo ocupa usted actualmente en su empresa? %															
		Director general	**Director Ejecutivo, Consejero, Presidente, Secretario Consejo adm.**	**Director técnico, Director de ingeniería, Gerente técnico, Jefe oficina técnica**	**Director de producción, Director de fábrica, Director instalaciones**	**Responsable de investigación, Director I+D+i y tecnología**	**Gerente, Director, Director adjunto, Gestor, Subdirector**	**Propietario, Administrador, Administrador general**	**Director de operaciones, Director de planificación, Desarrollo corporativo**	**Director calidad, Jefe calidad, Jefe prevención y medio ambiente**	**Director financiero, Jefe de adm., Control financiero, Control gestión**	**Director comercial, Director de marketing, Jefe de ventas**	**Director de IT, Director de TIC, Director de informática Director de aplicaciones**	**Director de compras, Jefe de compras**	**Consultor de I+D, Consultores y asesores**	**Director de expansión, Director de desarrollo internacional**	**Comunicación, Relaciones institucionales**
Estudios	Primaria + Secundaria	5,4	4,7				55,6	12,6			16,4				4,5		
	Medios	5,0	1,5	2,2	1,6	0,1	49,2	13,5		1,5	20,7	2,0	0,0	0,9	1,6		
	Universitarios 1º y 2º ciclo	7,4	2,8	7,9	0,2	2,8	38,9	13,9	0,1	0,6	20,1	0,2	2,7	0,2	1,3	0,7	0,0
	Universitarios 3º ciclo	15,6	3,2	8,0	0,3	7,3	33,6	6,1	0,5	2,5	20,3	0,4	0,2	0,0		1,7	0,0

para su empresa. Destacamos además la falta información sobre esas posibles ayudas y subvenciones y el complejo acceso a la financiación.

Otro de los obstáculos a los que se enfrentan las empresas es que el resultado de la inversión revierta en la empresa. Así, a los encuestados se les hizo la siguiente pregunta: La actividad investigadora o innovadora llevada a cabo por su empresa ¿ha dado lugar a la solicitud de patentes o modelos de utilidad?

Los datos de esta pregunta hablan por sí solos, ya que el 81,3% de las empresas que han hecho alguno de los tipos de I+D+i nunca han iniciado los trámites de solicitud para crear una patente o modelo de utilidad (invención) conforme a la *Ley 24/2015, de 24 de julio, de Patentes* recogida en el *BOE* n. 177, de 25 de julio de 2015 (*España*, 2015) a través de la *Oficina Española de Patentes y Marcas* (*OEPM*)[5] (gráfico 10).

Si observamos estos resultados totales por sector empresarial los datos son diferentes. Es decir, el sector empresarial es un factor determinante que afecta a la innovación.

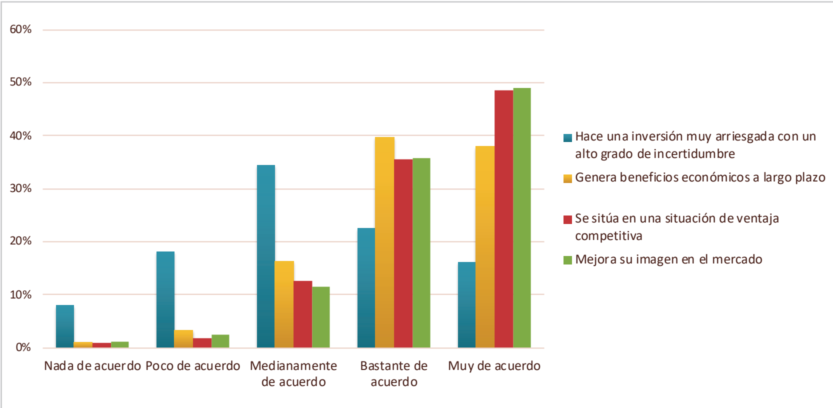

Gráfico 9. Implementar una política de I+D+i… (datos encuesta *CCe*).

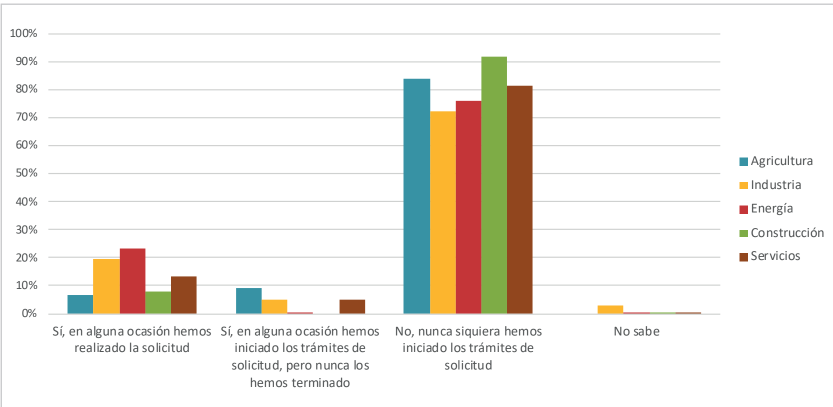

Gráfico 10. La actividad investigadora o innovadora llevada a cabo por su empresa ¿ha dado lugar a la solicitud de patentes o modelos de utilidad? Sector (datos encuesta *CCe*).

En este caso y viendo los resultados por sectores, se observa cómo sí que hay un porcentaje importante de empresas del sector industrial (19,6%) y energético (23,4%) que han realizado en alguna ocasión una solicitud de patentes o modelos de utilidad frente al 8,0% del sector de la construcción o al 6,6% del sector agrícola (gráfico 10).

Otro de los factores que influyen en la actividad investigadora es el tamaño de la empresa. Aunque las empresas de menos empleados implementen la I+D+i en menor medida que las empresas más grandes, entre las que sí que han realizado algún tipo de I+D+i el porcentaje de las que nunca han iniciado los trámites de solicitud de patentes es de aproximadamente el 80,0% frente al 67,3% de las empresas que cuentan con más de 250 empleados (gráfico 11).

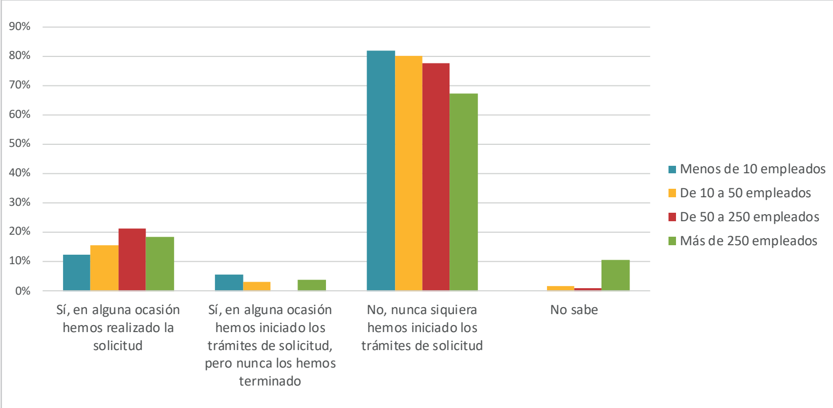

Gráfico 11. La actividad investigadora o innovadora llevada a cabo por su empresa ¿ha dado lugar a la solicitud de patentes o modelos de utilidad? Tamaño (datos encuesta *CCe*).

Esta pregunta relacionada con las patentes como uno de los resultados finales de la I+D+i tenemos que ponerla en relación con otro obstáculo que encuentran los encuestados a la hora de implementar la I+D+i: problemas derivados del actual sistema de registro de patentes y/o propiedad industrial. Este es un problema importante que encuentran el 22,3% de los encuestados[6]. Se trata del problema del exceso de burocracia, considerado por casi el 50% de los encuestados como un obstáculo importante al que se enfrentan las empresas a la hora de invertir e implementar la I+D+i. Asimismo, se hizo a los encuestados una pregunta abierta sobre las barreras u obstáculos que se había encontrado en su empresa a la hora de invertir o implementar la I+D+i. Entre las respuestas más reiteradas podemos destacar las siguientes:

- poco apoyo público,
- coste económico,
- ayudas y subvenciones poco apropiadas para determinadas empresas,
- falta de financiación,
- falta de una estrategia empresarial destinada a la I+D+i,
- rigidez organizativa,
- falta de personal cualificado,
- no hay actitud innovadora,
- escasez de demanda de innovaciones por parte del mercado, y
- falta de información.

5. Factores que afectan a la innovación

Como hemos ido haciendo referencia, existen diferentes factores que afectan de alguna manera, ya sea en positivo o negativo al nivel de I+D+i implementado por las empresas.

Uno de estos factores es ver si la empresa que estamos analizando pertenece a un parque científico o tecnológico, un clúster u otra agrupación de empresas cuyo fin sea incentivar la investigación, desarrollo e innovación, ya que estas agrupaciones tienen como objetivo fundamental aumentar la riqueza de la comunidad mediante la promoción de la cultura de la innovación así como la competitividad de las empresas e instituciones asociadas y promocionar la investigación favoreciendo el avance en áreas estratégicas.

Para que se cumplan estos objetivos, un *science park* estimula y gestiona el flujo de conocimiento y tecnología entre universidades, instituciones de I+D+i, empresas y mercados, facilita la creación y el crecimiento de empresas basadas en la innovación a través de procesos de incubación y spin-off, y proporciona otros servicios de valor agregado junto con espacios e instalaciones de alta calidad (*IASP*, 2018).

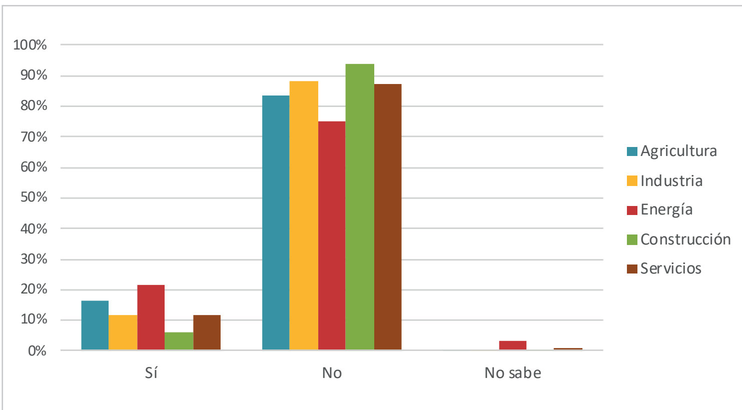

Gráfico 12. ¿Pertenece su empresa a un parque científico o tecnológico, un clúster u otra agrupación de empresas cuyo fin sea incentivar la investigación, desarrollo o innovación? Sector (datos encuesta *CCe*).

Basándonos en esta definición sobre lo que es y lo que implica un parque científico podemos sostener que, si una empresa pertenece a uno, es sinónimo de que conoce los avances científico-tecnológicos de primera mano, y que por tanto se encuentra en mejores condiciones de partida para implementar la I+D+i.

Este factor tan importante vemos que sólo es cumplido por el 11,1% de los encuestados, dato muy significativo. Esto implica que casi el 90% de los encuestados no están trabajando en una empresa asociada a un parque científico.

Sin embargo, este porcentaje será aún más significativo si miramos el sector empresarial en el que están ubicadas estas empresas y el tamaño de las mismas.

El sector es un factor clave que afecta a la I+D+i, ya que mientras los porcentajes de las empresas que pertenecen a un parque científico o tecnológico del sector energético (21,4%), la agricultura (16,6%) y la industria (11,6%) son altos, las empresas del sector de la construcción (5,9%) apenas pertenecen a estos parques científicos (gráfico 12).

Si atendemos al tamaño de la empresa, aunque hay un porcentaje elevado de empresas que no pertenecen a ningún parque científico, el porcentaje de las que sí, va incrementándose en relación con el aumento del número de empleados contratados. Mientras el 10% de las empresas de menos de 10 empleados pertenece a un parque, las empresas de más de 250 empleados lo están en un 21,2%.

A través del análisis de la propia encuesta y como factor significativo para la implementación de la I+D+i en España destaca a lo largo de la misma y con componentes tanto cuantitativas como cualitativas el nivel educativo. La educación como motor o desfase de la innovación empresarial. Para hacer esta afirmación nos hemos basado en diferentes preguntas de la encuesta. Entre ellas destacamos la siguiente: ¿Recuerda el nombre de alguna institución que se dedique a hacer investigación científica y tecnológica en nuestro país? Sobre la base total de los encuestados percibimos cómo no es mucho mayor el porcentaje de aquellos que responden que no conocen el nombre de alguna institución 59%, frente a los que han respondido de forma afirmativa 41% a la cuestión planteada. Por ello, vamos a analizar la pregunta en términos de los estudios que han terminado los encuestados (gráfico 13).

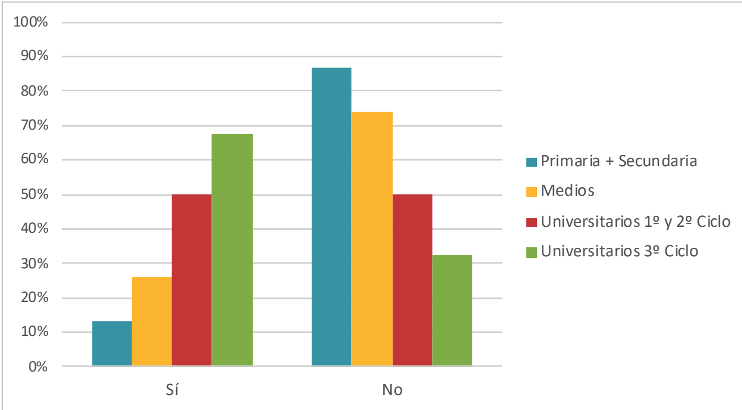

Gráfico 13. ¿Recuerda el nombre de alguna institución que se dedique a hacer investigación científica y tecnológica en nuestro país? Estudios (datos encuesta *CCe*).

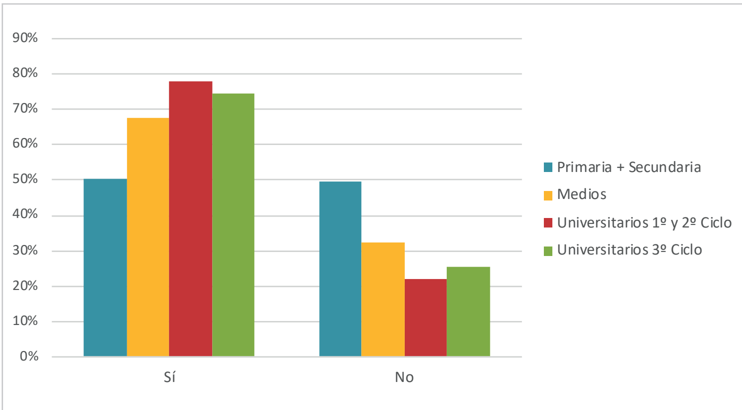

Gráfico 14. ¿Suele informarse para mantenerse al día sobre ciencia y tecnología en su empresa? Estudios (datos encuesta *CCe*).

Viendo el gráfico 13 podemos comprender perfectamente por qué el factor educación tiene especial relevancia en cualquier estudio sobre la implementación de la I+D+i en las empresas en una región concreta. Se observa cómo a menor nivel educativo, menor conocimiento de la investigación científica y tecnológica en España: el 13,3% de los encuestados con nivel de estudios primarios y secundarios conocen alguna de estas instituciones frente a más de un 50% de los encuestados con nivel universitario que han respondido afirmativamente a esta misma cuestión (gráfico 13).

Sin embargo, no es esta la única pregunta de la encuesta que refleja el factor educación como uno de los más importantes en un análisis como el que estamos llevando a cabo. Así, cuando se ha preguntado en la encuesta *CCe*: ¿Suele informarse para mantenerse al día sobre ciencia y tecnología en su empresa?

El 71,2% de los encuestados ha respondido que sí frente al 28,8% que no se informa sobre ciencia y tecnología.

Tal y como vimos anteriormente (gráficos 8 y 13), el nivel de estudios es un factor que afecta a la I+D+i, ya que la información sobre ciencia y tecnología y la utilización de fuentes de información relacionadas con este tema como laboratorios e institutos privados I+D+i, universidades y organismos públicos de investigación, conversaciones con investigadores, fuentes internas de la empresa, asociaciones profesionales y sectoriales, oficinas de patentes y propiedad industrial, bibliografía o publicaciones científico técnicas…, es mucho mayor cuando el nivel de estudios va aumentando. Es decir, a mayor nivel de estudios más información y utilización de fuentes bibliográficas específicas sobre ciencia y tecnología (gráfico 14).

Estos datos están en paralelo con el informe del *INE* que nos muestra dos claras consideraciones:

> "la de la permanencia de un destacado colectivo de empresas (casi un 30%) que consideran que la innovación no es precisa, puesto que no se demanda, y la del alza de las empresas que reconocen en los déficits del conocimiento uno de los factores que obstaculiza la adopción de la innovación" (**González-Hermoso-de-Mendoza**; **Sánchez-López**, 2010, p. 254).

6. Resultados destacados de la encuesta *CCe* sobre la innovación en España

La investigación, desarrollo e innovación son asuntos comunes y determinantes para el funcionamiento y desarrollo de una empresa. Sin embargo y a través de los resultados obtenidos en la encuesta advertimos cómo la I+D+i no está implementada en todas las empresas españolas con el mismo grado. Hemos rastreado a través de la misma dónde radican estas diferencias.

Tradicionalmente la innovación ha estado ligada a un contexto exclusivamente industrial y tecnológico. Y es que hay que recordar que el *Manual de Oslo* (*OCDE*, 2006) en su primera edición sólo consideraba como tal la innovación industrial. Fue en las sucesivas versiones cuando se amplió el concepto de innovación a un mayor número de empresas centrándose en productos y procesos para finalmente incorporar el sector servicios. De este modo, la idea tradicional de innovación sigue estado presente, aunque ya en menor medida, puesto que los sectores empresariales cada vez están más diversificados y cada empresa, independientemente del sector en que se encuadre, reconoce que la innovación es importante para su futuro empresarial. El actual tejido empresarial comprende los siguientes sectores analizados:

- agricultura,
- industria,
- energía,
- construcción, y
- servicios,

siendo los sectores industrial y energético los más innovadores hasta la fecha. Sin embargo, esto está cambiando ya que, aunque es verdad que el 47,8% de los encuestados piense que es bastante difícil hacer I+D en España y el 91,6% de los mismos no dispone de un departamento propio de investigación e innovación en su empresa, el 85% del total de entrevistados cree que la I+D+i es bastante o muy útil.

A la hora de implementar una política de innovación con resultados favorables, los sectores industrial, energético y agrario son los que más fácil lo tienen ya que son los sectores más interesados en los avances en la ciencia y tecnología aplicados a su sector. Si ponemos el foco de atención en los resultados de la encuesta *CCe* observamos cómo los encuestados han respondido de forma distinta a la pregunta: ¿Hasta qué punto se considera usted interesado/a en los avances en la ciencia y tecnología aplicados a su sector? Así destaca que los encuestados del sector energético están bastante o muy interesados en un 93,4%; el sector agrario en un 81,2% y el sector industrial en un 70,3%.

Aunque estos sectores son los que a priori implementan una política de innovación en sus empresas, también hay que considerar otro factor importante: la educación. Si atendemos al nivel de educación de los encuestados vemos cómo a mayor nivel de estudios más conocimiento se tiene acerca del valor de la innovación empresarial. Este hecho se repite independientemente del sector en el que se encuadre la empresa, así como del tamaño de las mismas medido en número de empleados. El nivel educativo es fundamental para poder llevar a cabo una política de innovación empresarial, ya que cuanto más conocimiento específico sobre la cultura innovadora, más posibilidades de implementar la innovación lo que se traduce en crecimiento, productividad competitividad y permanencia en el mercado.

El consumo de información y documentación especializada sobre ciencia y tecnología por parte de los empresarios muestra cómo la innovación va unida a la información. La educación y el nivel de estudios influyen significativamente en este aspecto. El nivel de estudios afecta de manera determinante a la I+D+i empresarial y cómo la desinformación sobre ciencia y tecnología lo observamos en el apartado de la no utilización de fuentes de información[7]. Formación e innovación también se conjugan conjuntamente en las políticas de I+D+i empresarial. Y es que como advierte Ferrer-Sapena

> "la búsqueda en bases de datos de prestigio científico-técnicas y de patentes tiene la gran ventaja de asegurar un cierto grado mínimo de calidad en cuanto los documentos que han sido recogidos en ellas" (**Ferrer-Sapena**, 2008).

Más del 70% de los encuestados han afirmado que se informan para mantenerse al día sobre ciencia y tecnología en su empresa. Este porcentaje se pude escalar atendiendo al nivel de estudios de los encuestados, ya que volvemos otra vez a insistir en que a mayor nivel de estudios menos desinformación científica y tecnológica.

Siguiendo con la afirmación de **Ferrer-Sapena** (2008) constatamos la importancia dada a las patentes, ya que mediante las patentes registradas por las empresas podemos conocer la evolución de la innovación de las y, además, podemos hacer análisis comparativos a través del registro de patentes en base a la vigilancia tecnológica e inteligencia competitiva.

La vigilancia tecnológica es un elemento clave en la política de I+D+i, ya que permite a las empresas captar información del exterior y de la propia empresa sobre ciencia y tecnología para posteriormente convertirla en conocimiento para tomar decisiones con un menor riesgo sobre la materia (*Aenor*, 2018), pero también les permite identificar a las empresas que cuentan con amplios avances y desarrollos tecnológicos que harán que la empresa pueda beneficiarse de ellos minimizando así sus inversiones en I+D+i mediante la implementación de una política de *benchmarking* empresarial (**Escorsa-Castells**; **Maspons-Bosch**, 2001; **Escorsa-Castells**; **Valls-Pasola**, 2003).

Sin embargo, y como hemos destacado en el apartado 4. "Obstáculos para invertir e implementar la I+D+i", la actividad investigadora o innovadora que llevan a cabo las empresas no siempre suele dar lugar a solicitudes de patentes o modelos de utilidad, siendo el análisis de patentes uno de los indicadores de resultados científicos y tecnológicos que miden la ciencia y tecnología de un país. De hecho, un 81,3% de las empresas nunca ha iniciado los trámites de solicitud de una patente. Este porcentaje se reduce si atendemos por sectores empresariales, ya que el 23,4% de las empresas del sector energético y el 19,6% del sector industrial sí que han realizado esta solicitud de patentes ante la *Oficina Española de Patentes y Marcas* (*OEPM*).

> "El bajo número de patentes y la escasa presencia en publicaciones internacionales es un claro reflejo, por una parte, de una capacidad de absorción insuficiente y, por otra, de la poca madurez en el mercado internacional de nuestro tejido productivo" (**Rojo**; **Gómez**, 2006).

Como resultado del análisis de los datos de la encuesta *CCe* se percibe que uno de los principales obstáculos a los que se enfrentan las empresas en relación con la innovación es el sistema de registro de patentes y propiedad intelectual, ya que sólo el 21,6% de los encuestados ha respondido que no encuentran ningún problema en el sistema de registro, dato que contrasta con el alto porcentaje de encuestados (40,4%) que no han querido contestar a la pregunta. Podríamos volver a concluir aquí que el desconocimiento sobre el sistema de patentes por parte de la empresa española está directamente relacionado con la formación. Una de las barreras percibidas por tanto con el uso del registro de patentes está asociado al exceso de burocracia, considerado por casi el 50% de los encuestados como un obstáculo importante al que se enfrentan las empresas a la hora de invertir e implementar la I+D+i.

Lo cierto es que el tamaño de la empresa o número de empleados contratados influye significativamente a la hora de implementar la innovación en las empresas, puesto que las empresas que cuentan con un mínimo de empleados apenas implementan la I+D+i frente a las grandes empresas con un número de empleados mayor a 250 que sí que llevan a cabo una inversión importante para poder realizar innovación y conseguir tanto patentes como modelos de utilidad. Podemos igualmente concluir que las pymes en España, que constituyen un porcentaje mayoritario del sistema productivo tienen, perciben serias barreras frente a la implementación de la I+D+i.

Enlazamos otra vez con la encuesta, pues otra de las barreras u obstáculos a los que se enfrentan las empresas a la hora de invertir en innovación es el coste económico que supone la política de I+D+i. Y es que, aunque casi el 80% de los encuestados reconocen que una estrategia empresarial destinada a la I+D+i genera beneficios económicos a largo plazo, la inversión inicial posee un alto grado de incertidumbre para llevar a cabo esta política de innovación por lo que es vista con recelo por el 73,1% de los encuestados. De esta forma, las empresas de menos empleados no suelen implementar la innovación porque esta inversión inicial les supone un riesgo mucho mayor que para las empresas que cuentan con un número de empleados más elevado.

En el trabajo de **Uyarra** (2006), financiado por *Naciones Unidas* y la *Universidad de Maastricht*, se define la necesidad de cooperar entre el sector público y privado para alcanzar logros en las inversiones de I+D+i denominándola como *policy mix for R&D* siendo ésta la combinación de instrumentos de políticas que interactúan para influir en la cantidad y calidad de las inversiones en I+D en los sectores público y privado. Es por ello que las fuentes de financiación son importantes,

> "resultando obligado que la innovación esté cada vez más presente en las políticas de los gobiernos nacional y autonómicos de nuestro país" (**Ferrer-Sapena**, 2008).

Debemos apuntar que esto no es un problema exclusivamente español, y es recogido en la investigación realizada en Holanda por Faber, Van-Dijk y Van-Rijnsoever:

> "Dado que la participación de las pequeñas y medianas empresas (pymes) en los programas europeos de investigación colaborativa es menor de lo que se había esperado, este estudio investiga los motivos de las pymes basadas en I+D para la (no) participación en estos programas. Encontramos que los programas europeos de investigación colaborativa atraen la participación de un número bastante limitado de pymes especialmente basadas en las que tienen experiencia previa con la colaboración internacional, en los incentivos del costo compartido y el intercambio de conocimiento y la barrera formada por los costos de participación en estos programas. Se derivan medidas de política que podrían mejorar la participación de las pymes en los programas europeos de investigación colaborativa derivadas de nuestros resultados" (**Faber**; **Van-Dijk**; **Van-Rijnsoever**, 2015).

Las fuentes de financiación tanto públicas como privadas[8] son importantes, ya que la inversión de las empresas en innovación siempre generará efectos positivos tanto en la propia empresa a través de su productividad y competitividad, independientemente del sector en el que se encuadre, como en el sistema económico y social. Es revelador el dato apuntado por la *OCDE* sobre el fracaso de las empresas españolas:

> "Sólo el 29% de las empresas españolas sobrevive al quinto año. En el primer año de creación, el 74% de las empresas españolas fracasa. En el primer año de creación, las empresas españolas también están a la cabeza de las que más fracasan en Europa, con un 74%. En el segundo año, el porcentaje se reduce al 60%; en el tercero, al 45% y en el cuarto, al 6%" (*OCDE*, 2015a).

Pero hay elementos para ser positivos. Una de las ideas siempre presente para mejorar la innovación de las empresas es hacer efectiva la demandada alianza empresa-universidad. El desarrollo de las *spin-offs* en los campus universitarios en España, está permitiendo la creación de las empresas más innovadoras hoy.

> "La creación de empresas de base tecnológica en el seno de las universidades, especialmente las *spin-offs* universitarias, se ha convertido en los últimos años en uno de los mecanismos más eficaces de transferencia de resultados de investigación y tecnología desde los centros de investigación universitarios al sector productivo. Como consecuencia, este tipo de empresas está siendo motivo de estudio por el importante papel que se les atribuye en los procesos de innovación, la generación de empleo cualificado y, por tanto, su aportación al desarrollo socioeconómico" (**Iglesias-Sánchez**; **Jambrino-Maldonado**; **Peñafiel-Velasco**, 2012).

El trabajo de Lacy *et al*. pone de manifiesto este aspecto para Estados Unidos

> "Las alianzas entre universidades e industrias de los Estados Unidos han existido durante varias décadas y en los últimos años se han vuelto generalmente más variadas, de alcance más amplio, más agresivas, experimentales y de mayor visibilidad pública. Además, en las últimas décadas, los intereses públicos y privados han abogado por políticas y leyes gubernamentales para promover globalmente la comercialización de la ciencia universitaria" (**Lacy** *et al*., 2014).

Esta es una de las ideas con los que nos gustaría concluir, el desarrollo de la innovación en los clusters universitarios está ayudando a cambiar la percepción de la innovación y en general de la cultura científica en las empresas españolas. Esperemos ver pronto resultados en la economía y por tanto en el empleo.

El informe de resultados de la innovación en Europa publicado en 2017 con datos de 2016, *Innovation ouput indicator 2017* (**Vértesy**, 2017), mide cómo las ideas son capaces o no de llegar al mercado dependiendo de una serie de componentes. Se basa en cuatro componentes:

- la innovación tecnológica;
- el empleo;
- la competitividad;
- la inversión en bienes y servicios intensivos en conocimiento en empresas, dentro de los sectores más innovadores.

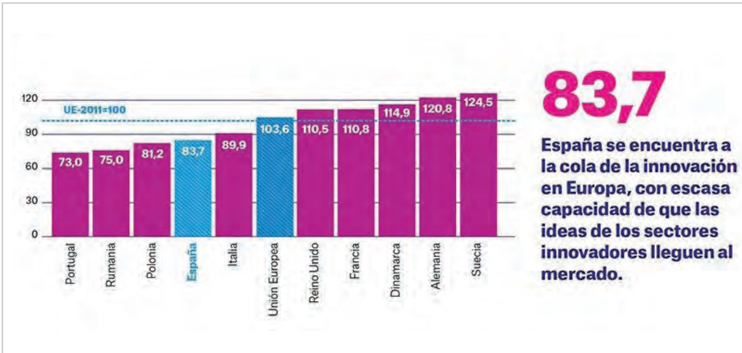

Gráfico 15. Innovation output indicator 2014.
Fuentes: *Joint Research Centre* y *La Caixa*.
https://observatoriosociallacaixa.org/es/-/innovation-output-indicator-2014-

Sobre estos datos el *Observatorio Social de La Caixa*, elabora unos informes poniendo el foco en España. Según dicho observatorio con datos publicados en 2016, España,

> "está a la cola de la UE en eficiencia de sectores I+D. El país tiene 83,7 puntos en el Indicador de Resultados de la Innovación, una valoración muy alejada de la media regional, de 103,6 puntos" (*Observatorio Social de La Caixa*, 2016).

7. Conclusiones y discusión sobre la innovación en España a partir de los resultados de la encuesta *CCe*

El objetivo de este trabajo ha sido presentar, a la luz del proyecto *Cultura científica empresarial*, un análisis del vínculo que existe entre educación, innovación y competitividad (**Osuna-Alarcón**; **Rey-Rocha**; **López-Navarro**, 2018) y por tanto, la importancia de la educación y del uso de las fuentes de datos para el desarrollo socio-económico de España que permita dirigirnos hacia un nuevo modelo productivo más tecnológico y competitivo, donde prime la innovación.

El éxito y en muchos casos la supervivencia de una empresa tiene que ver con el esfuerzo que dedica a la innovación, la competitividad, la eficacia y la gestión. Como hemos visto por los datos extraídos de la encuesta *CCe*, mejorar la estrategia comparativa en estos ámbitos por parte de las empresas españolas se hace imprescindible.

Resulta ineludible, por tanto, que la innovación en España se desarrolle, consiguiendo así mejorar uno de los pilares de la permanencia de las empresas en el mercado. En este esfuerzo de extrapolar los datos de una encuesta hemos tenido muy en cuenta en primer lugar los datos de la propia encuesta *CCe*, pero también la *Encuesta de percepción social de la ciencia y la tecnología* de *Fecyt*, estudio que desde 2002 recoge cada dos años el análisis y los resultados de la *Encuesta de percepción social de la ciencia y la tecnología en España* (*Fecyt*, 2018); y la *Encuesta sobre innovación en las empresas* del *INE* que tiene como objetivo, ofrecer información directa sobre el proceso de innovación en las empresas (*INE*, 2019).

Por otra parte, ha sido relevante la opinión de otros actores implicados como es la *Cámara de Comercio* de España quien declara que la competitividad para ser efectiva debe sustentarse en la innovación. Así como alguno de los responsables de la financiación de las empresas como es *La Caixa*.

También hemos intentado insertar los datos para ver la comparativa en un entorno regional como es el europeo. En un esfuerzo por reducir la brecha entre ciencia y sociedad, la *Comisión Europea* impulsó el concepto de Investigación e Innovación Responsable (*RRI*), un tema transversal dentro de *Horizonte 2020*[9]. El enfoque de toda Europa busca poner los asuntos de I+D+i en primer plano, anticipar sus consecuencias e involucrar a la sociedad en la discusión sobre cómo la ciencia y la tecnología pueden ayudar a dar forma al mundo del mañana. Se necesitan herramientas concretas para implementar *RRI* en toda Europa y realizar esta visión.

A través de la encuesta *CCe* hemos querido reseñar la necesidad de estudiar el vínculo ciencia-empresa como relación social para dejar constancia de que la innovación en la empresa española es escasa. Más significativa en las grandes empresas e insuficiente en las pymes para su propia supervivencia, siendo éstas la base del tejido productivo español.

Por tanto, estamos de acuerdo con la siguiente manifestación

> "existe una escasa participación empresarial en la financiación y ejecución de la I+D+i por la falta de estrategias para la apropiación por parte de las empresas del conocimiento generado por universidades y centros públicos de investigación" (**Fernández-Zubieta** *et al.*, 2016; *OCDE*, 2015b).

Destacando que la innovación es lo que permite a la empresa su supervivencia en un mercado tecnológico y por tanto cambiante, parece lógico que si entre las políticas gubernamentales españolas está mejorar las tasas y la calidad del empleo se deben crear mecanismos gubernamentales que ayuden y apuesten decididamente por la innovación en las empresas ya que estas por sí mismas, como vemos por el análisis de la encuesta *CCe*, no lo han hecho suficientemente hasta la fecha.

Tabla 4. Índice mundial de innovación de España (datos *OMPI*)

Fecha	Ranking de innovación	Índice de innovación
2019	29º	47,85
2018	28º	48,68
2017	28º	48,80
2016	28º	49,19
2015	27º	49,07
2014	27º	49,27
2013	26º	49,41
2012	29º	47,20
2011	32º	43,81

Las barreras que encuentran las empresas a la hora de innovar son de formación, burocráticas, de acceso a la información y de incertidumbre ante el cambio, además de financiación. El desarrollo de políticas públicas de apoyo decidido a la innovación en las empresas unido a la introducción de la innovación como materia en el sistema educativo tendría consecuencias favorables para la economía, el empleo y el desarrollo de las pymes, podríamos decir incluso que para su subsistencia ya que actualmente el 74% de las mismas no llegan a cumplir un año de vida (*OCDE*, 2015b). Así mismo señalamos que la innovación en los clusters universitarios está ayudando a cambiar la percepción de la innovación y en general de la cultura científica en las empresas españolas. Como podemos observar, el puesto que ocupa España en el ranking del *Índice mundial de innovación de 2019*[10] (**Dutta**; **Lanvin**; **Wunsch-Vincent**, 2019) es el 29 de 129 países, con una puntuación de 47,85 sobre 100, por suerte lejos del índice 43,81 que obtuvo en 2011. Destacamos que en el ranking de los 3 países con mayor *Índice mundial de innovación* se encuentran: Suiza con una puntuación de 67,24; Suecia con 63,65 y Estados Unidos con 61,73 sobre 100.

Ser o no ser competitivo en términos de innovación resume las opciones de supervivencia y triunfo o fracaso de las empresas. Debemos ser capaces de ver la I+D+i como una ventaja competitiva (**Chesnais**, 1986; **Wilson**, 2003; **Cornejo-Cañamares**, 2009) dentro de la cultura científica empresarial, sobre la base de una recuperación económica a medio y largo plazo (*Comisión Europea*, 2010a; 2010c).

Por suerte el año 2016 fue el segundo consecutivo de subida de la inversión en I+D en España después de seis años de contracción entre 2009 y 2014 (*Cotec*, 2018), ya que el gasto en innovación tecnológica se incrementó un 1,3% en 2016 y se situó en 13.857 millones de euros (*INE*, 2019).

8. Notas

1. Estudio financiado por el *Ministerio de Economía y Competitividad* a través del *Plan Estatal de Investigación Científica y Técnica y de Innovación*. Proyecto de investigación *Cultura científica, percepción y actitudes ante la ciencia y la innovación en el sector empresarial español* (CSO2014-53293-R) de la *Agencia Estatal Consejo Superior de Investigaciones Científicas* (*CSIC*).

2. La encuesta *CCe* (*Cultura científica, percepción y actitudes ante la ciencia y la innovación en el sector empresarial español*) se puede consultar en las siguientes direcciones:
http://digital.csic.es/handle/10261/171841 http://digital.csic.es/handle/10261/177927

3. El *Proyecto CCe* ha dividido la encuesta en los siguientes sectores económicos: agricultura, industria, energía, construcción y servicios (incluye también transporte, comercio y hoteles), según la agrupación de la *Clasificación nacional de actividades económicas* (*CNAE*).

También hay que hacer constar que las respuestas de los empleados de estos sectores económicos se han estructurado atendiendo al número de empleados con los que cuenta cada una de estas empresas:

- micro empresa: hasta 9 empleados;
- pequeña empresa: de 10 a 49 empleados;

- mediana empresa: de 50 a 249 empleados;
- gran empresa: de 250 o más empleados.

4. Los cargos directivos de las empresas se han diversificado y han adoptado un cambio significativo en relación con sus funciones a través de diferentes "etiquetas". No es de extrañar, por tanto, que actualmente tratemos con neologismos de los cargos de las organizaciones empresariales:

- CEO (*Chief executive officer*) o Director ejecutivo.
- CMO (*Chief marketing officer*) o Director de marketing.
- CCO (*Chief communications officer*) o Director de comunicación.
- CTO (*Chief technology officer*) o Director del área tecnológica.
- CIO (*Chief information officer*) o Director de información.
- CFO (*Chief financial officer*) o Director financiero.
- COO (*Chief operating officer*) o Director de operaciones.
- SCM (*Supply chain manager*) o Gerente de compras.
- CHRO (*Chief human resources officer*) o Director de recursos humanos.

5. *Oficina Española de Patentes y Marcas*:
https://www.oepm.es/es/index.html

6. El registro de los derechos de propiedad industrial no es obligatorio, pero sí recomendable, ya que el nacimiento del derecho exclusivo sobre los mismos nace del registro válidamente efectuado.

7. Para conocer mejor la división de las fuentes generales de información acudir a **Muñoz-Cañavate** (2003).

8. El sistema español de innovación fue modelado en el libro blanco *El sistema español de innovación: diagnósticos y recomendaciones* (*Cotec*, 1998), donde se han identificado cinco subsistemas:

- administración pública;
- sistema público de I+D;
- infraestructuras de soporte a la innovación;
- empresas;
- entorno.

9. Entre los objetivos de *Horizonte 2020* se encuentra hacer de Europa un lugar más atractivo para invertir en la investigación y la innovación, fomentar la industria altamente competitiva, impulsar la innovación en pequeñas y medianas empresas, invertir en tecnologías clave para el desarrollo industrial…

10. El *Índice mundial de innovación* clasifica los resultados de la innovación de unos 130 países y economías con más de 80 indicadores. El informe, publicado conjuntamente por la *OMPI*, la *Cornell University* y el *Insead*, ofrece una clasificación anual de las capacidades y el desempeño de las economías de todo el mundo en innovación (**Dutta**; **Lanvin**; **Wunsch-Vincent**, 2019).

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De qué conversan los periodistas españoles en *Twitter*. Contenidos y tendencias en la *twitteresfera* española

What are the Spanish journalists talking about on *Twitter*. Content and trends in the Spanish twittersphere

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Resumen

El consumo de noticias se ha convertido en una experiencia social. En este escenario nos planteamos responder al interrogante: ¿De qué conversan los periodistas españoles en *Twitter*? Este trabajo estudia qué tipo de contenido emiten en *Twitter* para establecer si la vinculación de estos profesionales con los medios convencionales o con los cibermedios influye en la orientación temática de su actividad en *Twitter*. Se ha trabajado con tres muestras (portadas de cinco diarios de referencia de España, diez cuentas de *Twitter* de periodistas de medios de comunicación tradicionales y diez cuentas de ciberperiodistas). La investigación, de dos años de duración, ha analizado 3.500 tuits a partir de un sistema de clasificación de unidades de registro conformado por 35 categorías temáticas. El estudio concluye, entre otros aspectos, que la política nacional e internacional es el gran tema de *Twitter* junto a una preocupación creciente por el terrorismo yihadista y los asuntos del contexto iberoamericano por encima del europeo. El trabajo advierte también de la existencia de ciertas brechas temáticas sobre sociedad, cultura, arte o ciencia. Además se detecta una tendencia creciente del uso de la plataforma con fines de autopromoción por parte de los periodistas.

Palabras clave

Twitter; Periodismo; Periodistas; Prensa; Diarios; Medios convencionales; *Legacy media*; Cibermedios; Medios sociales; Agenda; Información; Internet; Poder; Comunicación; España.

Abstract

The consumption of news has become a social experience. In this scenario, we set out to answer the following question: What are Spanish journalists talking about on *Twitter*? This work studies what type of content they emit on *Twitter* to establish if the link between these professionals and the mass media or with the cybermedia influences the thematic orientation of their tweet. The study has worked with three samples (a sample of covers of five newspapers of reference of Spain, a sample of ten accounts of *Twitter* corresponding to journalists from mass communication media and a sample of ten accounts of cyberjournalists). The two-year research has analyzed 3.500 tweets based on a classification system of registration units made up of 35 thematic categories. The study concludes, among other aspects, that politics (national and international) is the great theme of *Twitter* along with a growing concern for jihadist terrorism and issues of the Ibero-American context over Europe. The work also warns of the existence of thematic gaps in certain areas (such as society, culture, art or science). In addition, an increasing tendency of the use of the platform for the purpose of self-promotion by journalists is detected.

Keywords
Twitter; Journalism; Journalists; Press; Newspapers; Legacy media; Cybermedia; Social media; Agenda; Information; Internet; Power; Communication; Spain.

1. Introducción

La sociedad siempre ha sido una red en una u otra medida. **Lewin** (1947) señaló que la percepción, el comportamiento de los individuos y la misma estructura grupal a la que pertenecen se inscriben en un espacio social configurado por el grupo y su entorno. Los trabajos de autores clásicos como **Moreno** (1954), **Granovetter** (1974) o **King** y **Wertheimer** (2009) resaltan la importancia del concepto de red en la historia de la humanidad, al tiempo que advierten que la percepción de un objeto se realiza dentro de una totalidad compleja y organizada. La sociedad no es homogénea, sino que se articula alrededor de un conjunto de puntos (nodos) que están conectados. El concepto de red ha estado desde sus orígenes vinculado con el poder. El surgimiento de las redes globales de comunicación (**Thompson**, 1998), por ejemplo, hicieron posible una estructuración en clave imperial de los mercados. Las redes otra vez daban forma al poder.

La denominada "sociedad red" relaciona la evolución económica y las transformaciones políticas, sociales y culturales en el marco de la teoría integral de la comunicación (**Castells**, 1997). La información y los intercambios alrededor de ésta se ubican en el centro de este espacio reticular donde la comunicación está directamente vinculada al poder (**Castells**, 2006). Piscitelli señalaba que

> "en internet se produce la emergencia de la complejidad, la interacción de elementos simples desprovistos de toda inteligencia, acaban por generar un cerebro y una piel globales, inesperadas y superpoderosas" (**Piscitelli**, 2005, p. 22).

El ciberespacio ha renovado y multiplicado el protagonismo del concepto de red en nuestras sociedades, así como el modo de estudiarlas (**Del-Fresno-García**; **Marqués-Martínez**; **Sánchez-Paunero**, 2014). El impacto del ciberespacio en el cambio social ha sido objeto de reflexión teórica bajo conceptos como los de "masas inteligentes" (**Rheingold**, 2002) o "alquimia de las multitudes" (**Pisani**; **Piotet**, 2009). Las revueltas populares de los países árabes en el primer trimestre de 2011 pusieron de relieve las repercusiones políticas de los nuevos medios (especialmente *Twitter*), así como su vínculo con el poder y con el periodismo (**Sandiumenge**, 2012).

En este escenario, *Twitter* se ha convertido en una red social ampliamente utilizada por los periodistas en su desempeño profesional por su interés como fuente informativa, por su potencial como plataforma de publicación y por su versatilidad como espacio dialógico. Sin embargo, *Twitter* no es estrictamente periodismo. Esta plataforma comunicativa estructurada como una red asimétrica de microblogging no posee un uso predeterminado. Desde el campo político (**Gutiérrez-Rubí**, 2013; **Caldevilla** *et al.*, 2019) al periodístico (Jaraba, 2013; 2014; 2015), muchos trabajos han indagado sobre las posibilidades comunicativas de esta plataforma y su alcance en un escenario hiperconectado (**Reig**, 2011) que confiere un gran protagonismo a los usuarios (**Gillmor**, 2004; **Nafría**, 2007) y que viene marcado por la desintermediación (**Orihuela**, 2015). **Reig**, **Mancinas-Chávez** y **Nogales-Bocio** (2017) proponen, a partir de la metodología compleja de Edgar Morin o de lo que Konrad Lorenz llamó epistemología comparada, una "Metodología del enfoque estructural complejo" (MENEC) o "Enfoque estructural complejo" (EEC) donde todo está relacionado. Este conjunto de propuestas, procedentes de diferentes áreas y enfoques, resulta de gran validez para el estudio de nuevos fenómenos comunicativos como son las redes sociales.

> La cultura es un escenario en el que se percibe con mayor claridad la existencia de incipientes tendencias renovadoras, aperturistas o de futuro en *Twitter*

Twitter reúne una serie de características muy particulares a nivel comunicativo. El componente de inmediatez (**Cambronero**, 2012), la sencillez, la movilidad en la producción y la asimetría de relaciones entre sus usuarios (**Orihuela**, 2011) la convierten en un "espacio" comunicativo innovador y con grandes potencialidades en el actual escenario comunicativo que cuestiona la teoría de la *agenda-setting* de McCombs (**McCombs**; **Masel-Walters**, 1976; **McCombs**, 1994; **McCombs**; **Evatt**, 1995). Este artículo responde a la siguiente pregunta de investigación de ámbito descriptivo: "¿De qué conversan los periodistas españoles en *Twitter*?". Con relación a ella, en el marco del trabajo, la investigación persigue los siguientes objetivos:

- Analizar qué tipo de contenido emiten los periodistas españoles en *Twitter* y comprobar si varía respecto a si se trata de periodistas que trabajan en medios convencionales o si lo hacen en cibermedios.
- Establecer una posible diferencia de tendencias en el contenido a partir de la adscripción profesional a un medio convencional o un cibermedio.
- Definir en qué consisten estas tendencias y de qué modo se expresan en el contexto profesional e informativo español.

2. Marco teórico

El consumo de noticias se ha convertido en una experiencia social (**Tejedor**; **Carniel-Bugs**; **Giraldo-Luque**, 2018). Los contenidos informativos se han transformado en piezas "portátiles", "personalizadas" y "participativas" (**Matsa**; **Mitchell**, 2014). En este contexto, se observa una preocupación por analizar el impacto del ciberespacio en la dieta informativa de los usuarios. Desde los trabajos de **Levy** (1999; 2007) sobre la consolidación de una nueva cultura digital, las reflexiones de **Martín-Serrano** (2008) sobre las mediaciones sociales, o las investigaciones de **Galindo-Cáceres** (2010a; 2010b; 2011) respecto al comportamiento –previsible y pertinente– de los usuarios en las redes sociales, se ha venido cuestionando la teoría de la *agenda-setting* teorizada por **McCombs** (**McCombs**, 1992; **McCombs**; **Shaw**, 1972; 1976) y su impacto en la ciudadanía digital. Autores como **Manovich** (2005) afirman que existe una dependencia de los nuevos medios respecto de las convenciones fijadas por los viejos. En esta misma línea, **Martín-Barbero** (2015) señala que el paradigma digital se vincula directamente con modelos anteriores. A ello se une la emergente necesidad de una alfabetización digital y mediática (**Singh** *et al.*, 2015) que permitan afrontar los nuevos desafíos formativos que demanda el ciberespacio en un escenario marcado por la esencia líquida de los procesos económicos, políticos, culturales y educativos que se encuentran estrechamente ligados con las dinámicas informativas y comunicativas (**Bauman**, 2003).

Las redes sociales, identificadas como servicios basados en aplicaciones web que permiten al usuario interactuar (**Gentile** *et al.*, 2012) a través de un perfil propio (**Boyd**; **Ellison**, 2008; **Lenhart** *et al.*, 2007), se han convertido en plataformas de gran importancia en el ecosistema mediático actual (**Bulut**; **Doğan**, 2017). Autores como **Boyd** (2007), **O'Keeffe** y **Clarke-Pearson** (2011) o **Akter** y **Nweke** (2016) han destacado que la participación del usuario en los medios sociales ofrece la posibilidad de ampliar su visión del mundo, de su comunidad y de sí mismos.

Piscitelli, **Adaime** y **Binder** (2010), **Colás-Bravo**; **González-Ramírez** y **De-Pablos-Pons** (2013), **Bernal-Bravo** y **Angulo-Rasco** (2013) y **Pérez-Tornero** *et al.* (2015), entre otros, han incidido en el protagonismo que estas redes poseen entre los jóvenes, mientras que trabajos como el de **Schwarz** (2011) apuntan al abandono de ciertos espacios de comunicación tradicional en beneficio de la comunicación instantánea que potencian las redes.

El componente de la sociabilidad (**Quan-Hasse**; **Young**, 2010) unido a la oportunidad de crear redes propias de contactos y con internautas que posean intereses afines es otro de los elementos definitorios de estas plataformas colaborativas (**Shao**, 2009; **Sheldon**, 2009; **Papacharissi**; **Mendelson**, 2011; **Lin**; **Lu**, 2011; **Cheung**; **Chiu**; **Lee**, 2011; **Baek** *et al.*, 2011; **Ruano**; **Congote**; **Torres**, 2016). La posibilidad de compartir información entre internautas (**Alhabash** *et al.*, 2012; **Chung** *et al.*, 2016), la amplia amalgama de recursos informativos existentes, la capacidad de seleccionar recursos (**Martínez-Serrano**; **Ferraz-da-Cunha**, 2016) y el intercambio de éstos (**Sharma**; **Verma**, 2015) conforman las principales motivaciones para los usuarios, al tiempo que inciden directamente en su dieta informativa (**Kurtulus**; **Ozkan**; **Öztürk**, 2015). A ello se unen la versatilidad comunicativa de las plataformas (**Pempek**; **Yermolayeva**; **Calvert**, 2009), la invitación perenne a la integración, al intercambio (**Sheldon**, 2009; **Bulut**; **Doğan**, 2017), o al refuerzo del propio *branding* o marca personal (**Molyneux**, 2014, **Hanusch**; **Bruns**, 2017) como periodista presente en las redes sociales.

Las reflexiones de **Reig** en *La telaraña mediática* (2010) y *Los dueños del periodismo* (2011) aluden a la existencia de un entramado de poderes socioeconómicos que alcanzan a los medios de comunicación y, al mismo tiempo, advierten de la existencia de medios y grupos de comunicación que invierten en negocios ajenos a su teórica razón social. Partiendo de este enfoque, el estudio se propone analizar de qué tipo de temas y desde qué enfoque publican los periodistas españoles en *Twitter* para intentar desgajar posibles tendencias en los contenidos distribuidos a través de esta red social. **López-Meri** (2015) apunta que las noticias serían, en determinados contextos informativos, fruto de la negociación pública y en tiempo real entre periodistas y usuarios que ejercen de fuentes.

3. Metodología

La investigación, de tipo descriptivo y analítico, posee un enfoque cuantitativo y cualitativo. El estudio ha analizado el contenido de 3.500 tweets entre 2017 y 2018 a partir del análisis del contexto de los propios flujos de tweets y del estado de la actualidad informativa de acuerdo con lo que expresan las portadas de periódicos de referencia. Siguiendo la clasificación de la investigación social de **Berganza-Conde** y **Ruiz-San-Román** (1992), el trabajo presenta una investigación longitudinal retrospectiva que estudia una sucesión diacrónica de mensajes vía *Twitter* producidos a lo largo de unas franjas de tiempo y analiza las portadas de periódicos publicadas en los mismos períodos. Las fuentes de las que proceden los datos obtenidos del seguimiento de los dos grupos de periodistas se estructuran en dos muestras invitadas y no probabilísticas. La metodología empleada es la propia del análisis de contenido a partir de los aportes de autores clásicos como **Berelson** (1971), **Krippendorff** (1990) y **Holsti** (1969), y aplicado al ciberespacio según las propuestas de **Vilches** (2011).

Para conseguir llevar a cabo la adaptación metodológica al escenario de internet, convertimos en operativos elementos cuantitativos. Para ello, se ha diseñado un sistema de categorización de unidades de registro que posteriormente han sido cuantificadas. La sistematización de ese proceso desemboca en una descripción de fenómenos y tendencias de base cuantitativa que, gracias a la simbolización realizada a través de la categorización y el análisis, accede a la dimensión cualitativa. Un elemento muy útil para el análisis cualitativo ha sido disponer del contexto proporcionado por la muestra de portadas de periódicos.

El núcleo de la investigación se centra en el análisis de contenido de dos muestras de cuentas de periodistas presentes en *Twitter* y de las portadas de diarios publicadas en el mismo período. El primer seguimiento constituye un trabajo de campo que recoge unidades de análisis en forma de tweets a partir de su emisión en los *timelines* de las cuentas de los periodistas observados. El segundo seguimiento procede de una muestra documental hemerográfica en la que cada portada es una unidad de análisis y cada espacio informativo de ella, una unidad de registro. El análisis de contenido se realiza a partir de una categorización común a todos materiales mencionados, expresada en criterios temáticos relativos a la actualidad, según la tradición periodística de clasificación del contenido informativo surgida con el periodismo moderno del siglo XX y que ha evolucionado hasta las divisiones temáticas que presentan hoy tanto medios tradicionales como cibermedios.

La determinación de las unidades de análisis y de registro se ha producido como sigue:

- Una unidad de análisis formada por la muestra de portadas de periódicos seleccionados, publicados durante el período de seguimiento.
- Dos unidades de análisis formadas por las muestras de cuentas de *Twitter* con los tweets de los periodistas de medios convencionales (*legacy media*) y los periodistas de diarios digitales seleccionados.

La determinación de las unidades de registro se ha realizado como sigue:

- Cada tweet de cada muestra es una unidad de registro, considerando como tal el contenido textual del tweet y los eventuales elementos gráficos que puede incorporar.
- En las portadas de periódicos se considera unidad de registro cada elemento informativo de las mismas. Se excluyen los elementos publicitarios y las llamadas a páginas del interior que se refieren a contenidos de suplementos o páginas especiales que no tienen relación con la actualidad del día.
- La codificación de las unidades de registro es homogénea para todas las unidades de análisis. Consiste en la asignación de categorías y subcategorías a cada una de ellas.

3.1. Corpus de estudio y muestras

El corpus de estudio está formado por 3.500 tweets emitidos por 20 periodistas titulares de cuentas de *Twitter* entre enero de 2017 y marzo de 2018 y por 35 portadas de periódicos publicadas esos mismos días.

Se han diseñado tres muestras:

- Las portadas de cinco diarios de referencia, publicadas en el periodo estudiado.
- Diez cuentas de *Twitter* correspondientes a periodistas en ejercicio de medios de comunicación de masas convencionales.
- Diez cuentas de *Twitter* correspondientes a periodistas que trabajan exclusivamente en cibermedios. A estos se les ha identificado como "ciberperiodistas" o "periodistas digitales", si bien hoy día todo el periodismo es digital, para diferenciarlos de aquellos que integran la plantilla de un medio generalista de larga trayectoria y con presencia fuera del ciberespacio. A pesar de su muerte en 2017, se decidió mantener por su relevancia, trayectoria y actividad en *Twitter*, al periodista Miguel-Ángel Bastenier.

La muestra de portadas de periódicos la componen *El país*, *El mundo*, *La razón*, *La vanguardia* y *El periódico.* Se trata de tres diarios publicados en Madrid y dos en Barcelona, cuyas líneas informativas y editoriales abarcan la centralidad de las temáticas informativas mayormente publicadas y seguidas en España. No se ha incorporado un periódico de referencia como *ABC* porque su portada es monotemática y a menudo de tipo editorial, con lo que su valor informativo en cuanto a variedad y representatividad es menor. Tampoco se han incluido los dos diarios publicados únicamente en catalán en Barcelona, *El Punt Avui* y *Ara* porque su opción informativa suele estar restringida a Cataluña e incorporan poca información internacional, con lo que adolecen igualmente de variedad y representatividad.

Cada portada de periódico, en tanto que unidad de análisis, incluye diversas unidades de registro. Cada espacio noticioso de la misma (titular, fotonoticia, titular con *lead*, sumario informativo, cintillo) es una unidad de registro. Quedan excluidos los espacios de autopromoción del diario (llamadas a cuadernillos especializados o suplementos, avances de suplementos dominicales, etc.) y toda inserción no estrictamente informativa sobre la actualidad del día, así como la publicidad. Cada unidad de registro incluye una categoría y una o varias subcategorías. Las categorías se adjudican de acuerdo con criterios temáticos y las subcategorías se establecen con intención descriptiva del contexto del contenido y de sus protagonistas.

3.2. Muestra de periodistas de medios convencionales y de periodistas digitales

Las dos muestras de periodistas, los que trabajan en medios clásicos y los que lo hacen en cibermedios, son muestras invitadas no probabilísticas (tabla 1). Ha sido necesario por tanto justificar la elección de los periodistas que las forman. Se han empleado cuatro criterios para identificar la pertinencia de la inclusión:

- experiencia y trayectoria en el ejercicio de la profesión;
- adscripción a un medio influyente (tanto entre los medios convencionales como entre los cibermedios) y pluralidad de los medios representados en su conjunto;
- antecedentes denotativos de reflexión sobre el periodismo, los medios y la comunicación;
- representatividad en mayor o menor grado de: grupo profesional generacional, tendencia en la línea informativa y la opinión, ejercicio del periodismo generalista y no especializado.

Los periodistas que integraron la muestra se presentan en la tabla 1.

Tabla 1. Muestra de periodistas seleccionados

Periodistas de medios convencionales	Periodistas de cibermedios
Miguel A. Bastenier (@MABastenier)	Ignacio Escolar (@iescolar)
Andreu Farràs (@afarrasc)	Montserrat Domínguez (@MontseHuffPost)
Jordi Évole (@jordievole)	Silvia Cobo (@silviacobo)
Francisco Marhuenda (@pacomarhuenda)	Principia Marsupia (@pmarsupia)
Ana Pastor (@_anapastor_)	Rosa María Artal (@rosamariaartal)
Hermann Tertsch (@hermanntertsch)	Ricardo Galli (@gallir)
David Jiménez (@DavidJimenezTW)	Ramón Lobo (@ramonlobo)
Mayka Navarro (@maykanavarro)	Manuel M. Almeida (@mmeida)
Carlos Cuesta (@carloscuestaEM)	Iñigo S. Ugarte (@Guerraeterna)
Carlos E. Cué (@carlosecue)	Gumersindo Lafuente (@sindolafuente)

3.3. Tabla de categorías

La tabla de categorías viene estructurada en grupos, en aras de la operatividad (tabla 2). En total se han definido 6 grupos temáticos que engloban 35 categorías.

Tabla 2. Categorías temáticas para el análisis

Política	Internacional	Sociedad
Política española Gobierno Corona Instituciones Corrupción Terrorismo	Política internacional Crisis internacionales Yihadismo Derechos humanos	Problemas sociales Economía Trabajo Industria Sanidad Educación Solidaridad Ecología
Comunicación	**Cultura**	**Miscelánea**
Medios Medios en política Periodismo Internet	Instituciones culturales Artes Religión Historia Ciencia	Hechos diversos Interés humano Espectáculo Humor Delincuencia Catástrofes Información local

4. Resultados

El estudio ofrece una panorámica general de los contenidos analizados y al mismo tiempo describe una serie de tendencias temáticas generales a través de los grupos de categorías. La tabla 3, que presenta el número de tweets por los grupos de categorías definidos, advierte del predominio de la política sobre el resto de temáticas. Las referencias a cuestiones políticas, junto a las de internacional, alcanzan unas cifras que llegan a minimizar los demás centros de interés.

Tabla 3. Panorama general y valores totales

	Política	Internacional	Sociedad	Comunicación	Cultura	Miscelánea	Total
Periodistas de medios convencionales	759	723	44	476	70	34	2.106
Ciberperiodistas digitales	792	120	64	238	53	16	1.284

Por su parte, en el caso de los periodistas de medios convencionales (gráfico 1), destaca el alto interés prestado a los asuntos internacionales. Cuando se examina el contenido de los tweets, se comprueba que la mayoría de las veces el recurso a la política internacional responde a la intención de dirimir en este terreno cuestiones relativas a la política española, por alusiones o por trasposición de hipotéticas semejanzas. Por ejemplo, noticias o comentarios relacionados con Venezuela, que sirven de supuesto apoyo a argumentaciones que tienen como objetivo la crítica a determinados partidos o personas de nuestro país, un asunto que se viene dando tanto en los medios de comunicación de España como en los ambientes políticos españoles y que ha llegado a ser incluso un lugar común. La diferencia de proporciones en este asunto entre periodistas de medios convencionales y ciberperiodistas (según la dife-

> La política internacional sirve para dirimir cuestiones relativas a la política española, por alusiones o por trasposición de hipotéticas semejanzas

renciación realizada en este estudio) denota que estos últimos recurren mucho menos (unas seis veces menos) al mencionado estilo de argumentación y circunscriben la actualidad internacional en la esencia o naturaleza del ámbito.

Otra divergencia temática destacable se da en el grupo de categorías correspondiente a comunicación. Hay que señalar que los tweets relacionados con la comunicación, en el caso de los periodistas de medios clásicos, no están orientados a tratar con la situación de los medios o el periodismo en general. La mayoría de ellos responden a estrategias de autopromoción. En la muestra que conforma este estudio, los ciberperiodistas suministran más información o invitan a la reflexión, mientras que los periodistas de medios tienden a una utilización de *Twitter* como plataforma de promoción propia.

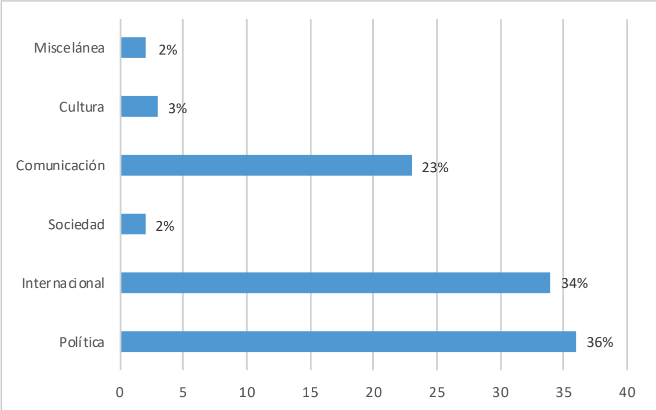

Gráfico 1. Panorama general, periodistas de medios convencionales

En el grupo de categorías correspondiente a sociedad, se observa también una mayor inclinación informativa por parte de los periodistas de cibermedios. Concretamente, se percibe una mayor atención a asuntos noticiables relacionados con realidades que se desmarcan de la polarización hacia la política y sus polémicas. Sin embargo, esta atención responde a centros de interés de variedad reducida. El interés por lo social no llega a compensar la polarización política y no abre espacio suficiente a la aparición de tendencias de apertura y futuro.

Tabla 4. Clasificación de las categorías de las portadas de los periódicos y menciones

1	Política española	51
2	Yihadismo	18
3	Política internacional	16
4	Deportes	16
5	Artes	14
6	Economía	13
7	Información local	3
8	Ecología	3
9	Ciencia	3
10	Cultura	2
11	Sanidad	2
12	Interés humano	2

La comparación de todas las categorías de los tweets en su conjunto ofrece una visión temática más detallada que permite comparar estos elementos diacrónicamente, columna a columna y en días sucesivos. Se aprecia que los periodistas (tanto de medios como de cibermedios) expresan sus contenidos abarcando un mayor número de categorías que las portadas. De este modo, se desprende que los periodistas en *Twitter* se ocupan de cuestiones de mayor amplitud temática que los contenidos que conforman la corriente principal de actualidad de las portadas. En las portadas de los diarios seleccionados (tabla 4), la categoría de política española (con 51 menciones), la de yihadismo (con 18), y política internacional y deportes (con 16 cada una) son las más frecuentes. Por el contrario, con una sola mención las de derechos humanos, religión, crisis internacionales, problemas sociales, gobierno y terrorismo ocupan los últimos lugares del análisis.

La información local ocupa un papel ínfimo. Ninguno de los actores que integran la muestra trata cuestiones relativas a este tipo de contenido (tabla 5), a diferencia de lo que hacen algunos diarios, concretamente los que se publican en Barcelona. Resulta llamativa la ausencia de información local en un medio de microblogging que teóricamente facilita la aproximación a realidades cercanas e incluso microrrealidades tanto geográficas como temáticas. De hecho, el estudio constata que los periodistas de *Twitter*, tanto de medios convencionales como de cibermedios, tienen un concepto de actualidad que se corresponde con el de la llamada "prensa nacional", caracterizada por:

- primacía de la política, especialmente nacional;
- atención a la política en proporciones muy parecidas a las de su presencia en los medios de masas;
- distancia considerable entre la cantidad de contenidos dedicados a política y los correspondientes a temas sociales, y más todavía a los culturales, artísticos, científicos, de interés humano y de sociedad en general;
- escasa presencia de deporte, al contrario de lo que sucede en la totalidad de los medios;
- escasa presencia de temas económicos en contraposición a la prensa impresa, no sólo por lo que respecta a los diarios especializados sino a las propias secciones de información económica de la prensa diaria.

Tabla 5. Temas (en cifras) de las portadas y de las muestras de periodistas

	Política española	**Yihadismo**	**Internacional**	**Deportes**	**Artes**	**Economía**
Periodistas de medios convencionales	659	175	496	12	26	14
Ciberperiodistas	770	53	34	5	36	23
	Local	**Ecología**	**Ciencia**	**Sanidad**	**Interés humano**	
Periodistas de medios convencionales	0	8	8	5	2	
Ciberperiodistas	0	8	8	5	5	

La polarización alrededor de la política, que es común tanto en los ciberperiodistas como en los periodistas de medios clásicos, denota una homogeneización. A ello se añade que ambos emplean en una amplia mayoría la información internacional a manera de parafraseo de cuestiones políticas nacionales, un intento de argumentación por temática interpuesta. Los tweets referidos al yihadismo aparecen en mayor cantidad en la muestra de ciberperiodistas. En este caso no existe el efecto de "argumentación por elevación" propio de los tweets de política internacional, sino que se da una actitud de protesta ante los atentados yihadistas ocurridos en Europa (que es más intensa que en los periodistas de medios tradicionales).

> La información internacional se utiliza para parafrasear cuestiones políticas nacionales en un intento de argumentación por temática interpuesta

El contraste de las categorías que aparecen en la muestra de portadas de periódicos y las de las dos muestras de periodistas de *Twitter*, establece que los ciberperiodistas prestan menos atención a la actualidad deportiva que los periodistas de medios, pero más a las artes. La mayor atención de los ciberperiodistas a los asuntos económicos se debe igualmente al efecto protesta, pues son tweets muy críticos con asuntos de la actualidad económica. Lo mismo sucede con la ecología, pero no con la sanidad, que podría haber sido considerada de modo parecido. Las semejanzas de proporciones en categorías como ciencia o temas de interés humano pueden interpretarse como la existencia de actitudes parecidas entre ambas muestras por un distanciamiento de las zonas más propicias a la polémica o la polarización ideológica.

La visión de conjunto de las categorías englobadas en el grupo "Política" ("Política española", "Gobierno", "Corona", "Instituciones", "Corrupción" y "Terrorismo") acentúa la percepción de la hegemonía de la polémica política como tendencia dominante entre los periodistas españoles en *Twitter* (tabla 6). Son los tweets sobre el debate político cotidiano los que predominan sobre cuestiones como la actuación del Gobierno, las actividades de la Corona, el papel de las instituciones o incluso la corrupción y el terrorismo. Se puede por tanto afirmar que tanto los periodistas de medios como los ciberperiodistas no desatienden otros asuntos, pero tienden a una actividad en *Twitter* de urgencia mediante la cual tratan de estar presentes en la Red acentuando su faceta más polémica e incluso retadora (Imágenes 1 y 2).

Imagen 1. Tweet de @ramonlobo sobre asuntos políticos

Imagen 2. Tweet de @pacomarhuenda sobre asuntos políticos

Sorprende que solamente dos tweets de la muestra de ciberperiodistas hayan sido categorizados en "Corrupción", cuando este asunto ocupa las portadas de los periódicos con frecuencia. Ello se explica –en las dos muestras de periodistas– por la tendencia general del contenido político en *Twitter*. El tono general de la polémica política, su aguda personalización y el modo como se centra en partidos e ideologías no abre un marco argumental suficiente para que se pueda dar una reflexión que aborde las cuestiones relacionadas con la corrupción de manera más profunda. Puntualicemos en todo caso que abunda el tema de la corrupción en los contenidos estudiados –sobre todo como trasfondo general de las polémicas– pero en un marco de polémica política agudamente personalizada y contextualizada en el debate general entre partidos.

Esta argumentación parece ser igualmente válida por lo que respecta a las categorías "Gobierno" e "Instituciones" y por los mismos motivos expuestos. Llama la atención por ello que, al abordar la categoría "Corona", nos encontremos con seis tweets en cada una de las dos muestras de periodistas, dado que la Corona de España aparece no como un ente colectivo, como es el caso de las instituciones en general, sino fuertemente personalizada en las figuras de la realeza. Es necesario recurrir aquí no sólo al contenido sino al contexto, que indica que la monarquía española genera de por sí muy pocas noticias aparte de los discursos del rey Felipe o de algún viaje o visita. Por otro lado, sólo tres tweets de las dos muestras de periodistas han sido categorizados en "Terrorismo". La suspensión de actividades por parte de *ETA* y el apaciguamiento de sus organizaciones frente a la sociedad civil ha supuesto que el terrorismo de matriz nacional haya desaparecido de la escena mediática. El terrorismo internacional que actualmente centra la preocupación general viene categorizado en este estudio como "Yihadismo". Los periodistas observados aquí hacen lo mismo que todos los de su profesión en nuestro país: dejar de

> La polarización alrededor de la política denota una homogeneización en el tipo de contenidos difundidos en *Twitter*

referirse a una cuestión que, como indican los sondeos generales de opinión, ha dejado de merecer la preocupación principal de los españoles.

Tabla 6. Clasificación categoría "Política" en los periodistas analizados

Política	Política española	Gobierno	Corona	Institucional	Corrupción	Terrorismo
Periodistas de medios convencionales	659	0	0	8	0	1
Política	**Política española**	**Gobierno**	**Corona**	**Institucional**	**Corrupción**	**Terrorismo**
Ciberperiodistas	770	3	5	11	2	2

En las categorías clasificadas como "Sociedad" ("Problemas sociales", "Economía, "Trabajo", "Industria", "Sanidad", "Educación", "Solidaridad" y "Ecología"), las dos muestras de periodistas parecen igualmente atentos a los problemas sociales en general (tabla 7). Lo mismo sucede con los temas económicos, laborales, industriales y sanitarios. No hemos hallado referencias a la educación en las muestras estudiadas. El interés por la ecología es casi equiparable en las dos muestras, aunque un poco superior en la de periodistas digitales.

El conjunto denota una tendencia en los periodistas digitales de mayor atención y acercamiento a las distintas realidades sociales que se encuentran fuera del marco político e institucional, y en cantidades algo alejadas del gran peso de la política observado en el análisis anterior. Puede sorprender el desequilibrio observado en la categoría "Solidaridad" a favor de los periodistas de medios. Ello no se debe a que presten mayor atención a estos asuntos sino a una cuestión relacionada con el uso que hacen de *Twitter* estos últimos periodistas. La totalidad de los tweets categorizados en "Solidaridad" corresponden a una acción promocional de un programa de radio dedicado a una campaña solidaria. El motivo del uso de *Twitter* en este sentido viene motivado por la voluntad de promocionar el propio medio antes que de tratar asuntos solidarios con los que no existe una vinculación profesional. Esta última constatación obliga a recurrir al análisis de contenido aplicado para atender tanto al propio contenido como al contexto. Ciertamente, la categoría "Solidaridad" en la muestra de periodistas de medios engloba contenidos referidos a este asunto, pero la mera categorización temática no es lo suficiente y necesariamente explícita al respecto. Debemos contextualizar el contenido no sólo en cuanto a lo explícito del mismo sino por lo que respecta a la intención de su publicación. La aplicación de métodos de las ciencias sociales a tejidos tan fluidos y a veces sutiles como las redes sociales va a obligar cada vez más a dar cuenta de lo que sucede en ellas teniendo en cuenta parámetros y variables que requieren la posibilidad de matizaciones más precisas.

Entre las tendencias observadas, más allá de lo mencionado en este apartado, destaca la escasa atención a las cuestiones laborales, nula en el caso de los periodistas de medios convencionales, al igual que los asuntos sanitarios, que en este caso se refieren a la sanidad pública, y los educativos. Podría pensarse que un medio como *Twitter*, que permite un acercamiento a realidades sociales que se encuentran en la base de la mayoría de la población, sería un cauce adecuado para vehicular la necesidad de que los profesionales de la información den cuenta de ellas al público. Pesa más, en cambio, la tendencia de caracterización profesional general respecto al panorama mediático que determinadas intenciones que a veces se manifiestan. En todo caso, la tendencia de mayor acercamiento a lo social por parte de los periodistas digitales es un dato de interés.

Tabla 7. Clasificación categoría "Sociedad"

Sociedad	Problemas sociales	Economía	Trabajo	Industria	Sanidad	Educación	Solidaridad	Ecología
Periodistas de medios convencionales	6	14	0	1	0	1	14	8
Sociedad	**Problemas sociales**	**Economía**	**Trabajo**	**Industria**	**Sanidad**	**Educación**	**Solidaridad**	**Ecología**
Ciberperiodistas	17	23	2	5	5	0	3	8

Las categorías de "Internacional" ("Política internacional", "Crisis internacionales", "Yihadismo", "Derechos humanos") denotan el gran peso de la política internacional en la muestra de periodistas de medios (tabla 8). El contraste con la misma categoría en la muestra de ciberperiodistas es sensible, tal y como sucede con la categoría "Yihadismo". Se observa un uso de la política internacional a manera de parafraseo de cuestiones políticas nacionales que denota un intento de argumentación por temática interpuesta. Esta tendencia se aprecia en menor medida en los ciberperiodistas. Las diferencias cuantitativas entre una y otra muestra en las categorías de este grupo indican un desmarque de los ciberperiodistas de esa actitud generalizada entre los periodistas de medios. La gran diferencia cuantitativa entre los datos que informan estas tendencias y los que corresponden a la categoría "Derechos humanos" advierte de la ausencia de atención a asuntos relacionados con el respeto y vulneración de los derechos humanos en el mundo reflejada en los tweets de ambas muestras de periodistas, que se centra en el seguimiento de esta cuestión básicamente en el panorama general de la actualidad internacional. La categorización de solamente cuatro tweets en "Derechos humanos" refuerza esta tendencia generalizada.

Respecto a la categoría "Crisis internacionales", las que ocupan la atención de los periodistas son las que se dan entre las superpotencias y muy especialmente las de las zonas de Cercano Oriente inmersas en procesos bélicos. Sin embargo, hay una escasa atención hacia las cuestiones sobre Israel y Palestina y el mundo árabe en general. Zonas críticas como Pakistán-India, India-China con el añadido de Tíbet y la situación en Birmania –entre la junta militar y el gobierno de Aung San Suu Kyi– están ausentes del foco de atención. Ni siquiera la cuestión del Sahara, o Ceuta, Melilla y Gibraltar, merecen ni una sola mención. África está ausente del foco de atención, igual que Asia salvo, en parte, China, así como las cuestiones europeas generales y asuntos civilizacionales relacionados con la globalización. La política estadounidense, salvo sus zonas de roce crítico con Rusia, tampoco es objeto de atención ni en términos informativos ni de opinión, de modo que el seguimiento de los periodistas de medios y los periodistas digitales no aporta información ni elementos propios de una realidad tan determinante de la evolución global como es la estadounidense en términos políticos, económicos, culturales e institucionales, por no hablar de sus movimientos sociales, conflictos raciales y de inmigración, y de los asuntos relacionados con la concepción de la democracia, sus instituciones y la república.

Tabla 8. Clasificación categoría "Internacional"

Internacional	**Política internacional**	**Crisis internacionales**	**Yihadismo**	**Derechos humanos**
Periodistas de medios convencionales	496	65	175	3
Internacional	**Política internacional**	**Crisis internacionales**	**Yihadismo**	**Derechos humanos**
Ciberperiodistas	34	32	53	0

Los asuntos relacionados con "Comunicación" (clasificados en los epígrafes de "Medios", "Medios en política", "Periodismo" e "Internet") ocupan una parte importante de la actividad en *Twitter* de las dos muestras de periodistas, siendo en cifras absolutas superior al de otros grupos de categorías (tabla 9). Es necesario, sin embargo, hacer de nuevo ciertas precisiones respecto al contenido y sus denotaciones reales. Los periodistas de medios tweetean más sobre estos que los ciberperiodistas (concretamente, cuatro veces más). No obstante, este alto nivel de tweets se debe a un aspecto señalado anteriormente: gran parte del uso de *Twitter* por parte de los periodistas está orientado a la propia promoción (imagen 3).

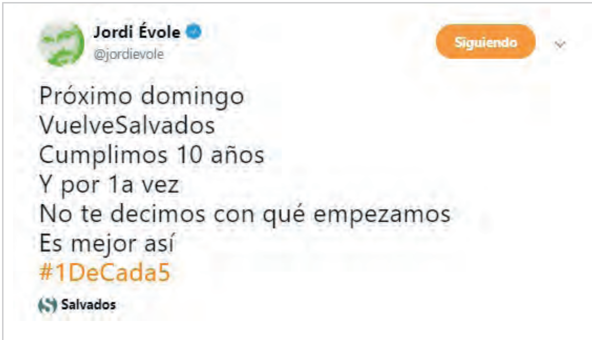

Imagen 3. Uso de *Twitter* para promocionar programas propios

No encontramos en el contenido de los tweets de la categoría "Medios" un debate o conversación sobre cuestiones relativas al presente y futuro de los medios de comunicación. Se produce la misma paradoja que en otros espacios sociales, la de la ausencia de los profesionales del gran debate sobre las profundas transformaciones comunicacionales no sólo en el seno de las industrias del ramo sino en el panorama social general. Sí que se da algo parecido sin embargo en la categoría de "Periodismo", en la que aparece contenido que en una medida u otra responde a asuntos deontológicos o de formación en la profesión. Este aspecto se aprecia en mayor medida en la muestra de periodistas de medios –casi tres veces más que en la de ciberperiodistas— y dado que en esta categoría no nos encontramos ante usos instrumentales de *Twitter* en términos de promoción propia o de otros, podemos decir que la atención a cuestiones profesionales no viene mediatizada.

Sin embargo, estas cuestiones periodísticas que se tratan nunca aparecen relacionadas, ni entre los periodistas de medios ni en los digitales, con los asuntos que ocupan la preocupación de la profesión periodística en los grandes medios internacionales y que a veces se hacen públicas en forma de libro. En muchos tweets de una y otra muestra, se da a conocer la aparición de libros periodísticos, algunos muy notables, pero nunca se recomienda libro alguno que no sea en español, ni tampoco medio en cualquier otra lengua que incorpore reflexiones como las que acabamos de mencionar. A pesar de que muchos periodistas de las dos muestras leen inglés y algunos lo usan como lengua profesional, su actividad en *Twitter* es estrictamente hispánica en términos de centros de atención. La lengua y culturas francesa, digamos de paso, desaparecen del panorama que tratamos del mismo modo que lo han hecho de tantos otros lugares del espectro social.

> Gran parte del uso de *Twitter* por parte de los periodistas está orientado a la propia promoción

La preocupación sobre cuestiones relacionadas con internet se presenta en cambio en un sentido inverso al de la categoría "Periodismo" por lo que respecta a las proporciones entre periodistas de medios y ciberperiodistas. Son estos los que tweetean más asuntos relacionados con la Red, casi tres veces más que los primeros. Parece lógico a primera vista que los periodistas digitales se ocupen más de cosas de internet, pero cabe recordar que los periodistas de medios que estudiamos figuran en esta investigación precisamente por el hecho de ser avezados usuarios de *Twitter*.

La categoría "Medios en política", que abarca los tweets que recogen la actividad de los medios de comunicación directamente vinculada a la política es muy peculiar. Las cuestiones relativas a los medios entran en esta categoría cuando denotan una vinculación directa a la actualidad política, especialmente la electoral. Este aspecto justifica el motivo de crear esta categoría particular y no asociar los tweets a ella vinculados a las de "Política española" o a "Medios" en el marco de esta investigación.

Tabla 9. Clasificación categoría "Comunicación"

Comunicación	Medios	Medios en política	Periodismo	Internet
Periodistas de medios convencionales	218	156	84	21
Comunicación	**Medios**	**Medios en política**	**Periodismo**	**Internet**
Ciberperiodistas	66	73	26	73

Existe por otro lado un descenso cuantitativo de los tweets relacionados con "Cultura" (bajo los ámbitos de "Cultura", "Artes", "Religión", "Historia", "Ciencias" y "Deportes") respecto a las categorías precedentes (tabla 10). Persiste también en esta categoría la tendencia general que se revela como fundamental entre los periodistas estudiados: su asimilación al modelo general de comportamiento profesional que impera en los medios de comunicación de masas, de modo que la existencia de internet apenas altera las características de esa caracterización generalizada.

En las categorías de este grupo destaca cuantitativamente "Artes". Al incluir asuntos como actuaciones de artistas interpretativos, cine y teatro, entre otros, ocupa la mayor parte de las referencias por cuanto los tweets relacionados responden a la actualidad en este campo. Al mismo tiempo se observa una diferencia sensible respecto a los temas científicos, tratados cuantitativamente casi igual en ambas muestras, asuntos que no suelen ocupar excesivo espacio en los medios convencionales, cosa que confirma la tendencia indicada en el párrafo precedente.

Es interesante observar lo que sucede con la categoría "Religión". Las actividades del Vaticano y el papado católico no merecen la menor atención. Vuelve a darse en esta categoría otra característica del estado general de los medios: la ausencia de una información religiosa seria y variada, como sucede en tantos otros países. Nótese que habiendo cobrado la religión una especial importancia en los últimos años del siglo XX y primeros del XXI –y no sólo a causa del fundamentalismo islámico— esta ausencia de referencias de información religiosa se da no solamente relacionada con la Iglesia Católica. No encontramos mención alguna a otras religiones en un país en el que los inmigrantes latinoamericanos suelen nutrir nuevas congregaciones pentecostalistas. A ello habría que añadir las referencias reducidas al pueblo gitano, a los sikhs, que abundan en las grandes capitales, o a la amplia población musulmana no solamente inmigrante.

En la categoría "Deportes" hay que destacar que es mucho menor la actividad de tweets sobre deportes que sobre artes, puesto que los periodistas de las dos muestras son generalistas mientras que los profesionales que tratan de deportes en los medios están especializados en este campo. Así, en la muestra de periodistas de medios, las referencias deportivas están entre las cantidades más reducidas; mientras que los tweets de los periodistas digitales son más de la mitad que los de los anteriores. Con cifras tan reducidas es aventurado hacer inferencias al respecto, simplemente observar que aquí se da un indicio de mayor apertura temática por parte de los periodistas digitales (imagen 4).

Imagen 4. Ejemplo de tweet sobre deportes

Tabla 10. Clasificación categoría "Cultura"

Cultura	Instituciones culturales	Artes	Religión	Historia	Ciencia	Deportes
Periodistas de medios convencionales	4	26	8	5	8	12
Cultura	**Instituciones culturales**	**Artes**	**Religión**	**Historia**	**Ciencia**	**Deportes**
Ciberperiodistas	1	34	0	2	9	5

La categoría de "Miscelánea" (que abarca: "Hechos diversos", Interés humano", "Espectáculo", "Humor", "Delincuencia", "Catástrofes") recoge también elementos que aportan diversidad temática a los tweets (tabla 11). Al incluir asuntos considerados ligeros en el despliegue temático propio de los medios informativos –generalmente incluidos en la segunda mitad de la paginación de los periódicos– puede indicar interés por asuntos que en los medios convencionales serían considerados de poca importancia pero que en una red social adquieren un cariz distinto. En los últimos tiempos se viene observando en las ediciones digitales de los periódicos impresos –y muy especialmente en los medios informativos creados específicamente como cibermedios y posicionados para abrirse espacio entre los nuevos públicos que demandan contenidos informativos en la Red– la apertura a áreas temáticas que incluyen un mayor número de asuntos "ligeros" con el ánimo de incidir en los espacios de internautas que se mueven en las redes sociales. La aparición de la edición española del *Huffington post* o la evolución de las nuevas secciones de las ediciones digitales de *El país* marcan significativamente esta tendencia. Ello hace que materiales informativos que solían aparecer relegados o incluso descartados en los medios convencionales ocupen en los cibermedios un mayor espacio y apelen a una mayor atención.

> La política es el gran tema: los periodistas centran prioritariamente su atención en la política nacional e internacional

Esta situación haría suponer que los periodistas que operan en *Twitter* podrían hallar en este nuevo interés, o por lo menos oportunidad ofrecida por las nuevas tendencias de los cibermedios, una vía para aproximarse a intereses más cercanos a los públicos más básicos de la Red mediante tweets sobre cuestiones que los medios convencionales no ayudan a difundir. Sin embargo, como hemos indicado en análisis previos, prevalece tanto en los periodistas de medios convencionales como en los ciberperiodistas, una inclinación temática más propia de los medios de comunicación de masas que de los cibermedios. Esto sucede igualmente entre los ciberperiodistas. La polarización política, institucional y partidaria concentra todos sus esfuerzos. Hay que decir que muchos de los medios digitales en los que colaboran parte de los profesionales que forman parte de la muestra de ciberperiodistas se publican con una clara intención de incidir en el campo de la información política, incluso de actuar como elementos altamente críticos en el medio de la política partidaria, con lo que los profesionales de nuestra muestra actúan en *Twitter* de modo idéntico a como lo hacen en sus medios.

La categoría "Catástrofes" también se ve influida por estas circunstancias y asimismo la mencionada consideración de *Twitter* como plataforma autopromocional por parte de algunos periodistas de medios. Esto se refleja en la mayor cantidad de tweets emitidos por una periodista de televisión cuyo medio estaba realizando una cobertura continuada de unos incendios producidos en Cantabria. En el caso de la categoría "Espectáculo", al no estar incluidos en ella los asuntos referentes a artes interpretativas, se recogen temas relativos a personajes famosos, concursos, etc. De este modo, los tweets incluidos en esta categoría pertenecientes a la muestra de periodistas de medios y su ausencia en la muestra de ciberperiodistas denota una diferencia de interés al respecto por parte de unos y otros. Las cifras parecidas de tweets referentes a "Interés humano" y "Hechos diversos", prácticamente equiparable en ambas muestras, muestra esa homogeneidad en la consideración de los temas ligeros que hemos indicado al inicio de este análisis en una y otra muestra de tweets.

Tabla 11. Clasificación categoría "Miscelánea"

Miscelánea	Hechos diversos	Interés humano	Espectáculo	Humor	Delincuencia	Catástrofes
Periodistas de medios convencionales	**8**	2	5	0	5	32
Miscelánea	**Hechos diversos**	**Interés humano**	**Espectáculo**	**Humor**	**Delincuencia**	**Catástrofes**
Ciberperiodistas	11	5	0	6	0	15

5. Conclusiones

Este estudio permite extraer una serie de conclusiones respecto al interrogante propuesto: ¿De qué hablan los periodistas españoles en *Twitter*?:

- La política es el gran tema: tanto los periodistas de medios convencionales como los de medios digitales centran prioritariamente su atención en la política nacional e internacional. Concretamente los segundos lo hacen en mayor medida que los primeros. Los contenidos de información y opinión políticas siguen un discurso y unos centros de interés idénticos a los que se usan en el conjunto del panorama mediático español. El contenido de los tweets sobre política española está sobre todo orientado a la opinión. Este aspecto conecta en cierto modo con los trabajos de **López-Meri** (2015), que analizó el impacto y alcance de *Twitter* en el escenario informativo y, en esta línea, la existencia de un intercambio o negociación entre los profesionales de la información y los propios internautas. Por su parte, los periodistas de medios convencionales publican tweets sobre asuntos internacionales en gran medida para "tirar por elevación" hacia contenidos de política española. Tanto éstos como los periodistas digitales que forman las muestras siguen en su mayoría un modelo de actitud profesional perfectamente asimilable al tipo de medios de comunicación de masas hegemónicos en España y al del periodismo que en ellos se practica. Esto sería comprensible con la muestra de periodistas de medios convencionales, pero también se da en la muestra de periodistas digitales.

  Existen sin embargo algunas brechas temáticas y de orientación informativa que señalan tendencias de desmarque del mencionado modelo hegemónico, pero el altísimo volumen de interés por los temas políticos, que genera a nivel institucional Madrid, les aproxima a la citada tendencia mayoritaria. El uso prioritariamente instrumental que los periodistas hacen de *Twitter*, muy especialmente los de medios convencionales, hace que sus tweets se ocupen en gran parte de vehicular información y debate políticos que responden a preocupaciones institucionales y partidarias y resulten tributarios de intereses más políticos que estrictamente periodísticos.

- *Twitter* como autopromoción: los periodistas de medios convencionales tweetean sobre comunicación para hacer difusión y promoción de sus propias tareas en los medios y acerca de periodistas o medios afines. Los periodistas digitales hacen lo mismo, pero en menor medida. Esta tendencia aproxima los resultados del trabajo a las reflexiones de **Molyneux** (2014) y **Hanusch** y **Bruns** (2017) sobre la construcción de una imagen de marca a partir de sus tweets y de las interacciones con otros usuarios.
- Brechas en ciertos temas: la escasa presencia del deporte, al contrario de lo que sucede en la totalidad de los medios de masas, responde a una inherente polarización en torno a la política, y al mismo tiempo puede venir dada por el perfil de los periodistas seleccionados en el marco del estudio. La inferencia anterior puede explicar también la brecha entre los contenidos políticos y los de temas sociales, culturales, artísticos, científicos, de interés humano y de sociedad en general. Puede sorprender la escasa atención a los temas económicos, pues se podría suponer que merecerían ser twitteados en cantidades si no iguales por lo menos cercanas a los temas políticos. Si bien hay que considerar esta cuestión con detenimiento, puede aventurarse una razón: la vertiente más polémica, incluso escandalosa, de la actualidad económica en España suele ser difundida bajo parámetros políticos, con lo que viene asimilada temáticamente a la categoría de política. Este aspecto está ligado a la escasa relevancia que los asuntos de la Corona adoptan en ambas muestras y a la desaparición del terrorismo en España como tema de preocupación y asunto de interés general.
- Escasa presencia de lo social: en general, los periodistas digitales se ocupan más de los problemas sociales que los periodistas de medios convencionales. Sin embargo, el estudio concluye que ni unos ni otros aprovechan el enorme potencial de *Twitter* para difundir asuntos sociales presentes en las capas básicas de la sociedad y que corresponden a preocupaciones tan generalizadas como profundas, según suelen expresar los sondeos de opinión. El escaso margen de diferencia respecto a la mayor atención a temas sociales por parte de los ciberperiodistas que los de medios convencionales podría abrir espacio para inferir una concepción de *Twitter* e internet abierta a la innovación y al desmarque de los modelos rígidos de la comunicación de masas tal como se dan en España. Pero ese margen se nos asemeja aún insuficiente dados los resultados obtenidos en el análisis del grupo de categorías "Política".
- Terrorismo yihadista: la cuestión del yihadismo aparece como una preocupación notable en el seno de la investigación en su conjunto.
- Más Iberoamérica que Europa: el espectro de países y asuntos internacionales a los que unos y otros periodistas prestan atención es inusitadamente reducido y denota lo que podría considerarse falta de interés ante los intensos procesos de globalización y los cambios civilizatorios que suponen. Se percibe la ausencia de espíritu europeísta y de preocupación por las instituciones europeas, y en cambio, una pronunciada mirada hacia Iberoamérica. Escasea la información y los materiales de debate presentes en la escena internacional, provenientes de importantes centros globales.
- Futuro de los medios y del periodismo: esta reflexión está ausente de los tweets de todos los periodistas del estudio. Existe el tratamiento de cuestiones periodísticas, pero sin un verdadero alcance estratégico.
- La Red habla más de la Red: los periodistas digitales se ocupan más de internet que los periodistas de medios convencionales, pero no reflejan las cuestiones relacionadas con el papel de la Red en la sociedad, los intensos cambios que ella provoca en la sociedad y las perspectivas de futuro inmediato que todo ello supone.
- Cultura como "territorio" olvidado: Todos los periodistas del estudio dedican pocos tweets a asuntos culturales, aunque los ciberperiodistas lo hacen más. En el grupo de categorías "Cultura" se percibe claramente el desaprovechamiento de la oportunidad que *Twitter* proporciona para tratar una mayor variedad de centros de interés que las que se presentan en los medios convencionales. Dentro del escaso número de tweets que reflejan preocupación por los asuntos culturales aún es menor la presencia de interés por asuntos científicos. Tanto periodistas de medios como ciberperiodistas desaprovechan la oportunidad que *Twitter* proporciona para difundir centros de interés más variados que los que ofrecen los medios convencionales. La categoría "Cultura" supone un espacio en el que se puede percibir con mayor claridad la existencia de incipientes tendencias renovadoras, aperturistas o de futuro.

> Los periodistas desaprovechan el potencial de *Twitter* para difundir asuntos sociales presentes en las capas básicas de la sociedad y que se corresponden con las principales preocupaciones de los ciudadanos

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Transparencia operativa de las comunidades autónomas españolas mediante sus portales de datos abiertos

Operational transparency of the Spanish autonomous communities through their open data portals

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Resumen

Una vez consolidadas a nivel mundial las iniciativas de datos abiertos, nos parece relevante averiguar si los portales autonómicos españoles tienen utilidad para la transparencia activa, elaborando un indicador en tres períodos de tiempo: 2013, 2015 y 2018. Este indicador valora tanto la existencia de información como su calidad reutilizadora. Tras valorar los resultados obtenidos, se indaga sobre la existencia de grupos diferenciados de autonomías empleando, cuando es pertinente, un análisis clúster. Los análisis efectuados encuentran indicios de que hay dos conglomerados de autonomías: avanzadas y rezagadas, hallazgos en línea con lo planteado por dos teorías contrapuestas sobre la divulgación de información del sector público: agencia y neoinstitucional.

Palabras clave

Análisis clúster; Transparencia; Rendición de cuentas; Datos; Datos abiertos; Información pública; Comunidades autónomas; España.

Abstract

Once open data initiatives are consolidated worldwide, it is important to find out if the Spanish regional open data portals are useful for active transparency. To this end, we developed an indicator to assess the existence of information and its reusable quality in three periods of time (2013, 2015 and 2018). Then, we inquired about the existence of differentiated groups of regional governments using, when necessary, cluster analysis. We found indications that there are two conglomerates of governments: advanced and lagged. These findings are in line with those offered by two opposing views on the dissemination of information from the public sector: agency and neo-institutional theories.

Keywords

Cluster analysis; Transparency; Accountability; Data; Open data; Public information; Regional governments; Spain.

1. Introducción: movimiento de portales *open data* y comunidades autónomas españolas

Pocos meses después del discurso inaugural del presidente de Estados Unidos Barack Obama, en el que prometió una administración transparente con la ciudadanía (**Ferrer-Sapena**; **Peset**; **Aleixandre-Benavent**, 2011), el 21 de mayo de 2009, se produjo el lanzamiento de *data.gov*, el portal estadounidense de datos abiertos, con 76 conjuntos de datos alojados. Diez años después y con un incremento que le hace llegar hasta los 232.000 conjuntos de datos (*datasets*), se mantiene como el mejor ejemplo para las más de 2.600 iniciativas similares a nivel mundial identificadas en la lista *Open data inception* (*Open Data Soft*, 2019) (figura 1).

Figura 1. Portales de datos abiertos según *Open data inception*. Fuente: *Open data soft*
https://opendatainception.io

Según dicho estudio, existen 361 portales de datos abiertos en España de hospitales, universidades, ministerios, ayuntamientos, diputaciones, autonomías y gobierno central. La iniciativa estatal (*datos.gob.es*), que federa o sindica información de la mayor parte de los portales del país, localiza 295 iniciativas (224 de la administración local, 43 de la administración del Estado, 18 de la autonómica y 10 de universidades).

De los 18 portales dependientes de comunidades autónomas (CCAA), 15 corresponden a repositorios analizados por nuestro estudio. La tabla 1 recoge nombre y número de conjuntos de datos ofertados a finales de cada uno de los años referidos. Se excluyen: *Datos abiertos del Instituto Cántabro de Estadística* (*Istac*)[1] y *Datos abiertos de la Comunidad de Madrid*[2].

Tabla 1. Portales de datos abiertos autonómicos y conjuntos de datos albergados

Comunidad autónoma	**Nombre del portal**	***Datasets* 2013**	***Datasets* 2015**	***Datasets* 2017**
Andalucía	*Datos abiertos*	70	178	464
Aragón	*Aragón open data*	440	2.519	2.794
Canarias	*Datos abiertos Canarias*	Sin portal	45	43
Cantabria		Sin portal	Sin portal	Sin portal
Castilla y León	*Datos abiertos de Castilla y León*	124	176	334
Castilla-La Mancha	*Datos abiertos de Castilla-La Mancha*	42	59	207
Cataluña	*Dades obertes GenCat*	1.460	1.468	571
Comunidad de Madrid		Sin portal	Sin portal	Sin portal
Com. Foral de Navarra	*Open data*	135	190	1.186
Comunidad Valenciana	*Dades obertes GVA*	Sin portal	279	338
Extremadura	*Gobierno abierto - Catálogo de datos*	26	25	25
Galicia	*abert@s*	292	324	349
Islas Baleares	*Dades obertes CAIB*	42	42	42
La Rioja	*Datos abiertos Rioja*	64	86	265
País Vasco	*Opendataeuskadi*	2.280	2.242	4.123
Principado de Asturias	*Open data del Principado de Asturias*	Sin portal	419	42
Región de Murcia	*Datos abiertos Región de Murcia*	Sin portal	Sin portal	271

Hemos decidido circunscribir nuestra investigación de los portales de datos abiertos a un ámbito poco contemplado en la bibliografía, las CCAA, que tienen una importancia indiscutible en la organización territorial de un país cuasifederal (**Bastida** *et al.*, 2019) fuertemente descentralizado como España (**Martínez-Vázquez**, 2014). No en vano las autonomías tienen competencias transferidas entre las que destacan sanidad y educación (**Fernández-Llera**; **Morán-Méndez**, 2013), que son las partidas a las que más recursos se le dedican según muestra la figura 2.

Figura 2. Distribución del presupuesto regional para 2017.
Fuente: *dondevanmisimpuestos.es*

España, referente de buenas prácticas en datos abiertos y uno de los líderes europeos en 2018 junto con Irlanda y Francia, según el estudio *Open data best practices in Europe's top three performers* (*European data portal*, 2018), ha adoptado una posición activa de seguimiento de las directrices de datos abiertos que tuvieron su origen en los ocho principios de *Open government data*[3] (*Sunlight Foundation*, 2007): datos completos, primarios, actualizados, accesibles, procesables, no discriminatorios, no propietarios y de licencia libre. Estas recomendaciones siguen vigentes en la actualidad y han servido de base para que otros organismos añadieran otras como derecho ciudadano, financiación pública, integridad, privacidad y confidencialidad, y preservación (**Curto-Rodríguez**, 2017).

Al movimiento de datos abiertos se le atribuyen varias utilidades como la creación de valor, el incremento de la interoperabilidad o la mejora de la eficiencia interna de las administraciones. No obstante, queremos enfocar en este estudio su papel para el fomento de la transparencia[4], puesto que los datos abiertos han generado muchas expectativas al respecto (**Ferrer-Sapena**; **Sánchez-Pérez**, 2013). Esta iniciativa podría aprovecharse como un excelente mecanismo de rendición de cuentas al facilitar la reutilización de la información ofertada, máxime cuando otras posibilidades como los portales de transparencia regionales o la web autonómica están publicando datos básicamente en formatos pdf o html, de difícil manejo (**Curto-Rodríguez**, 2016).

Vivimos en la era de los datos, siendo los gobiernos uno de sus principales creadores (**Cerrillo-Martínez**, 2018). Los datos abiertos se han convertido en un signo inequívoco de una administración transparente y responsable (**Höchtl**, 2012), siendo la base de la toma de decisiones y la materia prima para la rendición de cuentas. Sin datos de alta calidad, diseñar, monitorear y evaluar políticas efectivas se vuelve casi imposible (*European Commission*, 2014, p. 4).

Obviamente, la información debe poder usarse (**Ballester-Espinosa**, 2015), y a tal efecto es muy conveniente que sea depositada en la Web para favorecer las relaciones entre datos y la creación de redes (**García-García**, 2013), siendo datos abiertos la mejor iniciativa que lo permite. Los datos abiertos facilitan la reutilización al ser fácilmente localizables, reutilizables y no estár sometidos a restricciones técnicas o jurídicas (**Cerrillo-Martínez**, 2014), por lo que esperamos que su potencial de análisis, su facilidad de cruce con otra información y/o la elaboración de aplicaciones sean aprovechadas por cualquier interesado en base a los principios de *crowdsourcing* de **Surowiecki** (2005) y *The many minds principle* de **Walsh** y **Pollock** (2007).

> "Sin datos de alta calidad la labor de monitorear el desempeño gubernamental se vuelve casi imposible"

No está claro que todos los gobiernos deseen suministrar información relacionada con la transparencia activa, según se deduce del postulado de dos teorías contrapuestas de la divulgación de las administraciones públicas.

La primera es la teoría de la agencia, la más empleada en la bibliografía (**Rodríguez-Bolívar**; **Alcaide-Muñoz**; **López-Hernández**, 2013). Esta teoría es aplicable cuando los ciudadanos (principal) delegan cierta toma de decisiones en los gobiernos (agentes), requiriendo para mayor confianza en los actores políticos, que se revele información que permita su monitoreo reduciendo la asimetría de información (**Laswad**; **Fisher**; **Oyelere**, 2005), limitando los conflictos entre ciudadanos y gobernantes (**Zimmerman**, 1977), y resolviendo el problema de la agencia (**Ferejohn**, 1999).

La segunda, la teoría neoinstitucional, aborda un estudio sociológico de las instituciones, entendidas como espacios donde los actores sociales desenvuelven sus prácticas. Esa teoría es consciente de la réplica de iniciativas asociadas con la transparencia activa, como los portales de datos abiertos o de transparencia (**García-García**; **Alonso-Magdaleno**; **Alonso-Magdaleno**, 2016; **Curto-Rodríguez**, 2019a), que contribuyen a una mayor reputación gubernamental, a una apariencia de modernidad y a un posicionamiento como administración pública avanzada. No obstante, la puesta en marcha de un repositorio podría convertirse en un fin en sí mismo siendo posible no suministrar información "transparente" y conformarse con imitar iniciativas favorecedoras de una buena opinión pública sin dotarlas de contenido.

Estas teorías implican, como indica **Curto-Rodríguez** (2019b), que podemos esperar dos tipos de comportamientos fundamentales:

- en línea con la teoría neoinstitucional, la puesta en marcha de un portal de datos abiertos permitiría que los gobiernos cumplieran su objetivo de ganar valor frente a sus rivales políticos, pudiendo incurrir en un comportamiento de transparencia aparente publicando información irrelevante respecto al control de su gestión;
- en el extremo opuesto, estaría el comportamiento de transparencia sincera que, conforme a lo propuesto por la teoría de la agencia y motivado por el deseo de ampliar el conocimiento ciudadano, haría que fueran incorporados al portal múltiples conjuntos de datos de transparencia activa para justificar el desempeño gubernamental.

Fijamos el objetivo de nuestra investigación en medir la información transparente alojada en los portales de datos abiertos y su potencial a efectos de reutilización. Por ello, el siguiente apartado, además de sugerir comportamientos esperados, elabora y justifica el indicador empleado. El trabajo continúa con una tercera sección destinada a presentar las técnicas estadísticas utilizadas (análisis descriptivo y clúster), seguida de la presentación de los resultados, las conclusiones y las futuras líneas de investigación abordables.

2. Transparencia activa: lista de comprobación, herramientas de valoración, calidad reutilizadora e indicador de transparencia datos abiertos

Transparencia, buen gobierno y rendición de cuentas son temas de actualidad que se recogen en las grandes líneas de las políticas públicas y que comprenden comunicaciones, reglamentos, memorandos, guías, normas técnicas, directivas, leyes, apertura de repositorios digitales, etc.[5], formando parte del debate social como una piedra angular de todos los discursos políticos (**Delgado-Morales**; **López-Carvajal**; **Sierra-Rodríguez**, 2015) y convirtiéndose poco a poco en una realidad (**Sierra-Rodríguez**, 2018a, p. 27).

Según **Alt**, **Lassen** y **Rose** (2006), la transparencia ha sido una parte integral de los intentos de reformar la gobernanza del sector público siendo muchos los gobiernos que han trabajado para aumentar la apertura y la transparencia en sus acciones (**Bertot**; **Jaeger**; **Grimes**, 2010), pues ya son más de 100 los países que cuentan con leyes que regulan dicho cometido.

En nuestro país ha habido una expansión del interés sobre estas materias tras la publicación de la *Ley 19/2013 de transparencia, acceso a la información pública y buen gobierno* (**Sierra-Rodríguez**, 2018b). Antes de la aprobación de dicha normativa, España carecía de una ley *ad hoc* sobre transparencia o derecho de acceso a la información (**Beltrán-Orenes**; **Martínez-Pastor**, 2016). Ha sido esta ley, que responde a los compromisos adquiridos con la alianza con el gobierno abierto (**Cotino-Hueso**, 2015; **Beltrán-Orenes**; **Martínez-Pastor**, 2017), lo que ha permitido a nuestro país dejar de ser el único miembro del *Consejo de Europa* con una población de más de un millón de habitantes que no disponía de una ley específica de transparencia y acceso a la información pública (**Villoria**, 2014), lo cual era consecuencia de la inercia histórica, política y social del entorno (**Cotino-Hueso**, 2014).

Una bondad evidente de la transparencia en la administración pública es contribuir a la calidad de vida de los ciudadanos y mejorar la confianza en el gobierno debido a su valor informativo y su función de monitoreo (**Galli**; **Rizzo**; **Scaglioni**, 2019, p. 97), permitiendo el escrutinio y el control de la administración (**Boix**, 2015, p. 123, **Graells-Costa**, 2013), conteniendo un gran poder de transformación social y político (**Delgado-Morales**, 2018), y convirtiéndose en el mejor antídoto contra la corrupción (**Abu-Bakar**; **Saleh**, 2011).

Y si bien es cierto que entendemos que la transparencia no es unidireccional y no está vinculada exclusivamente a la proactividad de la administración en cuanto a la divulgación por defecto, puesto que el derecho de acceso a la información pública forma parte de este concepto, esta investigación concentra sus esfuerzos en medir el grado y calidad a efectos de reutilización de los datos suministrados en los portales de datos abiertos autonómicos. En base a los resultados alcanzados, estaremos en condiciones de sugerir si el comportamiento de las CCAA se asocia más con un modelo de agencia o con un modelo institucional. Dicho de otro modo, podemos valorar si las autonomías reducen las asimetrías informativas divulgando información transparente siendo avanzadas o si se quedan rezagadas (o al margen de este proceso) conformándose simplemente con aperturar el portal.

Tabla 2. Lista de comprobación

Rendición de cuentas económico-financiera
Presupuestos de gastos e ingresos:
Por cualquier clasificación (orgánica, funcional o económica)
Por partidas presupuestarias
Memoria con descripción de los programas presupuestarios
Ejecución presupuestaria:
Información mensual de ejecución
Liquidación anual
Modificaciones presupuestarias
Presupuestos de entes, sociedades y fundaciones públicas
Cuentas anuales de empresas públicas
Cuenta general de la Comunidad Autónoma
Cumplimiento del objetivo de estabilidad presupuestaria
Nivel y desglose de endeudamiento
Informe de fiscalización
Rendición de cuentas de los gobernantes:
Organigrama y contactos
Retribuciones a miembros del gobierno y altos cargos
Declaraciones de bienes de los miembros del gobierno
Declaraciones de actividades de miembros del gobierno
Lista y retribuciones de cargos de confianza
Rendición de cuentas en las ayudas y contrataciones:
Ayudas y subvenciones
Becas, premios o concursos
Contratos adjudicados

Con el cometido de cuantificar divulgación efectuada, nos hemos servido de una lista de comprobación propia compuesta por veinte items, distribuidos en tres apartados: existencia de datos económico-financieros, información de los gobernantes, y ayudas y subvenciones (tabla 2), siendo conscientes de la subjetividad inherente en su formulación. Pero como bien indica **Cerrillo-Martínez** (2012), la bibliografía ha aportado tantas definiciones de transparencia como intentos ha habido para definirla, lo que muestra la complejidad en la medición del concepto (**Cuadrado-Ballesteros**, 2014) y su controvertida cuantificación (**Ma**; **Wu**, 2011).

Esta *check list* ha sido utilizada en varias investigaciones[6] y, aun siendo previa al estudio publicado por la *Federación Española de Municipios y Provincias* sobre los 40 conjuntos de datos a publicar por las entidades locales (*FEMP*, 2019), comparte algunos apartados. Consideramos que se trata de una lista completa que permite valorar la divulgación de información a efectos de la supervisión de la gestión de asuntos públicos, y que no adolece del aprendizaje perverso señalado por **Alonso-Magdaleno** y **García-García** (2014) sí presente en el *Índice de las Comunidades Autónomas* que elabora *Transparencia Internacional España*, en cuanto a que los dirigentes van a concentrar esfuerzos en aquello que es evaluado por el índice (que además es requerido con anterioridad).

No obstante, para conseguir realmente empoderar al ciudadano, la puesta a disposición de la información online debe cumplir unos criterios de accesibilidad y usabilidad para que sea fácilmente localizable y pueda ser reutilizada (**Martínez-Moya**, 2015).

Hay varios indicadores que contemplan los estándares técnicos en los que se suministra el dato, como *Meloda*, descrito en **Abella**, **Ortiz-de-Urbina-Criado** y **De-Pablos-Heredero** (2014) y **Abella** (2016), y utilizado en **Abella**, **Ortiz-de-Urbina-Criado** y **De-Pablos-Heredero** (2018) y en **Vicente-Paños** y **Jordán Alfonso** (2017), si bien preferimos continuar la línea de investigación de **García-García** y **Curto-Rodríguez** (2018; 2019a; 2019b) que valoran el formato en el que la información está disponible según Tim Berners-Lee, el creador de la Web.

Los estándares técnicos son atendidos por ambos indicadores en función del formato en que la información viene suministrada (si bien con distintas escalas). Aunque *Meloda* considera otros apartados adicionales, hemos preferido el empleo de un indicador sencillo y fácilmente comprensible por todos los interesados, ampliamente avalado y con mayor utilización en la investigación académica.

Así pues, únicamente se medirá la capacidad reutilizadora según el modelo cinco estrellas[7] de Tim Berners-Lee (tabla 3), de forma que cada ítem atendido (con conjuntos de datos que contengan información completa y actualizada de cada requerimiento) recibirá un punto adicional por cada uno de los cuatro primeros niveles o estrellas que alcance[8].

Tabla 3. Esquema *5 star open data*

☆	Cualquier información en la web en formato no estructurado. Ejemplo: formato pdf
☆☆	Datos legibles por máquina, pero en formato propietario. Ejemplo: formato xls
☆☆☆	Además de formato estructurado, abiertos y no propietarios. Ejemplo: formato csv
☆☆☆☆	Datos vinculables y reutilizables. Ejemplo: formato rdf
☆☆☆☆☆	Nivel de datos enlazados que permite enlazar los datos alojados con otros creando un nuevo contexto

Fuente: **Berners-Lee** (2010)

En base a lo expuesto, ya podemos formular nuestro indicador de transparencia datos abiertos (TOD), cuya valoración oscilará entre los cero puntos si las autonomías no disponen de portal de datos abiertos o carecen de la información buscada por la lista de comprobación, y los 100 puntos si consiguieran completar los 20 items en formato/s nivel cuatro estrellas, con lo que damos paso a la discusión metodológica.

3. Análisis clúster: marco teórico

El análisis clúster o de conglomerados busca identificar grupos de sujetos lo más homogéneos posible entre sí y lo más heterogéneos posibles respecto a los individuos del resto de grupos (**Valderrey**, 2010, p. 359). Nuestra investigación va a emplear como variable discriminadora la puntuación alcanzada por las CCAA en el indicador TOD y, si bien es cierto que cuando el conjunto a clasificar está descrito por una sola variable, la obtención de grupos es aparentemente sencilla (**Grande-Esteban**; **Abascal-Fernández**, 2007, p. 397), la aplicación de la técnica consigue una división lo más aséptica posible eliminando susceptibilidades y minimizando el sesgo del investigador.

En primer lugar, utilizaremos una técnica de tipo jerárquico, recomendable cuando existen pocas observaciones (**Trespalacios-Gutiérrez** *et al.*, 2016, p. 244), que aplicará el criterio de Ward, puesto que generalmente es el que mejor se adapta a los objetivos de la investigación (**Trespalacios-Gutiérrez** *et al.*, 2016, p. 244). En segundo lugar, aplicaremos *Quick cluster*, una técnica no jerárquica que, si bien presenta una estructura matemática menos precisa que la clasificación jerárquica (**Valderrey**, 2010, p. 364), nos servirá para valorar la robustez de la solución inicial propuesta. Este *Quick cluster* seguirá las recomendaciones de **Trespalacios-Gutiérrez**, **Vázquez-Casielles** y **Bello-Acebrón** (2005, p. 260) y **Trespalacios-Gutiérrez** *et al.* (2016, p. 247), esto es, que el número de grupos sea guiado por los resultados de los métodos jerárquicos.

Tras mostrar las técnicas de análisis clúster a aplicar cuando el estudio descriptivo se muestre insuficiente, pasamos al siguiente apartado, que se dedica a exponer los principales resultados obtenidos en base al programa estadístico *SPSS* versión 23.

4. Resultados

Tabla 4. Ranking, items atendidos, calidad reutilizadora y puntuación total autonómica

				Dic. 2013			Dic. 2015			Dic. 2017, rev. 2018		
Rk1	**Rk2**	**Rk3**	**CCAA**	**Items**	**Cal.**	**PT13**	**Items**	**Cal.**	**PT15**	**Items**	**Cal.**	**PT18**
1º	1º	1º	País Vasco	11	33	**44**	12	36	**48**	10	30	**40**
4º-5º	5º	2º	Andalucía	5	11	**16**	5	11	**16**	7	21	**28**
9º	9º	3º	Cataluña	2	4	**6**	2	4	**6**	5	20	**25**
2º	2º	4º-5º	Com. Foral de Navarra	6	18	**24**	6	18	**24**	6	18	**24**
6º	6º	4º-5º	Castilla y León	3	12	**15**	3	12	**15**	6	18	**24**
4º-5º	4º	6º-7º	Aragón	3	9	**12**	4	12	**16**	5	15	**20**
11º-14º	11º- 17º	6º-7º	La Rioja	0	0	**0**	0	0	**0**	5	15	**20**
7º	7º	8º	Islas Baleares	2	7	**9**	2	7	**9**	2	8	10
3º	3º	9º	Extremadura	5	15	**20**	5	15	**20**	2	6	**8**
8º	8º	10º	Canarias	0	0	**0**	2	6	**8**	1	3	**4**
10º	10º	11º	Castilla-La Mancha	0	0	**0**	1	4	**5**	1	3	**4**
11º- 17º	11º- 17º	12º	Región de Murcia	0	0	**0**	0	0	**0**	1	2	**3**
11º- 17º	11º- 17º	13º-17º	Cantabria	0	0	**0**	0	0	**0**	0	0	**0**
11º- 17º	11º- 17º	13º-17º	Comunidad de Madrid	0	0	**0**	0	0	**0**	0	0	**0**
11º- 14º	11º- 17º	13º-17º	Comunidad Valenciana	0	0	**0**	0	0	**0**	0	0	**0**
11º- 14º	11º- 17º	13º-17º	Galicia	0	0	**0**	0	0	**0**	0	0	**0**
11º- 14º	11º- 17º	13º-17º	Principado de Asturias	0	0	**0**	0	0	**0**	0	0	**0**
Puntuación total						**146**			**167**			**210**

El análisis descriptivo comienza (tabla 4) mostrando las puntuaciones que alcanza cada una de las CCAA para el indicador TOD tanto en diciembre de 2013 (apertura masiva de portales de datos abiertos), como en diciembre de 2015 (entrada en vigor de la *Ley de transparencia, acceso a la información pública y buen gobierno* para las entidades locales y autonómicas) y para 2017-2018 (última visita realizada[9]).

A primera vista puede apreciarse que el número de autonomías calificadas con cero puntos disminuye desde las ocho existentes en 2013, a siete en 2015 y a cinco en 2018. Otra noticia positiva es que la puntuación global aumenta desde los 146 puntos de 2013, a los 167 de 2015, alcanzando los 210 puntos en 2018. Esta mejora se debe a que son más las autonomías que experimentan progresos (mención especial para La Rioja y Cataluña) que las que se estancan o empeoran (destacando negativamente Extremadura que no actualiza la información buscada).

> En 2017, las diferencias interautonómicas se reducen, aunque el análisis clúster sigue identificando dos grupos de comunidades autónomas bien delimitados

La tabla 5 ofrece un análisis desagregado del indicador por dimensiones. Todas las categorías presentan un desempeño limitado, si bien “gasto” presenta el mayor porcentaje de atención en todos los años de estudio, superando el 25% de la puntuación máxima aplicable (aunque tan solo en la revisión de 2018). No obstante, la evolución de todos los apartados es positiva con mejorías que oscilan entre el 35% y el 45%, lo que refleja una consolidación longitudinal de las iniciativas.

El análisis por tipos, un importante cometido de esta investigación, se realiza de forma detallada para cada uno de los períodos en que la información fue recogida. El estudio comienza con un diagrama de barras que representa gráficamente la puntuación alcanzada por cada autonomía, lo que permite tener una sencilla valoración visual y finaliza, cuando se considera como necesario, con un análisis clúster.

> Las puntuaciones alcanzadas por el indicador de transparencia datos abiertos son bajas en todos los períodos, si bien se aprecia una evolución positiva

Tabla 5. Valoración y evolución de las dimensiones del indicador

	Dic. 2013				Dic. 15				Dic. 2017, rev. 2018			
CCAA	**Ec-Fª**	**Gober.**	**Gasto**	**PT13**	**Ec-Fª**	**Gober.**	**Gasto**	**PT15**	**Ec-Fª**	**Gober.**	**Gasto**	**PT18**
País Vasco	20	10	14	**44**	24	10	14	**48**	17	15	8	**40**
Andalucía	0	8	8	**16**	0	8	8	**16**	4	14	10	**28**
Cataluña	6	0	0	**6**	6	0	0	**6**	15	0	5	**25**
Com. Foral de Navarra	16	8	0	**24**	16	8	0	**24**	16	8	0	**24**
Castilla y León	0	5	10	**15**	0	5	10	**15**	8	4	12	**24**
Aragón	8	0	4	**12**	12	0	4	**16**	8	0	12	**20**
La Rioja	0	0	0	**0**	0	0	0	**0**	8	0	12	**20**
Islas Baleares	0	5	4	**9**	0	5	4	**9**	0	5	5	**10**
Extremadura	8	4	8	**20**	8	4	8	**20**	8	0	0	8
Canarias	0	0	0	**0**	0	8	0	**8**	0	4	0	**4**
Castilla-La Mancha	0	0	0	**0**	0	5	0	**5**	0	4	0	**4**
Región de Murcia	0	0	0	**0**	0	0	0	**0**	0	0	3	**3**
Cantabria	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**
Comunidad de Madrid	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**
Comunidad Valenciana	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**
Galicia	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**
Principado de Asturias	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**
Totales	58	40	48	146	66	53	48	167	84	54	67	210
Puntuación máxima	1.020	425	255	1.700	1.020	425	255	1.700	1.020	425	255	1.700
% atendido	5,69	9,41	18,82	8,59	6,47	12,47	18,82	9,82	8,24	12,71	26,27	12,35
% mejora bienal					13,79	32,50	0,00	14,38	27,27	1,89	39,58	25,75
% mejora acumulada									44,83	35,00	39,58	43,84

Año 2013

La observación de la figura 3 muestra como evidente la existencia de dos grupos de CCAA en 2013: autonomías con cero puntos versus autonomías con puntuación positiva, por lo que no parece necesario realizar un análisis de conglomerados.

Así pues, proponemos la existencia de dos conglomerados, indicando la asignación autonómica a continuación. Nueve CCAA pertenecerían al primer grupo, en el que tendríamos, por un lado, Canarias, Cantabria, Comunidad de Madrid, Comunidad Valenciana, Principado de Asturias y Región de Murcia, sin portal autonómico; y por otro, Castilla-La Mancha, Galicia y La Rioja, puesto que su repositorio no incorpora conjuntos de datos relacionados con nuestra definición de transparencia. El segundo grupo, el de las CCAA de divulgación más avanzada, quedaría compuesto por las ocho autonomías restantes, liderando de forma destacada el País Vasco.

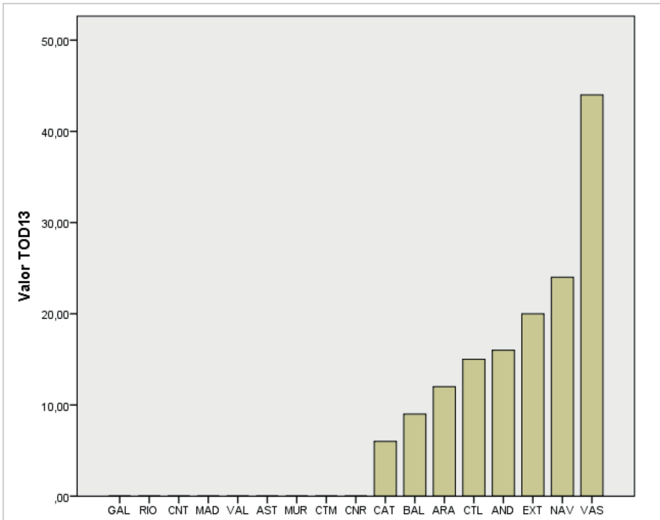

Figura 3. Puntuación del indicador de transparencia de datos abiertos en 2013

Año 2015

El indicador de 2015 refleja los cambios en los dos años transcurridos. Apreciamos que:

- Canarias, Comunidad Valenciana y Asturias se han incorporado a la iniciativa de portales datos abiertos autonómicos;
- los conjuntos de datos relacionados con la transparencia han aumentado ligeramente.

A nivel global, los avances son escasos, lo que se traduce en la práctica ausencia de cambios en el ranking, dando a entender que la entrada en vigor de la *Ley 19/2013* apenas ha tenido impacto en la divulgación de datos para la rendición de cuentas. Además, la división propuesta también es en dos grupos de autonomías (figura 4).

Al primer conglomerado pertenecería el 40% de las CCAA que, o bien no tienen portal (Comunidad de Madrid, Región de Murcia y Cantabria) o bien no publican información que permita completar ningún ítem (Galicia, Comunidad Valenciana, Principado de Asturias y La Rioja). Al segundo grupo pertenecerían las diez CCAA con puntuaciones positivas, entre las cuales sigue destacando el País Vasco, que mantiene el primer puesto de forma holgada.

Año 2018

Los portales de datos abiertos experimentan avances en cuanto a la divulgación de información relacionada con la rendición de cuentas, apreciando una mejoría que duplica a la producida en los dos años anteriores (la mejora en este último período es de 43 puntos, mientras que la experimentada entre 2013-2015 es de tan sólo 19 puntos). La figura 5 muestra los valores del indicador.

Tan sólo permanecen cinco CCAA valoradas con cero puntos por el indicador, un porcentaje inferior al 30%: Comunidad de Madrid y Cantabria, sin portal de datos de uso operativo; y Galicia, Comunidad Valenciana y Principado de Asturias, que siguen sin ofrecer conjuntos de datos transparentes. Otro grupo de cinco autonomías presenta una valoración exigua (Región de Murcia, Castilla-La Mancha, Canarias, Extremadura y Baleares) oscilando entre los tres y los diez puntos TOD. A partir de aquí, y con un significativo salto de diez puntos, se encuentran las autonomías más avanzadas: La Rioja, Aragón, Castilla y León, Comunidad Foral de Navarra, Cataluña y Andalucía, que han recortado la distancia frente al líder, el País Vasco, quien ha visto reducida levemente su valoración al no mantener actualizada toda la información disponible en revisiones anteriores.

A la luz de la observación de la figura 5, y en base a lo descrito, no parece posible realizar una discriminación sencilla entre autonomías. Por ello, decidimos acometer un análisis clúster, comenzando con el método jerárquico propuesto por Ward, para contrastar posteriormente la solución propuesta mediante el método no jerárquico de *K means*, que ofrece como solución más plausible la existencia de dos grupos de CCAA.

La tabla 6, que recoge para cada uno de los años analizados la asignación de cada autonomía a las CCAA más avanzadas / rezagadas, da por finalizado este apartado con el que pasamos a señalar las conclusiones más relevantes de nuestro estudio.

5. Conclusiones, limitaciones y futuras líneas de investigación

Una vez puesto de manifiesto que los portales de datos abiertos se han consolidado a nivel mundial como una excelente iniciativa para que gobiernos e instituciones de todo tipo depositen sus datos de forma accesible, con licencia libre, y de forma no discriminatoria, favoreciendo por tanto su procesabilidad y

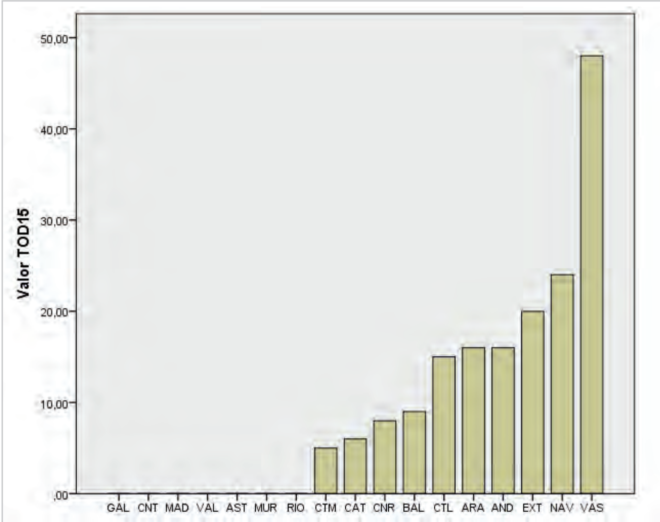

Figura 4. Puntuación del indicador de transparencia de datos abiertos en 2015

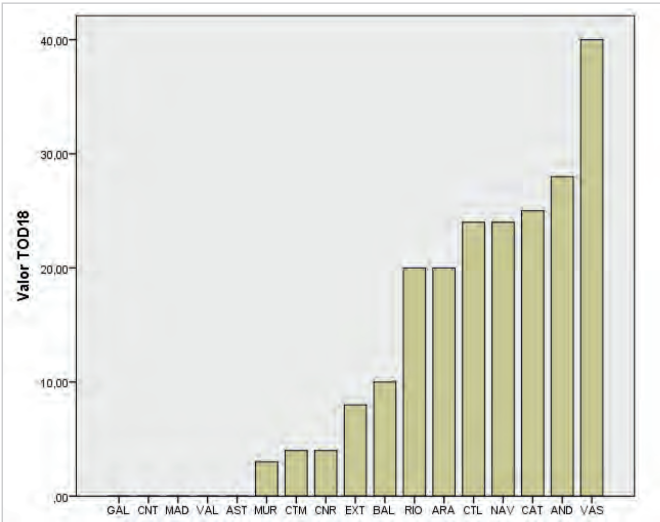

Figura 5. Puntuación del indicador de transparencia de datos abiertos en 2018

Tabla 6. Tipos y evolución de la transparencia activa de las CCAA según sus indicadores TOD

Comunidad autónoma	2013	2015	2018
Andalucía	Avanzada	Avanzada	Avanzada
Aragón	Avanzada	Avanzada	Avanzada
Canarias	Rezagada	Avanzada	Rezagada
Cantabria	Rezagada	Rezagada	Rezagada
Castilla-La Mancha	Rezagada	Avanzada	Rezagada
Castilla y León	Avanzada	Avanzada	Avanzada
Cataluña	Avanzada	Avanzada	Avanzada
Comunidad de Madrid	Rezagada	Rezagada	Rezagada
Comunidad Foral de Navarra	Avanzada	Avanzada	Avanzada
Comunidad Valenciana	Rezagada	Rezagada	Rezagada
Extremadura	Avanzada	Avanzada	Rezagada
Galicia	Rezagada	Rezagada	Rezagada
Islas Baleares	Avanzada	Avanzada	Rezagada
La Rioja	Rezagada	Rezagada	Avanzada
País Vasco	Avanzada	Avanzada	Avanzada
Principado de Asturias	Rezagada	Rezagada	Rezagada
Región de Murcia	Rezagada	Rezagada	Rezagada

consecuentemente su reutilización, hemos apreciado que nuestro país se ha sumado exitosamente a este este movimiento. Por ello, nos ha parecido interesante, debido a la importancia de las comunidades autónomas en nuestro país, enfocar el estudio al entorno de los portales regionales analizando el grado de atención que prestan a un objetivo: el fomento de la transparencia.

> La asignación de cada autonomía al conglomerado de transparencia avanzada o transparencia rezagada se mantiene bastante estable a lo largo de todo el estudio

Si bien es cierto que la transparencia tiene varios componentes, hemos decidido centrarnos en la divulgación de información de forma proactiva, siendo futuros estudios los que incorporen otras vertientes, como el grado de atención a las solicitudes de acceso a la información. A estas consideraciones hay que añadir que entendemos esta divulgación en formatos reutilizables no obligatoria, según lo mencionado por la *Ley 19/2013* y recomendable, según indica la *Ley 8/2015*, de 9 de julio, por la que se modifica la *Ley 37/2007*, de 16 de noviembre, *sobre reutilización de la información del sector público*, que señala que se procurará siempre que sea posible proporcionar la información en formato abierto y legible por máquina, conjuntamente con sus metadatos y con los niveles más elevados de precisión y desagregación.

La transparencia activa ha sido medida en base a una lista de comprobación propia compuesta por 20 items, motivada por lo que sería interesante encontrar disponible tras la lectura del capítulo de transparencia activa de la *Ley 19/2013 de transparencia, acceso a la información pública y buen gobierno*, básicamente en sus artículos 6, información institucional, organizativa y de planificación; y 8, información económica, presupuestaria y estadística. Tras ponderar la existencia de información en función de su capacidad reutilizadora según lo propuesto por Tim Berners-Lee, quedó formulado nuestro indicador de transparencia datos abiertos calculado en tres períodos de tiempo, 2013, 2015 y 2018.

Este indicador ofreció unos resultados mediocres, puesto que las puntuaciones medias son muy bajas (8,6, 9,8 y de 12,35 respectivamente en cada período), lo que supone que apenas se completa el 10% de la valoración total máxima, y eso sólo para la revisión más reciente. Esto equivale a afirmar que, salvo determinadas excepciones, se está desatendiendo el potencial de los datos abiertos para la rendición de cuentas.

Por su parte, el análisis deja interesantes conclusiones:

- se aprecia una polarización muy marcada en los años 2013 y 2015, que permite una discriminación sencilla a nivel regional entre las comunidades que se incorporan a la iniciativa y publican algo de información transparente y las que o bien carecen de portal o no divulgan absolutamente nada;
- para 2018 las diferencias se ven suavizadas, lo que nos invita a realizar un análisis de conglomerados que asegure la imparcialidad y minimice el riesgo de equívocos.

Siguiendo las recomendaciones de combinar más de un método de análisis clúster, y para obtener una mayor garantía en el resultado, utilizamos modelos jerárquicos (Ward) y no jerárquicos (*k means)* que siguen permitiendo identificar dos grupos diferenciados, estableciéndose la frontera divisora en el salto de los 10 y 20 puntos.

> Se aprecia una polarización casi dicotómica en la transparencia activa de las autonomías para las revisiones de 2013 y 2015

Estos hallazgos están en línea con las teorías sobre la divulgación de información del sector público de la agencia y neoinstitucional que postulan, respectivamente, la necesidad de publicar información que reduzca las asimetrías principal-agente o simplemente conformarse en imitar las iniciativas favorecedoras de una buena imagen pública, en un evidente fenómeno de isomorfismo institucional, pero sin incorporar información relevante para el control de su gestión.

La dicotomía hallada guarda relación con los conceptos de transparencia sincera aparente y transparencia aparente utilizados en otras investigaciones y que aquí se aplica a las autonomías avanzadas o rezagadas en divulgación, según su pertenencia a los equilibrados conglomerados obtenidos a lo largo del análisis longitudinal, que obviamente son susceptibles de cambios, al igual que lo hacen las puntuaciones del indicador en cada uno de los años.

Debe señalarse, no obstante, que prima la estabilidad en cuanto a la pertenencia autonómica a cada clúster. Doce comunidades no experimentan cambios: seis siempre han sido *triple A*, es decir siempre han estado en el grupo de las avanzadas (Andalucía, Aragón, Castilla y León, Cataluña, Comunidad Foral de Navarra y País Vasco) mientras que otras seis han sido siempre rezagadas (Cantabria, Comunidad de Madrid, Comunidad Valenciana, Galicia, Principado de Asturias y Región de Murcia). Únicamente experimentan variación Canarias y Castilla la Mancha, que sólo han estado mejor que la media en 2015; Extremadura, que mantiene su iniciativa prácticamente abandonada; y La Rioja que, tras dos períodos en el furgón de cola, está ahora junto a Aragón en el grupo de las mejores autonomías.

En cuanto a las limitaciones de la investigación, debemos mencionar la subjetividad de nuestra definición de transparencia, tanto en los items incorporados (que creemos, no obstante, de gran interés para la ciudadanía) como en la ponderación llevada a cabo. De todas formas, el uso del indicador propuesto ha permitido obtener una escala sencilla (de 0 a 100 puntos) y un rango de variabilidad en los resultados superior a otros como el *Índice de transparencia de las CCAA*, elaborado por *Transparencia Internacional España* (que carece de capacidad discriminadora entre regiones). En todo caso, y en línea con otros indicadores como *Meloda*, pensamos que en futuros estudios deben ser contempladas nuevas dimensiones de calidad reutilizadora, como las licencias de los conjuntos de datos. Igualmente debe considerarse el efecto de las solicitudes de información ciudadana yendo un paso más allá de la transparencia activa.

Nuestra reflexión final consiste en el deseo de que próximos estudios muestren mejores resultados en las puntuaciones y de que los dos grupos de autonomías converjan en uno solo, donde sólo se aprecie transparencia sincera en sus portales de datos abiertos, lo que significará que se estarán aprovechando las bondades de la divulgación de información transparente en formatos reutilizables.

6. Notas

1. No son portales autonómicos al uso. Se trata de proyectos de tipo estadístico que muestran la información desagregada, debiendo interactuar con los menús existentes para la generación de datos.

2. El portal se inauguró el 10 de abril de 2019 con 170 conjuntos de datos. Además, una revisión efectuada en mayo de 2019 de sus 172 conjuntos de datos no consiguió localizar ninguna información buscada por nuestro estudio, por lo que incluso si esta iniciativa hubiera sido tenida en consideración no afectaría a los resultados alcanzados.

3. Considerados como la aplicación de los datos abiertos al caso específico de la información que gestionan las administraciones públicas u otros organismos dependientes. Este manuscrito utiliza indistintamente los términos *open data* u *open government data* puesto que sólo se ocupa de datos puestos a disposición por las administraciones públicas.

4. Transparencia y rendición de cuentas son términos relacionados pero no sinónimos. **Rubiños-Gil** (2014) señala que la transparencia tendría que ver con la idea de visibilizar el interior de una organización, mientras que la rendición de cuentas sería la necesidad de que ésta responda por su comportamiento o actividad, explicando cómo se gestionan los fondos públicos.

5. No es objetivo de este estudio ser excesivamente exhaustivo en las iniciativas favorecedoras. Una revisión más detallada se puede consultar en **Curto-Rodríguez** (2017).

6. Comienzo en **Curto-Rodríguez** (2015), siendo los últimos trabajos publicados los de **García-García** y **Curto-Rodríguez** (2018; 2019a; 2019b).

7. En *https://5stardata.info* se ofrece una detallada información de las características de cada nivel, así como sus costos y beneficios.

8. Formato/s nivel uno, un punto adicional; nivel dos, dos puntos extras; nivel tres, tres puntos, y resto de niveles, cuatro puntos adicionales. Hemos decidido, al igual que *Fundación Orange* (2014) fusionar los niveles 4 y 5, ambos muy relacionados con el concepto de la web semántica, representando el estadio superior en la reutilización de los datos.

9. En 2018 realizamos un muestreo de autonomías para evaluar la necesidad de realizar una nueva recogida. Ante la ausencia de cambios, mantuvimos los de diciembre de 2017 como actualizados.

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Do bumper ads bump consumers?: An empirical research on *YouTube* video viewers

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Abstract

YouTube, the most popular present-day online video platform, is also considered one of today's leading advertising media. There is an ongoing argument that *YouTube* measures and shares its own ad effectiveness. However, the consumer research results contradict with their measurements. The difficulty of measuring the performance of video ads on *YouTube* without *YouTube*'s built-in data increases the debate about its effectiveness as an advertising environment and therefore makes it more important to collect data from consumers through empirical research. This study was carried out with *YouTube* viewers located in Turkey, whose population is among the most online video watching Internet users in the world, to uncover the determining attitudes and the factors affecting them in the effectiveness of bumper ads, which *YouTube* introduced in 2016 as 6-seconds unskippable ad videos. The acquired data were tested by correlation and regression analysis under a predicted model that could explain the attitudes towards the ad. According to findings; it has been shown that the attitudes towards bumper advertisements are significantly related to the factors such as entertainment, informativeness, credibility, irritation, frequency of exposure and advertising value. However, it was found that the participants did not develop a positive attitude towards these factors, and the bumper advertisements, along with them.

Keywords

Advertising attitudes; Advertising value; Bumper advertising; *YouTube* advertising; Digital video advertising; *YouTube*.

1. Introduction

With the increasing emergence of new digital advertising types, advertisers have been striving to monetize from these various types over the last years. Nowadays advertisers are giving more importance to digital video ads (DVA), because 47% of live streaming video viewers worldwide are streaming more live video compared to 2017 (*IAB*, 2018d, p. 11), and by 2019 global consumer internet video traffic will account for 80% of all the consumer internet traffic (*Cisco*, 2018). Advertisers, who take the consumption of mobile devices and the rise in the video viewing into account increased their investment in DVA recently. According to *eMarketer*'s last research about DVA effectiveness (**Verna**; **Clayton**; **Creamer**, 2017, p. 2), DVA spending will grow from $15.42 billion in 2018 to double-digit annual rates for at least the next four years, surpassing $22 billion in 2021. DVA reaches consumer via social media platforms such as *Facebook*, *Instagram*, *YouTube*, *Snapchat*, and *Twitter*. *YouTube* that increased its registered users worldwide from 1.5 billion in June 2017 to 1.8 billion in March 2018 is now predicted to have 1.86 billion users in 2021 (*Statista*, 2018a; 2018b). It has become one of the biggest DVA platforms. *eMarketer* (**Verna**; **Clayton**; **Creamer**, 2017, p. 7) expects *YouTube*'s net ad video revenues to reach $3.57 billion in 2019, up from $3.23 billion in 2018.

Previously *YouTube* was just offering non-skippable DVAs to their clients along with its display, overlay ads. But suffering from 15-, 30-, or even 60-second pre-roll ads prompted so many back-button clicks that eventually *YouTube* had to add a skip button to their ads in 2009 (**Chi**, 2018). In 2011, *YouTube* sales director Bruce Daisley announced that just 30% of their skippable ads were actually skipped. After the announcement, some technology and social media sites stated that they were doubtful about the percentage which *YouTube* has announced (**Fisher**, 2011; **Rick**, 2011). The consumer research results on *YouTube*'s video effects contradict with *YouTube*'s announcements. A research by *IPG Media LAB* (2016, pp. 9, 11) revealed that 65 % of people skip DVA and skipping is an ingrained behavior for them. Also the data shows that 84% skip the DVAs when they are exposed to video ads on smartphones. Similarly, *LaunchLeap* determined that 59% of millennials only watch *YouTube* video ads until they are allowed to skip the ad (**Kirkpatrick**, 2017). From all these results, it can be seen that *YouTube*'s skippable DVA data and consumer research data contain different views and interests.

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It has been argued for a long time that *YouTube* is making its own measurements and sharing these measurements with ad buyers. According to *The Wall Street Journal*; *YouTube* says that it supports third party tracking but not in a common way. Instead of allowing third parties to directly pull data from their sites or mobile apps, *YouTube* receives tracking code from third parties and then modifies the code slightly. It also set up a different process to deliver data. Because of this process, ad buyers want more transparency into how third-party data is collected on *Google*'s *YouTube*, and ideally more oversight over the process, since it helps them determine where and how to spend their video marketing money (**Shields**, 2016). While this controversy continued, *Google* announced that they are launching an ads measurement for *YouTube* on 2017 that called Ads Data Hub to help advertisers measure the value of their campaigns as ads are distributed over an ever-expanding number of devices. However, *Google* states that marketers can't extract any of the impression-level data from *Ads Data Hub* for privacy reasons. Also, *Google* explained that advertisers can give third-party measurement vendors, including *comScore*, *DoubleVerify*, *Integral Ad Science* and Nielsen, access to the system. But those vendors must still rely on *Google*'s own data for measurement. It shows that *Ads Data Hub* was not enough for advertisers who have been pushing *Google* to lower their walls and support independent tracking for measurement and verification (**Marvin**, 2017).

In 2016, at *Sundance*, *YouTube* launched bumper video ads that are unskippable 6-second ad units as a solution to the skipping behavior of its users. *Google* (2016) announced that huge brands are using bumper ads to drive upper-funnel goals like ad recall and awareness and they are a cost-effective way to reach target audience. Furthermore, *Google* stated that they have tested over 300 bumper campaigns and found that 9 out of 10 drove a significant lift in ad recall. The brands can ensure their message is seen and heard with bumpers, although the ads are short in time, they're long in impact. Similarly, *YouTube* chief business officer Robert Kyncl also said that (**Verna**; **Clayton**; **Creamer**, 2017, p. 7) *YouTube* saw a 70% increase in the number of advertisers that ran 6-second ads on the platform in 2017 and one-third of *YouTube* advertisers now use the bumpers.

The unilateral disclosure of *YouTube*'s own data about the bumper ads, and the presentation of this data to the ad buyers allow ad buyers to see the effect of these ads in a biased way. Since consumer attitudes play a major role in predicting advertising effectiveness (**Mehta**, 2000) and they have a significant effect on the interest in buying online (**Aqsa**; **Kartini**, 2015, p. 234) then it is of utmost importance to predict the attitudes of the consumers towards bumper ads. If ad buyers want to use the bumper ads in an efficient way, they have to know the consumers' attitudes towards bumper ads. This makes the discovery of the attitudes of users towards bumper advertisements and the variables that make up these attitudes an academic interest. In the field related to literature and in academic studies on digital advertising, it is seen that the factors that constitute attitudes towards digital advertisements are examined by using various models. However, studies on attitudes towards bumper advertisements are not yet sufficient. Using a conceptual model, this study is aimed at revealing the

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level of attitude towards bumper advertisements and the variables that constitute these attitudes. Within the scope of this aim, a research was prepared within the framework of a model which is foreseen explain the attitudes towards bumper advertisements. The findings of the survey about internet users in Turkey, which has one of the highest rates of online video viewing in the world, were examined.

2. Bumper ads as a new model for digital video ads (DVAs)

The rapid development of internet technology and its easy integration into individuals' daily lives had led to the development of digital advertising in a short time. The Web 2.0 concept, which began to be used in 2004, represents the general name of second-generation internet services, where internet users are no longer simply consuming, but also producing information at the same time. The interactive nature of Web 2.0, including the user, has led to the inclusion of interactive web pages on the Internet with the development of Internet; digital advertising has also started to develop. As a result of the developments in the digital advertising that happened in the last 20 years, digital advertising is divided into three groups; namely content agnostic advertising (random placing advertisements), contextual advertising (placing relevant advertisements based on context) and semantic advertising (placing advertisements based on the semantic analysis) (**Cheng** *et al.*, 2017, p. 1172).

Founded in 2005 and bought by *Google* in 2006, *YouTube*'s easy and fast video sharing experience encourages users to share videos, and makes the platform one of the most preferred social networks in a short time. Due to the TV shows and movies that have been watched by a wide range of people on the internet in recent years, digital video advertising, whose main purpose is to attract more of the potential customers has become a huge business opportunity with a rapid and sustainable development (**Wang** *et al.*, 2018, p. 40). In this context, DVA is important for influencing consumers in terms of content and advertising messages. The fact that consumers are part of the internet, often producing content and watching videos, has increased the variety of digital advertisements in these medium. DVA is defined as the integration of video ads into advertisements or regular online contents (**Turban** *et al.*, 2017, p. 278). According to the *IAB* (2008, p. 3) definition, DVA is a type of digital ad that has live, archived, or downloadable content that takes place before, during, or after various contents (**Brown**; **Jones**; **Wang**, 2016, p. 241). In this context, DVA, which has advanced with *Google AdSense*, has strengthened its algorithm with *Google*'s purchase of *YouTube*. *YouTube* DVA has become an important channel for being able to transfer the advertising message to the right audience. The most preferred channel for DVA investments is video advertising seen in video with 26% (*IAB*, 2018c, p. 41). Even though the types of digital ads are considered to fall in certain categories, *YouTube*'s DVA diversity constitutes the basic categories of this advertising model. While ads called display ads, sponsors cards, and overlays ads are taking place as images within the video; video ads, skippable video ads, non-skippable video ads, and bumper ads are video advertisements. First, DVA in-stream video advertisings began as short video ads, such as television commercials. In 2010, *YouTube* developed a DVA called "TrueView in stream advertising," which allowed it to jump after the first 5 seconds of the ad. This type of ad was developed specifically to increase the metric based effect of ad content on search terms (**Pashkevich** *et al.*, 2012, pp. 451-457). Along with changing consumer needs and attributes, advertising is also in the process of rapid change. While an average person's "attention span" was 12 seconds in 2000 (**Landau**, 2015, p. 44), according to the report conducted by *Microsoft Corp.* and published by *Time* magazine in 2015, the "attention span" has now fallen to 8 seconds (**Abdow**, 2018, p. 34). With the decrease of the "attention span" of consumers every day, the necessity of revision of advertising periods and the emergence of new advertising types arise. In 2016, *YouTube* announced a new 6-second non-skippable CPM-based bumper ad that could be featured on videos. *YouTube* aimed to encourage advertisers by bumper ad type about the value and power of stories created in short form on mobile (**Caufield**, 2017). Then in 2017, *Facebook* and *Twitter* also announced "bumper" ads as an ad type to be placed on their own sites (*IAB*, 2018a, p. 8). For advertisers and marketers who are looking for new techniques to communicate messages and attract attention of the consumer, the 6-second bumper advertising quickly became an important type of advertising. According to the DVA study conducted by *Adweek* and *GumGum* in 2018, it was determined that marketing experts evaluated bumper advertisements as the best DVA. According to the same research, 27% of the bumper advertisements were very effective and 54% effective (**Fleck**, 2018). In another study conducted about 6-second ads in 2018, brand recall is higher in bumper ads than 15-second and 30-second ads, and viewers are generally more positive about bumper advertising (**Marci**, 2018). Bumper advertisements, which is soon became a standard ad format for digital media, is today the preferred type of advertising for overcoming consumers' "ad avoidance" (**Sloane**, 2017). In addition, brands prefer 6-second short ads instead of long ads; because consumers are bothered by them and their tolerance for ads are reduced every day (*Shutterstock*, 2017). In addition to this digital medium, 6-second short advertisements in traditional TV programs have been implemented in 3 different strategies as

- "premium focus / reach build,
- multi-airing cable-frequency build, and
- hybrid strategy."

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Global brands like *Toyota*, *Pepsi* and *Duracell* prefer these ads on TV channels like *Fox*, *NBC*, *TLC*, *CNN* and *Discovery Channel* (**Donato**; **Schiffman**, 2018, p. 10).

3. Consumer attitudes toward DVAs

Researches conducted with the aim of examining consumers' attitudes towards advertising reveal that consumers' attitudes towards traditional advertisements are in general negative (**Zanot**, 1984). Moreover, the reason for this outcome is that consumers find the information contained in advertisements unnecessary and even irritating. According to some researches, consumers have developed more positive attitudes especially towards internet-based advertising (**Schlosser**; **Shavitt**; **Kanfer**, 1999). The reason for this is that these advertisements, by targeting consumers, provide them with the information they need and are more entertaining (**Xu**; **Li**, 2014, p. 3). According to **Ducoffe** (1996), and **Brackett** and **Carr** (2001), individuals' beliefs about ads lie on the basis of attitudes toward advertising, which is defined by **Mackenzie** and **Lutz** (1989, p. 54) as

> "a learned tendency to respond positively or negatively to advertising in a steady manner."

There are a number of studies aimed at determining consumer attitudes towards social media ads, including "DVAs", one of the most important types of internet advertising today. According to the results of the research conducted by **Akar** and **Topçu** (2011, pp. 53-54); individuals who have clicked on social media ad messages at least once have more positive attitudes towards social media advertising and marketing activities than those who have never clicked. In addition to these results, research results show that as the frequency of *Facebook* usage of individuals increase, the attitudes towards social media advertising and marketing activities are more positive. **Cheng** *et al.* (2009, p. 516) addressed three different attitudes; informative, entertaining and irritating, in the research they conducted in order to determine consumers' attitudes towards social media advertising, and revealed that consumers have seen their social media ads as informative, annoying and entertaining with their rankings. According to **Moon**'s study of attitudes toward *YouTube* video ads (2014, p. 28), the consumers who watched the advertising in high video quality held significantly more favorable attitudes toward the DVAs than those who watched the same advertising in low quality. Another research shows that (**Li**; **Lo**, 2015, p. 216); in-stream *YouTube* video ads interrupt consumers' video viewing experience and such interruption is likely to generate feelings of intrusiveness.

Additionally **Lee** and **Lee**'s (2011, p. 622) research data revealed that the more the participants believed watching online video ads would entertain them, the more positive were their attitudes toward the ads. Similarly **Gunawan** (2015, p. 420) found that for positive consumer attitudes DVAs must focus on making emotional impact. There are also some studies that show whether attitudes towards internet-based advertising vary according to demographic factors such as age, gender, and education. **Schlosser**, **Shavitt** and **Kanfer** (1999) found that younger consumers have more positive attitudes towards advertising, in comparison to other age groups. Similarly, according to the research results of **Chu** and **Kim** in 2011, university students and young consumers are more positive towards social media ads than other age groups (**Gaber**; **Wright**, 2014, p. 56). Several studies have examined the relationship between gender differences and attitudes towards advertising. Most of the past research suggests that male consumers, unlike female ones, tend to have more positive beliefs and attitudes towards advertising including specific types of advertising, for example web advertising, and positive reactions to advertisements as well (retrieved from **Milaković**; **Mihić**, 2015, p. 413). According to the research results of **Wolin** and **Korgaonkar** (2003); men have more positive attitudes towards internet based advertising than women. However, if ads are irritating, positive attitudes are affected negatively (**Cheng** *et al.*, 2009, p. 507). There is an important connection between the level of education of a consumer and his response to the advertising message, and the level of education influences the perception and understanding of the content of the message and the choice of advertising media. According to **Shavitt**, **Lowrey** and **Haefner** (1998); less-educated people generally report more positive attitudes towards advertising and the enjoyment they have from the ad is greater than more educated people.

4. Research model and hypotheses

In his researches aimed at revealing attitudes towards internet-based advertising by consumers, **Ducoffe** (1996) defined antecedent factors, which help consumers develop their attitudes, as informativeness, entertainment and irritation, and formed the attitude model for advertising with these factors included in message content. **Brackett** and **Carr** (2001) also add to the reliability of these models by developing the model variables. Since attitudes toward advertising in general can explain individuals' attitude toward online

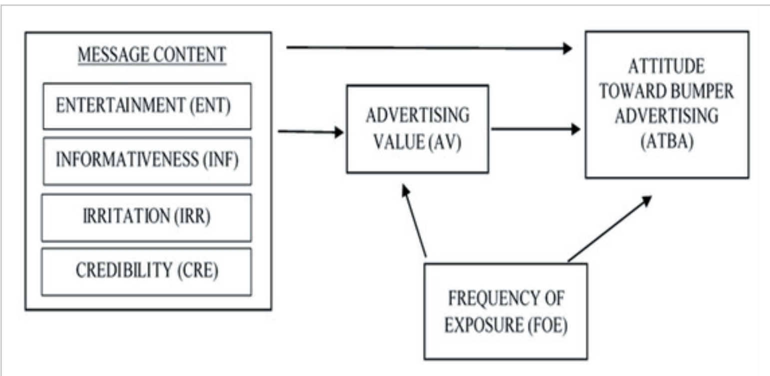

Figure 1. Conceptual model (developed from **Brackett** & **Carr**, 2001)

advertising to a large extent (**Souiden**; **Chtourou**; **Korai**, 2017, p. 210) this study strives to determine the attitudes towards bumper advertising.

In the light of all these data, the conceptual model used to determine consumers' attitudes towards bumper advertisements is given in Figure 1.

4.1. Advertising value and attitude toward bumper advertising

Ducoffe's 'Advertising value model' is mostly used for explaining consumer attitudes toward advertising. In his model Ducoffe defined advertising value as

> "a subjective evaluation of the relative worth or utility of advertising to consumers" (**Ducoffe**, 1995, p. 1).

In his model (1996), Ducoffe states that web advertising value has a significant influence on attitude towards web ads. In the light of all these data, the following hypothesis is proposed in the study;

H_1: A high advertising value is "positively" correlated with a positive attitude towards bumper ads.

4.2. Entertainment - advertising value and attitude toward bumper advertising

Ducoffe (1995; 1996) states that entertainment is one of the major antecedents that contributes to consumers' evaluations of advertising values and attitudes towards the web ads. Entertaining, which can be defined as the level of enjoyment contained within the advertising message, often includes features such as humor, music and play, which also affect the consumer's attention to remain in the message. Especially nowadays, advertising messages presented via mobile applications and internet are highly entertaining (**Le**; **Nguyen**, 2014, pp. 91-92), and research shows that consumers develop positive attitudes about advertising as they enjoy it and find it entertaining (**Bauer** *et al.*, 2005, p. 188; **Tsang**; **Ho**; **Liang**, 2004; **Zernigah**; **Sohail**, 2012, p. 649). The studies of **Tsang**, **Ho** and **Liang** (2004, pp. 67, 71) have shown that the most important factor that has helped consumers to develop positive attitudes towards advertisements has been entertainment, ahead of other factors; credibility, irritation and informativeness. The following hypotheses have been proposed in the framework of this information;

H_{2a}: A high entertainment factor of an advertising message is positively correlated with a 'positive' attitude towards advertising via bumper ads.

H_{2b}: A high entertainment factor of an advertising message is positively correlated with a high advertising value.

4.3. Informativeness - advertising value and attitude toward bumper advertising

Ducoffe (1995, 1996) states that informativeness is one of the factors contributing to consumers' evaluations of advertising values and attitudes towards the web ads. Ducoffe defines informativeness as the ability of advertisers to inform buyers about product alternatives and to provide them with the most satisfying buying behavior. Shown as the greatest income consumers can obtain from advertisements, information can determine the direction of consumers' attitudes towards advertising. In other words, how positive the consumer views the ads is in direct ratio to how much the advertising responds to the consumers' information needs (**Saadeghvaziri**; **Khodadad-Hosseini**, 2011, p. 397). Internet-based advertisements can be considered more informative than other advertisements because they provide consumers instant access to up-to-date information and different types of information, and they can present information about new products and services instantly. The informativeness factor has a direct impact on the attitudes that consumers have developed for internet-based advertising. This effect is due to providing information to consumers and helping them make purchasing decisions (**Tsang**; **Ho**; **Liang**, 2004). The more informative the advertising message is, the more positive the attitude is (**Brackett**; **Carr**, 2001, pp. 30-31, **Zernigah**; **Sohail**, 2012, p. 656). According to the findings of **Zernigah** and **Sohail** (2012, p. 657); the most important factor that has enabled consumers develop positive attitudes towards advertisements has been informativeness, taking precedence over other factors; reliability takes second place while entertaining takes last place. Therefore, the following hypotheses are suggested in the study;

H_{3a} High informativeness of an advertising message is positively correlated with a 'positive' attitude toward advertising via bumper ads.

H_{3b} High informativeness of an advertising message is positively correlated with a high advertising value.

4.4. Irritation - advertising value and attitude toward bumper advertising

Ducoffe (1995; 1996) states that irritation is one of the antecedent factors contributing to consumers' evaluations of advertising values and attitudes towards the web ads. **Ducoffe** (1996, p. 22) describes irritation as an emotional state that occurs when advertising messages are offending, irritating, disturbing, confusing, and manipulative; while **Brackett** and **Carr** (2001) argue that this factor arises when consumers' intelligence is offended, and when they are exposed to messages in irritating patterns and frequencies. Although internet-based ads are as irritating as those exposed in traditional medium (**Le**; **Nguyen**, 2014, p. 92), **Tsang**, **Ho** and **Liang**'s study showed that, if advertising messages are defined by consumers as irritating, their attitudes towards advertising are negative, and there is a negative relationship between them. Given this data, the following hypotheses are proposed in the study;

H_{4a}: Irritation of an advertising message is negatively correlated with a 'positive' attitude towards bumper ads.

H_{4b}: Irritation of an advertising message is negatively correlated with a high advertising value.

4.5. Credibility and attitude toward bumper advertising

According to **Brackett** and **Carr** (2001), reliability is the most important and critical factor affecting consumer attitudes and advertising value for internet based advertising. It is defined by **Mackenzie** and **Lutz** (1989, p. 51) as a cognitive experience that comes out as a result of the perception that either the advertisement or the commitments of the brand in it are not real, credible or fair. According to **Haq** (2009, p. 214), reliability can be the source of the message, not just the advertising message that affects it, and in this context, internet-based ads are less reliable than those communicated through traditional channels. Research by **Kelly**, **Kerr** and **Drennan** (2010) also supports **Haq** (2009) and shows that if young people do not find social media ads as trustworthy, they get away from them and ignore them. The studies of **Brackett** and **Carr** (2001), **Zernigah** and **Sohail** (2012), and **Tsang**, **Ho** and **Liang** (2004) have shown that there is a positive relationship between the reliability factor and the attitude toward advertising, that the more the consumers find advertisement messages reliable, the more their attitudes towards those messages get positive. Given this data, the following hypotheses are proposed in the study;

H_{5a}: High credibility of an advertising message is positively correlated with 'positive' attitude toward bumper ads.

H_{5b}: High credibility of an advertising message is positively correlated with a high advertising value.

4.6. Frequency of exposure - advertising value and attitude toward bumper advertising

Advertising frequency influences consumers' attitude towards advertising (**Chih-Chung** *et al.*, 2012, p. 358). As the quantity of ad messages rises, the attitude towards the advertising worsens (**Haghirian**; **Madlberger**, 2005). According to **Haghirian** and **Dickinger**, the number of advertising messages received via mobile devices is an important factor that influences the advertising value for the consumer (**Haghirian**; **Madlberger**, 2005). Since there is no empirical evidence on the relationship between web advertising frequency and advertising value, this research has formed these hypotheses based on the above findings.

H_{6a}: Frequency of exposure of an advertising message is negatively correlated with a 'positive' attitude toward bumper ads.

H_{6b}: Frequency of exposure of an advertising message is negatively correlated with a high advertising value.

5. Research design

The main objective of this research is to uncover factors determining the attitudes of internet users in Turkey towards bumper ads. According to *We are social* 2018 data, there are 54.33 million active internet users in Turkey, of which 51 million are active social media users (**Kemp**, 2018). According to the January 2018 data, internet users watch online video, 95% in Turkey, and rank 2nd in the world with this ratio (*Statista*, 2018c). Turkish internet users spend 7 hours 9 minutes a day on the internet, and spend 2 hours 48 minutes on social media (*We are social*, 2018). The most actively used social media platform in Turkey is *YouTube* with 55% (**Kemp**, 2018). The 18-49 age group prefer *YouTube* channels to traditional TV channels (**O'Neil-Hart**; **Blumenstein**, 2016; **Hamedy**, 2016). To reach active *YouTube* viewers in study's framework, participants aged between 18 and 49 were targeted. However, reaching to the right audience who are exposed to bumper ads and consuming *YouTube* content extensively was challenging for researchers due to the low response rates to online surveys. Consequently, the sample of the study was formed by snowball sampling method, which is a non-probability sampling technique and often employed when no sampling frame can be constructed as in this study, due to the structure of the study population. Snowball sampling is based on a referral approach where a small number of participants with specific characteristics recruit other participants with same characteristics from their networks or community. Thus, it is considered as a suitable method in studies lend on credibility to research, due to the fact that study participants would likely know other people in the same situation as themselves and help them to overcome fear and mistrust, which, in turn, ensures access. Based on this rationale, snowball sampling was chosen as the main method for this research.

Reaching to the right audience who are exposed to bumper ads and consuming *YouTube* content extensively was challenging for researchers due to the low response rates to online surveys

5.1. Sampling design and data collection

In the first step, a small group representing the research sample was reached and invited to participate in the survey. About one third of the participants received the questionnaire directly from the researchers (primary participation rate is 32%, n=271) In the second stage, the study team gently asked primary participants whether they would be willing to pass the survey form they just completed to others who may be interested of eligible. Rest of the participants with similarities in terms of their demographic characteristics and habits of consuming internet video, received the survey invitation indirectly via primary participants from a web addressee (secondary participation), if they are approved by the primary participant for possible inclusion. To defense against the lack of “sample diversity” in the study and ensure that the initial set of respondents is sufficiently varied researchers strategically began the sample with seed that are diverse as possible in terms of demographic and socio-economic variables, which was a necessary condition for valid research findings. By this means, the sample was created by enlarging with the effect of snowball, which increased the sample size and its representativeness (**Bailey**, 1987, p. 96).

The questionnaire consists of three parts. In the first group, participants were asked about the frequency of *YouTube* exposure and exposure to *YouTube* ads, measured by a 5-point Likert rating (Always, Very frequently, Occasionally, Rarely, Very rarely, Never). In the second part of the questionnaire, in order to determine the effect of informativeness, entertainment, irritation and credibility variables on consumer attitudes towards bumper advertisements, scales consisting of 19 statements were taken from the studies of **Soh**, **Reid** and **Whitehill-King** in 2009, named “Measuring trust in advertising: Development and validation of the adtrust”, and **Cheng** *et al.* in 2009 named “Consumer attitudes and interactive digital advertising”. For the attitude variable, three statements were taken from the scale of **Xu** and **Li**’s (2014) work “Advertising in new media: Exploring adoption of location-based mobile application advertising”. The three statements of Advertising Value were taken from the work of **Ducoffe** (1995), “How Consumers Assess the Value of advertising”. In the third group, questions about demographic characteristics were included. A visualization was prepared to remind participants what type of advertising is “bumper advertising”, which was a new internet advertising campaign. There were 34 items in the questionnaire, 25 of which belonged to the scales used. Statements in the questionnaire were prepared with Likert rating of 5 (5-Strongly agree, 4-Agree, 3-Undecided, 2-Disagree, 1-Strongly disagree). Please refer to Table 1 for further details on the measures applied.

Once created, the survey was transferred to *Google Forms*
https://docs.google.com/forms

The questionnaire was distributed in social networking sites and forums between July 5, 2018 and July 27, 2018. Participation was voluntary and the survey completion process took approximately 10 min. The study received 847 responses. As all participants completed the full survey, the completion rate was 100%. There was not any invalid questionnaire and all 847 questionnaires were usable. Data were analyzed using *SPSS 22.0*. In some cases, some scale expressions were encoded in reverse.

Table 1. Properties of purified measures

Measures	Items	Mean	Std. deviation	Variance	α
Message content (MC)					
EN	5	1.96	.883	.779	.880
INF	6	2.75	1.005	1.011	.920
IRR	4	3.59	.868	.754	.737
CRE	4	2.44	.914	.836	.913
AV	3	2.72	.880	.774	.823
ATBA	3	2.24	.989	.978	.851
FOE	1	4.40	.714	.509	-

6. Findings

Demographic data showed that males made up 37.4 percent of the sample and 94.6 percent of respondents were 18 to 49 years old. The vast majority of participants were undergraduate (61.9%) and graduate (30.2%) and had middle to upper middle income level (83.9%). Compared with a representative sample of the Turkish general public, our snowball sample is younger, and highly educated. Of these participants, 43.3% rated watching *YouTube* videos “frequently” and 35.6% “occasional” when one day duration was considered. Nearly all of the participants (98.8%) stated that they were exposed to watching *YouTube* videos and rated their frequency as “always” at 49% and “often” at 44.6%. 97.8% of respondents preferred to skip a *YouTube* ad, if possible.

Table 2. Results of hypotheses tests

H_1 (AV)		.863**
H_{2a} and H_{2b}:(ENT)	.640**	.563**
H_{3a} and H_{3b}: (INF)	.449**	.583**
H_{4a} and H_{4b}: (IRR)	-.301**	-.394**
H_{5a} and H_{5b}: (CRE)	.410**	.515**
H_{6a} and H_{6b}: (FOE)	-108*	-133**

*p < .05, ** p < .01

The results of the hypothesis test are given in Table 2. Accordingly, it was found that all the independent variables (ENT, INF, IRR, and CRE) that determined the message content and the AV and ATBA dependent variables were significantly correlated. Given this data, it is seen that as the levels of informativeness (r = .449, p < .01), entertainment (r = .640, p < .01) and credibility (r = .410, p < .01) were increased, the value assigned to advertisement also increased positively. However, the increase in the incidence of irritation (r = -. 301, p < .01) and exposure to advertising (r = - 108, p < .05) affected this value negatively. Likewise, significant correlations between ATBA and ENT ($r = .563$, $p < .01$), INF ($r = .583$, $p < .01$), IRR ($r = -.394$, $p < .01$), CRE ($r = -.515$, $p < .01$), and FOE variables were also determined.

When we look at the relationship between AV and ATBA, it is seen that there is a strong correlation ($r = .863$, $p < .01$) between these two variables in the positive direction. This shows that as the value of advertising rises, the attitude toward bumper advertisements is also positively affected.

Table 3. Summary of multiple regression analysis for variables predicting attitudes toward bumper ads

Source	Standardized b	t	p
AV	.703	25.634	.000
INF	.161	4.714	.000
ENT	.102	3.155	.002
IRR	-.072	-2.823	.005
CRE	.021	.639	.000
FoE	-.025	-1.124	.000
(R^2): .806			

*$p < .05$, **$p < .01$

Multiple regression analysis was conducted to investigate the relationship between the attitude towards bumper advertisements, which was the dependent variable in the model, and the independent variables correlated with each other. The assumption of normal distribution and linearity, which are assumptions of regression analysis, were fulfilled.

A multiple linear regression was calculated to predict ATBA based on CRE, INF, ENT, IRR, FOE and AV (Table 3). A significant regression equation was found [$F(6.390) = 270.271$ $p < .000$], with a R2 of .806. Participants' predicted ATBA is equal to .164 + .023 (CRE) + .161 (INF) + .116 (INF) + .790 (AV) -.084 (IRR), -.043 (FOE). All of which were significant predictors of attitude towards bumper ads.

7. Discussion and conclusion

7.1. Antecedent factors of attitudes towards bumper ads and ad value

This study attempted to investigate antecedent factors of consumer attitudes toward bumper ads. According to the findings obtained from the research, the H_1 hypothesis was supported and a positive and significant correlation was found between the advertising value and the attitude toward the bumper ads. The results of the research support Ducoffe's data in 1996, and it was seen that bumper advertising value had a significant influence on attitude toward bumper ads.

According to the findings obtained from the research; H_{2a} was supported and there was a positive and significant correlation between advertisements entertainment value and consumer attitudes. According to this, consumer attitudes towards these advertisements were also positively affected as the entertainment value of the bumper advertisements increases. The results of this study are in parallel with **Le** and **Nguyen** (2014), **Bauer** *et al.* (2005), **Tsang**, **Ho** and **Liang** (2004), and **Zernigah** and **Sohail**'s (2012) research findings. In this context, it can be said that the bumper advertisements' quality of being entertaining is an important factor on consumer attitudes towards these advertisements. According to the findings obtained from the research, H_{2b} was supported and there was a positive and significant correlation between the entertainment value of the advertisement message and the advertising value. According to this, as the entertainment level of the bumper advertisements increases, the advertising value of the consumer is also affected positively. The results of this study are in line with the findings of **Ducoffe** (1995; 1996) in the literature. In this context, it can be argued that the entertainment value that exists in bumper advertisements contributes to the consumers' evaluations about the advertising value.

> Consumer attitudes towards these advertisements were also positively affected as the entertainment value of the bumper advertisements increases

According to the findings obtained in the study, H_{3a} was supported and there was a positive and significant correlation between informativeness and attitudes. According to this, consumer attitudes towards these advertisements were also positively affected as the level of informativeness of the bumper advertisements increases. These results are parallel to the findings of **Brackett** and **Carr** (2001), **Zernigah** and **Sohail** (2012) and **Tsang**, **Ho** and **Liang** (2004) in the literature. In this context, it can be said that informativeness has a significant influence on attitudes towards bumper advertisements.

According to the findings of the advertisement message obtained from the research, H_{3b} is supported and there is a positive and significant correlation between the informational value of the advertisement message and the advertising value. According to this, as the level of informativeness of the bumper advertisements increases, the advertising value of the consumer is also affected positively. The results of this study are parallel to the findings of **Ducoffe** (1995; 1996). In this context, the information available in bumper advertisements can contribute to consumers' evaluations of advertising values.

> As the level of informativeness of the bumper advertisements increases, the advertising value of the consumer is also affected positively

The survey results show that H_{4a} is supported. A negative and significant correlation was found between the irritation value of the advertising message and the positive attitudes towards advertisements. According to this, consumer attitudes towards these advertisements are adversely affected as the level of annoyance of the bumper advertisements increases. It is seen that these results are in parallel with the results of **Brackett** and **Carr** (2001), **Le** and **Nguyen** (2014) and **Tsang**, **Ho** and **Liang** (2004) in the literature. According to the findings obtained from the research, H_{4b} was accepted and there was a negative and significant correlation between the annoyance level of the advertisement message and the advertising value. According to this, as the annoyance level of the bumper advertisements increases, the advertising value is affected negatively. The results of this study are in line with the findings of **Ducoffe** (1995; 1996) in the literature. In this context, the annoyance level of bumper advertisements can be said to contribute to consumers' evaluations of advertising values.

> A negative and significant correlation was found between the irritation value of the advertising message and the positive attitudes towards advertisements

According to the findings obtained in the study, H_{5a} was accepted and a positive and significant correlation was found between reliability and attitudes. According to this, consumer attitudes towards these advertisements are also positively affected as the level of reliability of the advertisements increases. These findings are directly related to the results of **Brackett** and **Carr** (2001), **Kelly**, **Kerr** and **Drennan** (2010), **Haq** (2009), **Zernigah** and **Sohail** (2012) and **Tsang**, **Ho** and **Liang** (2004) in the literature. In addition, a positive and significant relationship was found between the reliability of the bumper advertisements and the advertising value in the study, and H_{5b} was supported in this context. As the credibility of the bumper ads increases, the advertising value is also positively affected. These findings are in line with the results of the research by **Brackett** and **Carr** (2001) in the literature. In this context, the reliability of bumper advertisements can be said to contribute to consumers' evaluations of advertising values.

7.2. The importance of frequency on attitudes towards bumper ads and ad value

The H_{6a} hypothesis was supported according to the data obtained from the study. A negative correlation between advertising exposure frequency and a positive attitude for bumper advertisements was found. According to research data, as the frequency of exposure to bumper advertisements increases, the positive attitude towards these advertisements also decreases. In this context, as the frequency of exposure to the advertisement increases, consumers' discomfort level increases and the level of positive attitude for advertising decreases. This data is similar to the findings in the literature (**Chih-Chung** *et al.*, 2012, p. 358; **Haghirian**; **Madlberger**, 2005; **Haghirian**; **Dickinger**). The H_{6b} hypothesis is also supported. Negative correlations were found between the advertising value and the advertising exposure frequency. These findings are parallel to the findings in the literature.

7.3. The role of demographic variables on attitudes towards bumper ads and ad value

According to research findings, there was no significant correlation between the age and the education level of participants and attitudes towards bumper ads. Although findings in the literature indicate a relationship between age and attitudes towards advertising (**Schlosser** *et al.*, 1999; **Chu**; **Kim**, 2011; **Gaber**; **Wright**, 2014, p. 56), the data obtained are not parallel to these findings. In parallel, there was no correlation between AV and age variables. The findings of **Ducoffe** (1996) are not parallel to the findings obtained. Although Ducoffe has established a relationship between the advertising value of internet advertising and age, this relationship is not found in the data obtained for bumper advertisements.

According to the results of T test, ATBA (P = 588) and AV (P = 499) values did not differ according to sex. This finding differs from the findings of **Milaković** and **Mihić** (2015, p. 413), **Wolin** and **Korgaonkar** (2003); **Cheng** *et al.* (2009, p. 507), which takes place in the literature.

> There was no significant correlation between the age and the education level of participants and attitudes towards bumper ads

Participants did not evaluate the bumper advertisements as entertaining (M = 1.96, SD = .883), informative (M = 2.75, SD = 1.005) or reliable (M = 2.44, SD = .914). It can also be concluded that participants were more likely to find bumper ads annoying (M = 3.59, SD = .868). In parallel, the advertising value variable, which is the determinant of the attitude toward bumper ads, shows that participants did not find the bumper advertisements worthwhile (M = 2.72, SD = .880). It can be said that the negative attitudes of participants to bumper ads (M = 2.24, SD = .989) stem from bumper ads' not being informative, fun, reliable or worthwhile. The results of the multiple linear regression test and the hypothesis test, which reveal the relationship between the variables in the model, also support these findings. Looking at the parameters of the model's explanatory level (R^2:803), it can be said that the participants can explain their attitudes towards the bumper advertisements at a high level.

As previously stated, the goal of this research was to reveal the level of attitude towards bumper ads, and the variables that constitute it. Clearly, this goal has been achieved as reflected above. It is a fact that *YouTube* makes its own metrics, and delivers these metrics to "ad buyers", offering them their own video ads as very profitable and successful solutions, and "ad buyers" are not satisfied with this and expect more transparency from *YouTube*. Consumer research on *YouTube* video ads shows that *YouTube* data is unilateral and manipulative. The ability of ad buyers to effectively advertise is largely dependent on the research results of consumers. Since consumer attitudes play a major role in predicting advertising effectiveness (**Mehta**, 2000) and advertising value has a significant influence on attitude towards web ads, this study is important for determining the attitudes of ad buyers towards bumper ads, and their advertising value, and showing to ad buyers how bumper ads can become more effective. The research shows that, without demographic differences, consumers do not find bumper advertisements entertaining, informative or trustworthy, which affects their attitudes. The research data suggest that the frequency of exposure to the bumper advertisements should be correctly regulated in order to increase the positive attitude towards bumper advertisements. It may be argued that, in this framework, *YouTube*'s adoption of an imaging model that will make the frequency of exposure to bumper advertisements is more reasonable for viewers. Also, brands will not disturb the consumer by differentiating the advertising content and provide them with more informative, entertaining and reliable content that will increase the positive attitude towards the relevant ads.

8. Limitations and future research directions

The study had several limitations. Choosing *YouTube* as the platform avoids the possibility of representing user experiences and perceptions with other multifarious digital video websites. There are many video sites using bumper advertising and the advertisements used may have different underlying principles. Further studies covering other video advertising media should be undertaken like *Facebook*, *Google*. In addition, the narrowness of the demographic qualities of the participants, and that the participants are chosen from Turkey is another limitation. In this context, it is important to continue the validation of the model by examining the factors that determine attitudes towards video ads in future studies on groups with different demographic and cultural backgrounds. In this study, the attitude towards bumper advertisements in the consumer dimension was examined, and the opinions of the brands about the consumer perceptions after the advertisement and the opinions about the brand were not included. In future studies, how consumers' opinions differ before and after an advertisement can be researched by making them watch bumper advertisements of a certain brand. Moreover, testing different metrics to analyze the effectiveness of bumper ads might be an aim for further studies. Considering different campaign objectives in advertising such as impact, positioning, brand or product awareness would require different metrics to be tested. In this respect, this study should be considered as a basis for further studies, due to the fact that it approaches the issue in terms of customers' positive attitudes only.

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A copyright overview

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Abstract

Review of the main concepts about copyright. Among the topics discussed are: ownership, joint ownership, assignments, licenses, permissions, infringements, exceptions, unpublished works, orphan works, artificial intelligence generated work rights, patents, trade marks, performers rights, moral rights, *Sci-Hub*, risk management and calculation, etc.

Keywords

Copyright; Exceptions to copyright; Infringements; *Sci-Hub*; Licenses; Orphan works; Databases; Moral rights; AI-created works.

1. Introduction

Copyright has influence on everything scholars and library and information practitioners do, including developing and giving talks, and writing or using articles, reports, books and other materials, including those in digital form. It also has an impact on those that serve the scholarly community, such as funders and publishers. This article covers the basics of copyright law from a UK perspective (other countries' laws are similar, but not identical), and other intellectual property rights of relevance before examining a few examples of how the law impacts some stakeholders. There is no easy textbook on copyright and related rights. However, a free of charge user-friendly introduction including text, video and other teaching aids has been produced by *copyrightuser.org*:
https://www.copyrightuser.org

An approachable official overview of UK copyright basics can be found at:
https://www.gov.uk/topic/intellectual-property/copyright

whilst similar information about local copyright laws can be found at the web sites of many other national copyright offices. *Rights Direct* has produced a good summary of copyright principles throughout the world:
https://www.rightsdirect.com/international-copyright-basics

2. What is copyright?

Copyright is an automatic right, which is created as soon as anyone makes something that is new –in other words, that has not been directly copied from something else, or represents only a minor change to something else[1]. Some countries require a form of registration, e.g., deposit of a copy of a literary work in a national library. The USA is unusual in that it requires registration of copyright with the *Copyright Office* before one can start litigation over infringement of works or the award of damages for such infringements. This requirement seems to contradict the internationally agreed *Berne Convention* on copyright, which requires no formalities at all, but does not seem to have been challenged. A brief description of the registration requirement and its value can be found at:
https://en.wikipedia.org/wiki/Copyright_law_of_the_United_States#Registration_procedure

whilst **Dukes** and **Killen** (1994) have written an introduction to US copyright law.

Copyright can apply to a wide range of artefacts, but of particular relevance to scholars are words (as in this article or in a book, and sometimes called “literary works”, though there is no requirement for literary merit), numbers (as in research data), images such as photographs, paintings and drawings, (also known as “artistic works”, though, again, there is no requirement that they must have artistic merit.) Another category is moving images (as in, for example, a film or video). There is also protection for sound recordings, for dramatic works (such as the text of a play) and for musical works. At the moment, copyright only protects products of the human mind, whether created in a few seconds or the result of years of effort. There is no copyright in things produced by nature, or by other living organisms. There is a question regarding things produced by computers; arguably purely computer-generated outputs where there has been no human input apart from the original programming effort (where there would be copyright in the software) do not enjoy copyright, but this is an area where novel copyright concepts might emerge in the future. I discuss copyright and artificial intelligence later in this article.

Countries differ somewhat on what outputs of the human mind might be protected by copyright. Some countries classify copyright works into formal headings, e.g., literary works, artistic works, sound recordings as listed above, whilst others simply demand protection for works of the human mind, without classifying them. All countries require, whether explicitly or implicitly in their laws, that the protectable subject matter must be fixed in some way, though they might not specify a minimum length of time for fixation or the medium on which the fixation occurs. Some countries’ laws further require that the creator (or someone authorised by the creator) must carry out the fixation. Indeed, sometimes if an unauthorised person carries out the fixation (say they tape record a live music performance contrary to the performers’ wishes), they have indeed created a copyright work, but in doing so they will have infringed the performers’ rights. If two people totally independently create something identical (say a poem), then both authors will independently own copyright in the work.

Creativity

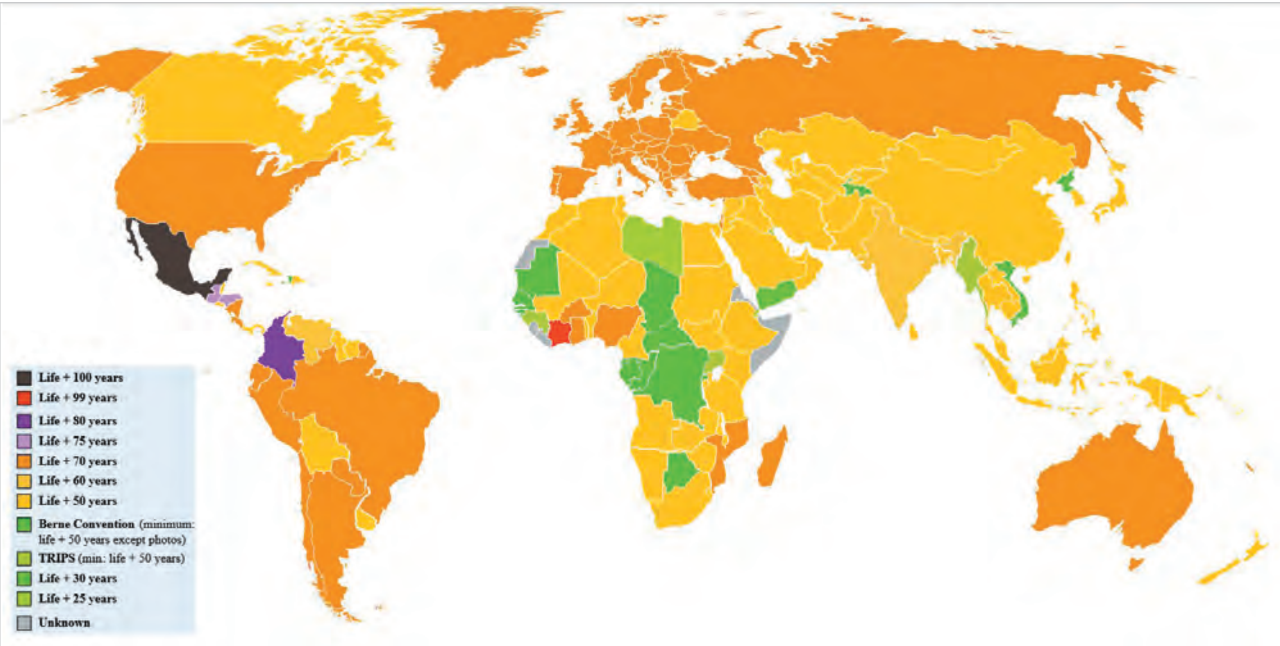
To enjoy copyright, the item created must involve a minimum of creativity. Thus, a simple photograph of (say) a statue will not enjoy copyright, but if the photographer used skill and judgement on lighting, exposure time, etc., then it will enjoy copyright. As the well-known *Infopaq* case (decided by the *European Court of Justice*) confirmed, even a sentence comprising 11 words can enjoy copyright[2]. Rosati has provided background on *Infopaq* and its implications (**Rosati**, 2011).

The © sign

In general, there is no requirement to put a copyright notice or a “©” attached to the artefact, though it is often useful to do so to flag up a warning to third parties.

Lifetime

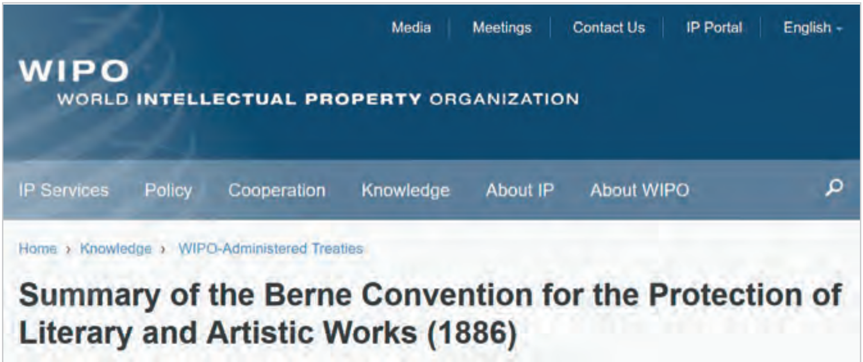
In most countries in the world, the lifetime of copyright for published works is often (but not invariably) 70 years after the end of the year when the creator died. *Wikipedia* has created a list of lifetimes in countries:
https://en.wikipedia.org/wiki/List_of_countries%27_copyright_lengths



https://commons.wikimedia.org/w/index.php?curid=20388347 but one should not rely 100% on the list, as it simplifies what are often complex rules, and ignores some classes of protected creations. Unfortunately, there are numerous special cases, and the nature of what makes it a special case and the resulting lifetime varies from country to country. These are not considered further here, but just as examples, there are special rules for jointly created works, for anonymous or pseudonymous works, and for works that are "unpublished". "Unpublished" refers to works that have not been available to the public or a significant sub-set of the public, whether for free or for a fee. The copyright lifetime for unpublished works can be exceptionally long. Unpublished works include letters, preliminary artwork, unpublished data, many photographs and much else. To give an example, unpublished works (whether the author is known or unknown) are protected in the UK by copyright until the end of 2039, no matter when they were first created[3]. Thus, even a 14th century private letter will still be in copyright in the UK (and in some other countries). By contrast, published works include a large proportion of the material a scholar typically encounters, or creates, on a daily basis. There are also special rules for so-called "orphan works", i.e., works that are in copyright but no one can trace who the owner is. Orphan works are discussed further below.

Similarity among copyright laws

Although copyright laws have different origins depending on the country and its particular legal traditions, whether with a civil law tradition or a common law tradition, in practice, copyright laws in every country in the world are very similar. It is for this reason that international copyright agreements are widely accepted. For example, virtually all the countries of the world are signed up to an international convention (the *Berne Convention*) that sets ground rules for national copyright laws. It sets the minimum term at life plus 50 years, but many countries have made the lifetime of copyright in their country longer, such as the life + 70 years noted above. One important aspect of the *Convention* is that copyright created in one country automatically gets protection in every other country. Thus, something created in, say, Japan, automatically has protection in the UK, and vice versa. More background on the *Convention* can be found at[2]:
https://en.wikipedia.org/wiki/Berne_Convention



https://www.wipo.int/treaties/en/ip/berne/summary_berne.html

Seville (2006) has written a readable account of the history of the development of international conventions in copyright.

Once the creator dies, any copyright they owned passes to their heirs and successors; ownership is discussed further below.

Ideas can't be copyrighted

Copyright does not protect ideas that have not been recorded in some way, or simple facts – more on the latter below. The former concept is known as "the idea/expression dichotomy," which embodies the proposition that copyright extends only to the expression of ideas in a work, not to the ideas themselves (**Dukes**; **Killen**, 1994, pp. 28, 30).

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Restricted acts

The most important right that comes with copyright is the right to do, or authorise others to do, so-called "restricted acts". These acts include:

- copying the work (the so-called "reproduction right"),
- issuing copies to the public (the so-called "distribution right"),
- communication to the public by electronic or other means,
- renting or lending the work,
- performing the work (performers rights are considered below) and
- adapting the work (the so-called "adaptation" or "derivative works right").

These rights end when copyright in the work expires, and the work is then said to fall into the public domain, and anyone can do what he or she like with it. How one defines "the public" in these various rights varies from country to country.

Object ownership ≠ copyright ownership

Perhaps the most important point to make is: just because you own a physical object (or have access to it in some electronic form) does not mean you own the copyright in it, and so, you are not necessarily free to do things such as reproducing it without express permission. Thus, just because an individual owns a copyright work (say a painting), does not mean they can (say) create and sell postcards or images of that work. All they are entitled to do is sell or give away the item they own, if they so wish, and/or display the item. This rule, first established in the *Pope v Curll* case in England in 1741, is accepted worldwide (**Brennan**, 2015). Curiously, it seems that Pope deliberately conspired with Curll to have the latter publish a "pirated" edition of Pope's own writings to establish this legal precedent! (**Feather**, 1994).

> Just because you own a physical object (or have access to it in some electronic form) does not mean you own the copyright in it

Copyright applies to electronic materials in the same way as it does to more traditional materials. Thus, materials on the Internet are subject to the same rules as, say, printed or hand-written materials.

2. Ownership

The first owner of the copyright in a creation is normally the creator. However, if an employee creates the work in the normal course of their employee duties, or if a third party has specially commissioned the work, then in many countries (but not all), copyright in what is created automatically belongs to the employer or whoever commissioned the work. Some countries have special rules for jointly authored software, or audiovisual outputs where the numbers of people involved in the creation may be in the hundreds.

Copyright in something created by a scholar at home in the evenings or weekends will still belong to their employer if the creation was part of the employee's expected duties. Equally, copyright in something created by an employee during work time and using their employer's resources, but is nothing to do with their expected duties belongs to the employee. Of course, the employer would be perfectly entitled to dismiss the employee for not doing their employee duties, but the copyright would still stay with the individual. This raises interesting questions regarding what an employee can take away with them when they change jobs, or end their employment. Are they entitled to make copies of, or remove the originals of, materials they created whilst in the earlier employment? Strictly speaking, the answer is "no", but some employers might turn a blind eye to what copyright materials that they created an ex-employee takes away. Copyright in text written by an author for a publisher is discussed further below. Any employee-created materials ceases to enjoy copyright if more than the standard rule years for copyright in the country it was created have passed since the employee died. Joint authorship rules vary from country to country, as do the rules regarding what one author of a jointly created work can do in terms of granting permission to third parties to copy the work.

> Copyright in something created by a scholar at home in the evenings or weekends will still belong to their employer if the creation was part of the employee's expected duties

3. Assignments and licences

Whoever owns the copyright in a creation is entitled to either pass the ownership over to a third party (assignment) perhaps for money, or to give permission to third parties to do some or all the possible restricted acts, again perhaps for money (licensing) if they so wish. It is worth noting that a licence can be an explicit written agreement, or can be implied from custom and practice. In contrast, an assignment has to be in writing. Such agreements, whether a licence or an assignment, often happen when an individual writes an article for a journal, or writes a chapter for, or writes an entire book. If a book contains an index that has been created by someone else (such as a professional indexer), the copyright in that index belongs to the person who created the index in the first instance, but typically will be assigned or licensed to the publisher or author for a fee. Incidentally, if an index (or indeed any other creation) has been created with the help of software, it is not the software creator who owns the copyright, but the person who programmed it.

In some cases, a licence can be implied by the actions (or lack of actions) by a copyright owner in response to re-use of their materials. It is always best, however, to have a formal contract signed by the interested parties in place. Reproduction of materials in an article, report or monograph (whether in print or electronic) may well involve using third party materials with perhaps multiple copyright owners. A person wishing to reproduce such materials might have to approach several different parties for permission to do so. It is worth noting that sending a copyright owner a message along the lines of "unless I hear to the contrary I shall assume you have no objections to me reproducing the item" has no legal validity.

Where there is joint ownership, such as with a jointly authored article or book, then each party has rights and responsibilities, which, in turn can sometimes mean one of the owners, cannot do things with the work without the permission of the other owner(s). This is a complex legal area and is not discussed further in this article except to stress that for jointly authored materials, ideally, all the authors should come to an agreement at the outset regarding copyright ownership of their creations.

> What an employee can take away with them when they change jobs, or end their employment?

4. Infringement and exceptions to copyright

If a third party does any of the restricted acts to all, or a "substantial part" (see below) of another person's work, without permission, that third party may well have infringed the copyright of the work. The copyright owner can then sue the infringer for damages, representing the financial loss for the copyright owner or the financial gain for the infringer, plus of course legal costs. In more severe or blatant cases, there may be criminal sanctions as well, such as fines or even prison. What is considered "substantial"? There is no fixed rule. Each case would be considered on its own merits; court cases have looked not at the proportion of the original that has been copied, but its importance. As noted earlier, the European *Infopaq* case deemed 11 words from a text was "substantial", and an earlier UK case decided one single frame from a film was substantial. With this, as with so many things in copyright, one has to make a judgement call.

The development of new ways to disseminate information by electronic means has led to new legal concepts to handle infringements caused in this way. Thus, many countries have introduced laws that give legal backing to so-called "Technical Protection Measures", or TPMs. These are software or hardware systems developed for use by rights owners to prevent unauthorised access to, or dissemination of, copyright materials. The laws that have been developed make it an offence to by-pass or disable such measures with the intention of infringement. The problem with such laws is that they may well prevent a person carrying out *bona fide* activities, such as something permitted under an exception to copyright (see below). National governments have responded differently to this problem, which seems to me to not be capable of easy resolution.

> It is worth noting that sending a copyright owner a message along the lines of "unless I hear to the contrary I shall assume you have no objections to me reproducing the item" has no legal validity

Exceptions

For good public policy reasons, the law allows certain activities that would otherwise be infringement to be done without having to ask for permission or having to pay any fees. These are known as exceptions to copyright. One should distinguish exceptions, which allow someone to do something that would otherwise be infringement because of the wording of the law, and limitations, which allow a person to do the infringing act but require payment at levels usually set by Government –in effect, compulsory licences. The discussion here focuses on exceptions. Under an exception, anyone can copy all, or a substantial part of a work, as long as it is for a permitted purpose (as specified in the local legislation) and as long as the copying does not damage the legitimate interests of the copyright owner. The three major permitted purposes in most countries (countries are not consistent in the way they have built exceptions into their laws) are:

- non-commercial research or private study;
- quotation of a small part; and
- criticism or review.

Many countries also include in their copyright law an exception for non-commercial educational purposes, and some have introduced, or are planning to introduce, one for text and data mining for non-commercial purposes. Text and data mining (TDM) involve the use of software to scan through large volumes of text or data in order to identify and extract trends in the use of particular words or data. It has widespread potential uses, but is currently hampered by the fact that in many countries, the initial downloading and/ storing of large volumes of text or data is potentially copyright infringement, even when the purpose of the mining is non-commercial. **Horvath** (2019) has written a short readable article on the background to a proposed EU-wide copyright exception to TDM.

A brief overview of the rationale behind exceptions can be found in a *Wikipedia* entry:
https://en.wikipedia.org/wiki/Limitations_and_exceptions_to_copyright

https://www.ifla.org/copyright-issues-for-libraries

> The European *Infopaq* case deemed 11 words from a text was "substantial", and an earlier UK case decided one single frame from a film was substantial

"Non-commercial" as a term used in copyright laws can cause a problem regarding its definition. It is normally understood along the lines of the intention of the activity is to create something that makes money, for example a priced monograph (where, in addition to the publisher earning income, the author may also earn royalties from sales). But there are many circumstances where the intention is not to make money, but perhaps to save expense, or where any money generated is incidental to the initial reason for carrying out the activity. Most, but not all media types are covered by exceptions to copyright. Quotation can be for any purpose, but what is being quoted should be relevant to whatever the argument the user of a quotation is making. Note that copying an item for criticism or review does not have to be criticising the item copied, and in any case "criticism and review" are terms that are interpreted generously.

In addition, libraries and archives typically have an exception allowing them to make copies of items for *bona fide* researchers, and even to charge for such a service if they so wish (not all libraries choose to levy charges for providing copies). It is likely that many readers of this article will have taken advantage of this or indeed may well offer such a service. Such library exceptions are typically restricted to the making of a single copy (printed or a photocopy) for any given patron. The law typically does not usually allow such copies to be in digital form, or to be delivered by electronic means, unless the scanning and delivery of the scan is to a single terminal, where it is then printed out for the library patron, and so long as the scan is then immediately deleted. If a library wishes to offer a service to provide copies of its holdings to patrons in digital form, including on multiple terminals to patrons on demand, typically it will have to obtain (and pay for) licences from publishers or other distributors.

https://www.gov.uk/guidance/copyright-orphan-works

In all cases of relying on exceptions, the person being sued (or threatened) for infringement would have to demonstrate that the copying was indeed done for one of the permitted purposes and did not damage the legitimate interests of the rights holder. Thus, an exception to copyright is a defence to be used if one is sued for infringement, or is threatened with legal action by the copyright owner, but is definitely not a guarantee of immunity.

Merely displaying a copyright item in, say, a presentation is not infringement as long as it is the original, and not a copy that is being shown. Showing a copy of a copyright work in a talk is also probably acceptable, as the action is likely to fall under one of the exceptions to copyright.

5. A particular problem: orphan works

Researchers in some disciplines, including, but not limited to, history and politics are more likely to encounter older works that are still in copyright than those in the hard sciences. This is either because it is less than 70 years since the creator died, or because the works in question are unpublished, such as letters and private reports, which, as was noted above, can have a surprisingly long copyright lifetime. Many of these will be so-called orphan works. Orphan works are works that are still in copyright, but where it is impossible to identify or track down the copyright owner, and so there is no one who can be identified to approach when seeking permission to carry out a restricted acts on that work. The problem applies to all media, including photographs, films, broadcasts and textual materials. However, all is not lost. They may well be justified in copying and reproducing the items under one of the exceptions to copyright noted above; the risk equation towards the end of this article may also be of assistance in such cases. Some countries, including EU member states, have special permissions and licensing schemes available –see, for example:
https://www.gov.uk/guidance/copyright-orphan-works

Useful background about the EU's initiatives can be found at:
https://en.wikipedia.org/wiki/Orphan_Works_Directive

However, it must be said that these schemes may not suit every user's needs.

6. Other intellectual property rights of relevance

Copyright is one of a collection of different legal rights that are collectively known as Intellectual Property Rights. Many of these are of limited or no relevance to scholars or information professionals, but are certainly potentially relevant to those involved in the history of, or are working on current developments in, a technology.

Patents

The first of these are patents. As a rule, copies of patents can be made for a talk, display or publication. Patent law requires that one should apply for a patent if one has made a worthwhile invention before publishing anything about it. If a so-called prior publication, such as a journal article describing the invention, has been published before the date a patent is applied for, then no patent for the invention will be granted. This is a complex, but important area of law, and anyone who encounters, or is likely to encounter, such patents for inventions should take specialist advice. There are, for example, specialist societies for the patent searching community, such as the *Patent and Trade Mark Group* of the *Chartered Institute of Library and Information Professionals* (*Cilip*) in the UK.

> Under an exception, anyone can copy all, or a substantial part of a work, as long as it is for a permitted purpose

Registered trade marks

Registered trade marks can also be important. These prevent unauthorised use of a registered name or logo (or anything confusingly similar to it) by third parties promoting similar goods or services. It would not usually be an infringement of a trade mark to reproduce it in a publication unless the article published is promoting a product or service whose trade mark is confusingly similar or identical to a registered trade mark for the same class of goods or services. Registered trade marks are registered in individual countries (there is an EU-wide mark as well). Again, there is useful background in *Wikipedia*:

https://en.wikipedia.org/wiki/European_Union_trade_mark

and when applying for such a mark one must specify the classes of goods and services the applicant wishes to have protection for. The lifetime of all trade marks is potentially infinite.

Performers rights

Performers rights are also important for anyone who gives talks, presentations or does acting, singing or playing musical instruments, or makes use of audiovisual materials containing such performances. This gives the presenter (who is automatically the owner in the absence of any agreement to the contrary) the right to prevent unauthorised recording of and/or dissemination of their performance.

Moral rights

Moral rights, which are not applicable in all countries, give a creator the right to be identified as the creator, and the right to object to derogatory treatment of their work, such as amending it in such a way that it damages the reputation of the creator. The lifetime of moral rights is generally the same as for copyright.

Database rights

Arguably, the most important right other than copyright for those involved in the creation and use of materials that LIS professionals handle is, however, database right. There is no copyright in a fact ("the Second World War lasted from 1939 to 1945"), but there can be protection, in the form of copyright and/or database right, for a collection of facts or of copyright works. Such a collection of items gets copyright if it is original by reason of the selection or arrangement of the materials within it, even if the selection and arrangement is minimally creative. Gaining protection for such a collection does not affect the copyright status of the items within the collection; depending on the amount of creativity involved in the original items, the age of the individual items, etc., each item may or may not separately enjoy copyright. A listing of (say), all breeds of dogs might well enjoy copyright because the creator has used their skill and judgement to decide if a particular dog is a separate breed, or is not. The author of a restaurant guide that awards points for food quality, value for money, etc., will have copyright in the collection of scores awarded, but cannot stop third parties from reproducing details, such as name, address, phone number or URL of the restaurants themselves. Those are individual facts that do not have any protection.

Any collection that involves little judgement in selection and arrangement is unlikely to enjoy copyright. However, such collections may well enjoy database right in those countries that offer it (primarily EU member states) if the creator has made a substantial investment in obtaining, verifying and presenting the contents. Database right does not last as long as copyright, and the penalties for infringement are not as harsh as for copyright infringement, but nonetheless it is a useful addition to the armoury of creators – and a hurdle to consider for users of such materials.

Registered designs

Registered designs, which protect the aesthetics of physical objects, are not considered further here, except to note that in some countries such objects are also protected by copyright. Preparatory artwork for such designs is usually considered artistic works under copyright law.

7. Implications for some specific stakeholders

Many libraries have explicit permission in law to make copies of items (typically in the form of photocopies or printouts) in their collections and to supply said copies to requestors under exceptions to copyright. The patron may have to fill out a form before they can get the copy. One problem that might arise is if a requestor needs a copy of an item for their commercial (as opposed to non-commercial) research.

Authors of books and articles must ensure that what they write is either not copied from a third party-owned source, or that they have permission to copy such third party text or images they reproduce –assuming, of course, that such copied material is still in copyright. Alternatively, if using third party material, one or more of the exceptions to copyright might cover the authors.

Book, journal, conference and magazine publishers should ensure that everything they publish is clear of potential copyright problems. They therefore will often require authors submitting material for publication to provide a warranty that confirms that nothing the author has supplied will infringe copyright (or any other law, such as data protection, defamation, and official secrets) and that the author indemnifies the publishers against all costs should it turn out that the warranty is mistaken. They may or may not quite separately require the author to assign copyright in the work to them, or may be content simply with a licence to reproduce, with the author retaining their rights; it would be a mistake to rely on implied licences for a monograph, but implied licences are not uncommon in magazine publishing. If the publisher amends the work in any way before publishing, they risk infringing the moral rights of the author (unless the author has agreed to waive their moral rights, something that is possible in some countries), and so should check that the author is happy with the amendments. Moral rights only kick in if the amendments damage the author's reputation, so very minor changes are very unlikely to cause concern. It is probably safe to assume that the author of a piece in a magazine owns the copyright in the work (unless it was written by an employee as part of their employee duties) and that the author, by submitting the article to a magazine publisher, has granted the publisher a licence (whether in writing or implied) to reproduce the item.

In addition to the various copyright issues raised by talks, another needs to be considered if the talk is live streamed or video recorded and that recording is then made available online, e.g., on *YouTube*. The person giving the talk has performers rights in their performance (for that is what it is), and so has the right to control the reproduction of that performance. This means that explicit permission to record must be sought from the person giving the talk in advance of the event. If the screening or recording shows any members of the audience, then they should be asked to sign a statement that they agree to be so included, to avoid any data protection problems that, however unlikely, might arise.

Any organisation that scans or otherwise copies materials for preservation purposes will probably be able to do so because of relevant copyright exceptions, but putting the resulting scans on, say, a web site or forwarding the scans in machine readable form to a third party might be problematic.

If something is posted on the web, it can get widely copied and disseminated. Caution is required if reproducing something taken from the web. In particular, one should check if the material is available under a Creative Commons licence (such as everything on *Wikipedia* is). This says, in effect, "I retain the copyright, but feel free to reproduce this at no charge." There are several types of Creative Commons licence and you should be careful to follow the rules associated with anything you use which is under such a licence. A user may not have permission to amend the item, or make money from it, depending on the particular Creative Commons licence involved. The rules are explained at the Creative Commons web site.
https://creativecommons.org/share-your-work

It is worth noting that the Internet has brought other players into the copyright arena, i.e., intermediaries such as search engines, hosting platforms and link aggregators. Their activities raise questions of their possible liability for acts of copyright infringement that take place by persons using their systems. Such intermediaries might not be directly engaging in copyright infringement, but may be seen to be facilitating it. In the USA and EU, such services often enjoy exemptions from liability for any infringements that take place when their services are used. In contrast, a good example of exploitation of the Internet for explicit copyright infringement purposes is *Sci-Hub*[4].

"...in many jurisdictions, use of *Sci-Hub* may constitute copyright infringement."

This website provides free access to millions of research papers, deliberately infringing the copyright of the copyright owners (frequently commercial scholarly publishers), bypassing publishers' paywalls and technical protection measures. *Sci-Hub* was founded in 2011 in response to the high cost of research papers behind paywalls. The site is widely used around the world, serving hundreds of thousands requests per day. It seems that a significant proportion of its usage is by individuals who work for organisations that have the relevant subscriptions to publications, i.e., they can get direct access to the materials without hitting any paywall or technical protection barrier. This might be because *Sci-Hub*'s search systems are better than those offered by *bona fide* publishers or distributors, or because the individual doing the searching uses *Sci-Hub* so often they have come to rely on it as their primary source of information. *Sci-Hub* has been sued for its blatant copyright infringement, and has lost these cases, but the publishers who sued have not received any compensation; they have, however, forced *Sci-Hub* to change its URL addresses, but this outcome does not seem to have caused *Sci-Hub* any problems. **Himmelstein** *et al.* (2018) provide useful background on *Sci-Hub*, its growth and usage. They rightly stress

> "it retrieves and distributes scholarly literature without regard to copyright. Readers should note that, in many jurisdictions, use of *Sci-Hub* may constitute copyright infringement. Users of *Sci-Hub* do so at their own risk".

8. When is it OK to copy?

- If the work is so old that it is out of copyright. It is reasonable to assume that anything that has been published and is more than 125 years will be out of copyright. But a recent edition of an old work may still be in copyright if the creator of the new edition has added notes or commentary. However, unpublished materials may well be still in copyright no matter how old they are, as noted above. These should not be copied without consideration of risk management, as discussed below.
- If the amount copied is so small to be considered "insubstantial", but note "substantial" is measured in terms of both length and importance of what is copied, so care is needed.
- If the copyright owner has granted permission. This may be because the user has obtained a licence to use the materials (perhaps by asking the copyright owner directly), or because the copyright owner has granted a free of charge licence, such a Creative Commons, to all.
- Where the copying is under an exception to copyright, such as for non-commercial research or private study. This will not apply if the purpose is for financial gain, for example to earn royalties, but would apply when the purpose is clearly non-commercial.
- There may be an implied licence permitting copying of what can be found on the web, but readers should not assume that just because it is on a web site that it is acceptable to copy the materials. Check the terms and conditions of the web site (if any) and whether it is reasonable to assume the copyright owner (who may not be the same as the organisation running the website) would grant permission to copy.
- Many government-issued outputs, including Acts of Parliament, official advice notes, patent specifications, and some other materials produced by Governments, as well as reports of legal cases in many countries, can be freely copied.

9. Two current copyright issues

9.1. Technological challenges

Text and data mining

One of the most interesting issues in copyright is how it responds to new technological challenges. I have already noted that the ability to undertake large scale text and data mining has led to changes in the law to protect the use of technical protection measures that restrict users' ability to download the large amounts of text and data required for such mining and subsequent analysis. This is a classic case of rights owners responding defensively against technical possibilities that challenge their traditional grip on how data and information is exploited.

Artificial intelligence

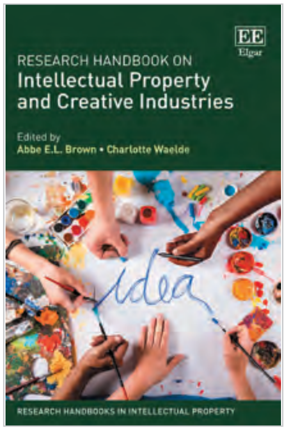
Another example of the sorts of challenges relates to the rapid improvements in artificial intelligence (AI) tools and software in recent hears, with the promise of further improvements in the near future. There is right now ongoing discussion on whether AI will change human creativity and how AI-generated works should be protected.

"A key question is whether copyright exists at all in AI-created works"

A key question is whether copyright exists at all in AI-created works. This is an issue considered by **Burt** and **Davies** (2018) and by **Guadamuz** (2017), who provides interesting background to the question of whether AI-created artefacts should enjoy copyright. The types of works produced by AI systems will have the same appearance as those created by humans. In other words, it will be impossible to distinguish between the output of the human intellect and that of AI software. National copyright laws' philosophy tend to fall in two traditions;

- the first is that copyright is justified as it protects the products of the human mind, and
- the second is that copyright is justified to protect the skill and effort put in by a creator.

For those countries where copyright law is based upon the idea that protection can only be given to products of the human mind, AI-created works should not be protected. Although it might be possible to argue against this by saying that an author makes arbitrary choices, just as an AI-driven computer does, this argument may be incorrect, as people make, as far we know, subjective decisions whereas AI machines follow predetermined rules. But maybe at some time in the future, scholars will find evidence that humans are akin to pre-programmed computers; we just don't know enough about human thought processes yet. Looking to countries where a work receives copyright protection only when effort and investment is made, how does this apply to AI-created works? Effort and investment have gone into creating the AI software and hardware, but arguably not the work, which is generated by setting the AI system to work.



ISBN: 978 1 78643 116 5

Another problem in both traditions of copyright law is that a work has to come from a human. It might be possible argue there is a precedent in those copyright systems which automatically transfer copyright from an employee to an employer. However, there is no person creating the work, and so no one who can be the initiator of the transfer.

In conclusion, it looks like there are three options to the challenge posed to copyright law by AI. Two of them work on the assumption that we want to give protection to such AI-generated works. Either it is agreed to develop a brand new right outside traditional copyright, called, say, AIGWR (Artificial intelligence generated work right)[5], or copyright law will have to fundamentally change to abolish the requirement that it is linked to a human's creativity. There are precedents for this idea; the UK has a good system to deal with AI-generated works under its current *Copyright Act*, whereby copyright in a computer-generated work is owned by the person by whom the arrangements necessary for the creation of the work are undertaken[6] (or, of course, their employer should the work have been carried out as part of employee duties). Similar provisions also exist in a few other countries' copyright laws.

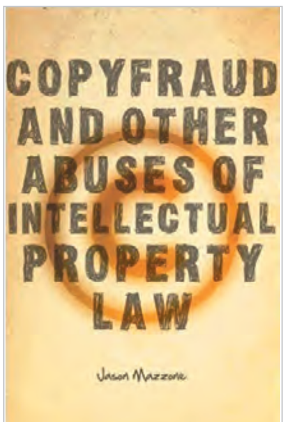
The third, and in my opinion by far the least likely option to be accepted, is that AI-generated works do not receive any protection at all. If it is decided that AI-generated creations should not have copyright, some interesting implications follow. Because machines are getting so good at creating works that they either are, or will be very soon, indistinguishable from human-created works, and if those works do not have copyright protection and therefore are in the public domain, what will happen to human-created works? Will humans be able to compete in the creative writing, film-making, music making, or computer games marketplaces? I doubt it. That's why we need to ensure AI-generated works do receive copyright.

> We need to ensure artificial intelligence generated works do receive copyright

Lots of work will no doubt come up on this topic in the future at the *World Intellectual Property Organisation* (*WIPO*), the *UN* body that handles international copyright matters!

9.2. Private *vs* public interest

The second major issue in current copyright discussions is the balance between the uses of copyright to protect private (typically commercial) interests versus the public interest in access to knowledge. Much of the debate has been triggered by concerns in the scholarly publishing arena, why authors of scholarly outputs are pressurised by commercial publishers to either assign copyright, or grant an exclusive licence to commercial publishers in return for the reward, kudos and promotion/funding opportunities that result from having got an output published by a prestigious publisher. This debate has revolved around the idea of open access outputs, i.e., scholarly publications that are free for anyone to read and use, as opposed to traditional toll access outputs, which one can only get access to by either paying oneself or by being employed in the organisation where the organisation has paid sums of money to the publishers. The debate, though, is broader than just this. At a time where there is considerable concern about the future of the planet due to global warming, there is a concern that such a crisis requires an informed public to participate, and that is not possible if much of the evidence and discussion is behind paywalls. Civil society groups in both developed and developing countries argue that current copyright laws compromise the necessary access to knowledge and thereby reduce things such as basic rights to food and good health. Social movements have emerged that favour making policy-making on copyright and other forms of intellectual property appropriate to the goal of affordable appropriate access for the good of humanity as a whole. If this was not bad enough, there is plenty of evidence that even within



ISBN: 978 0 804760065

the current law, copyright owners are abusing their powers beyond acceptable norms. **Mazzone** (2011) provides some examples of this sort of activity.

All of this raises a fundamental question: who should have priority in copyright? The general public or private corporate interests? The argument is that the excessive length of copyright protection combined with exploitation of other intellectual property rights (especially patents) means that the balance is currently far too heavily skewed in favour of private corporate interests. Even the term "rights" in "Intellectual Property Rights" is challenged, as these "rights" should really be known as "monopoly privileges" which damage fundamental human rights. Similarly, critics have complained about the terms "theft" or "piracy" when referring to deliberate infringements of copyright, as such terms imply that anyone who does such actions (for example *Sci-Hub* mentioned earlier) is automatically cast as the bad guys. One way of reducing the dominance of copyright and other intellectual property rights is the controversial idea of compulsory licences made available by laws to reduce the power of intellectual property rights. Such licences may or may not involve payment to the rights owner. The idea of compulsory licences raises the question of when, and to what extent, they should be used, and should every country in the world have compulsory licences written into their legal systems? There are already some compulsory licence provisions for translation and reproduction of copyright works in some developing countries, but such compulsory licences have rarely been used. In the past, countries that have such provisions in their laws have been very reluctant to use them for fear of antagonising the private sector, and perhaps thereby reducing investment from other countries. An alternative approach to compulsory licences is a significant expansion of exceptions to copyright, but here too one can expect vigorous opposition from vested commercial interests.

> Who should have priority in copyright? The general public or private corporate interests?

My own view is that the current copyright system is too heavily skewed in favour of copyright owners, and that rebalancing by changes to the law is required. This requires a concerted worldwide effort through *WIPO*. But expect the fight to be difficult; the vested corporate interests have the money and lobbying power to delay or nullify any such efforts, and *WIPO*'s own history in these debates so far does not inspire confidence about its ability to push the agenda forward at a reasonable speed.

10. Risk management and calculation

Deciding what can be done with a copyright work one has not created oneself is, in my opinion, more to do with management of risk than it is to do with the statutes. What are the chances that a copyright owner will make a complaint of infringement and threaten to sue? The odds are low, but not zero and in some circumstances can be very high. Anyone using third party copyright materials has to take a risk management approach. A useful resource to help on this can be found at:
https://www.copyrightlaws.com/developing-copyright-risk-management-plan

Amongst the points it makes, the following (lightly edited by me for clarity) are particularly helpful:

> "Locating a copyright owner can be a daunting and often impossible task. The Internet has made the task somewhat easier, but the problem still remains. You want to reproduce a certain work, for instance, and despite all your online searches, telephone calls, emails, faxes and snail mails, you're at a dead end –you cannot identify who owns the copyright.
>
> In other words, you are dealing with an orphan work. You then have two choices. First, don't reproduce the work; instead, either find another copyright work that suits your needs or simply don't use the work at all. Second, reproduce the work, perhaps relaying on exceptions to copyright, but fully aware of the risks you're taking, for example that the exception may not apply to your particular use. What exactly are those risks? And are you, or your employer's organisation the kind that accepts low or medium risks of this nature or perhaps no risks?"

There are several risks you may face when using a third party owned copyright-protected work you don't have permission for, or for which you think an exception to copyright may apply.

You may face paying a copyright fee after using the copyright-protected work. In the worst case scenario, you may be subject to a lawsuit (which would more than likely be settled out of court).

You may face public embarrassment by the fact that you used copyright-protected materials without permission. This may be reputationally damaging, especially for a publicly-funded organisation or an organisation that either creates, licenses or distributes copyright-protected works or other intellectual property in its own right.

You may need to stop using the non-cleared work. This may encompass actions such as removing an image from your website, or editing and then re-issuing the publication that previously included the work.

> The current copyright system is too heavily skewed in favour of copyright owners

10.1. Risk assessment

To assess your risk of using non-cleared materials, consider the following:

The origin of the work(s)

Is the author well known? This may be riskier. Does the author or copyright holder have a reputation for strictly guarding uses of their works and/or aggressively pursuing or threatening infringers? Is the copyright owner likely to pursue legal action or to negotiate a copyright fee? Is the copyright owner likely to proceed through a trial if they commence an action?

Who will have access to the work(s)

If it's being reproduced on the web, then it's accessible to a huge number of people around the world. That increases both the risk that the copyright owner will find out, and the level of damages they might demand.

Analyse your budget

Are you prepared to pay damages, royalty payments, settlements out of court, court-related fees, and infringement-related legal advice?

The "political" consequences of using materials without permission

Would bad publicity mean less public funding? What would be the message to the public about your respect for copyright law? Would it harm your organisation in any non-monetary manner, such as reputation?

Insurance

Do you have insurance coverage for copyright infringement? Would this use be covered by the policy? How would this affect your future insurance cover and/or premiums?

Emotional costs

What are the emotional costs of a claim against you for copyright infringement? How would this affect you, any employees and your governing body (if there is one)?

Inconvenience costs

Weigh the time and inconvenience of dealing with an infringement action against the time and effort involved, as well as advantages, of using authorised materials.

10.2. Alternatives and advice

Before using non-cleared work, consider all possible alternatives to using the work without permission. Are there similar works you could use with permission? Are there works in the public domain or subject to Creative Commons licences? Could you or an employee create a new work to fill the gap? (On the latter idea, bear in mind that a brand new creation that is very similar to the original you are copying is likely to be considered infringing).

There are also things you can do to lessen your risk of copyright infringement, including:

- Implement a written procedure on obtaining copyright permissions, and make sure the procedure is consistently used throughout your enterprise.
- Educate your staff and end users of content about any potentially applicable copyright exceptions. Make staff aware of the penalties for violating copyright
- Conduct periodic copyright compliance spot checks in your organisation.
- Track developments related to your country's copyright statutes, international developments, court cases interpreting the law, as well as any public policies and procedures implemented at similar organisations.
- Develop a written copyright policy and keep it regularly updated. Include permission guidelines and guidelines on exceptions. Make your policy and guidelines available to all in your enterprise.

With the above advice as background, this simple equation that I have developed might help to judge whether to copy or not:

$$R = A \times B \times C \times D$$

A is an estimate of the chances that what is being done is infringement and is not covered by an exception to copyright. A can be anywhere between 0 (zero risk) and 1 (certainly infringement).

B is an estimate of what the chances are that a copyright owner will find out about the possible infringement. Again, it is an estimate, and again it can range between 0 (no chance) and 1 (certainly). It would be low if the copying were shown to a restricted number of people, high if it was published in a popular magazine or was placed on the Internet.

C is an estimate of what are the chances that, having found out, the copyright owner chooses to sue? Again, this figure will range from 0 to 1. By multiplying these three figures together, an estimate of the risk involved can be established. Of course, if an owner does complain, one should not ignore the complaint, but engage with the complainant. In the vast majority of cases, an apology will satisfy the complainant.

Finally, D is the likely maximum damages and legal costs. R then is the financial risk. If R seems worryingly high, either get explicit permission to reproduce, or don't use the item.

Finally, remember these three points:

1. Just because you own an item does not automatically give you the right to reproduce it.
2. In most cases, the risk involved in copying and reproducing materials is low, but there are some high-risk scenarios to be aware of.
3. Use the advice and risk equation, and take sensible precautions.

11. Notes

1. Another general overview of copyright law can be found at
https://en.wikipedia.org/wiki/Copyright

2. It turns out that the *Infopaq* case was not about particular words, but about the principle. The Court decided that, in principle, a string of 11 words could be a copyright work, rather than stating a specific set of 11 words was. This explains why nobody has ever reported what the words were.

3. The *UK Copyright Act* is particularly obscure on this matter, but section 170(2) of the *Copyright Designs and Patents Act 1988* (as amended) refers.
http://www.legislation.gov.uk/ukpga/1988/48/section/170

4. It changes its URL from time to time; at the time this article was written it could be found at:
https://sci-hub.tw

5. There are precedents for such new rights outside copyright, such as the EU's database right discussed above.

6. Section 9(3) of the *UK Copyright Act*.
http://www.legislation.gov.uk/ukpga/1988/48/contents

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https://doi.org/10.1017/CBO9780511495274

Patrimonio y memoria LGTBI en las leyes autonómicas en España

LGTBI heritage and memory in the autonomous communities laws in Spain

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Resumen

En España, las leyes del patrimonio, tanto la nacional como las autonómicas, no hacen referencias específicas al patrimonio LGTBI (lesbianas, gays, personas transgénero, bisexuales e intersexuales). Las escasas referencias que podemos encontrar emanan de leyes autonómicas sobre igualdad LGTBI. La presente investigación tiene como objetivo general categorizar y comparar las consideraciones sobre patrimonio LGTBI en las 9 Comunidades Autónomas que han legislado en materia de igualdad y no discriminación en relación a personas LGTBI. De manera específica, queremos saber si las menciones al patrimonio tienen que ver con los patrimonios históricos materiales o inmateriales y los sitios históricos en un contexto de atemporalidad, o si tienen que ver con patrimonios relacionados con el Franquismo o de reciente creación. Finalmente se analizan las posibles disposiciones que estas leyes puedan realizar sobre la presencia de fondos con temática LGTBI en bibliotecas y la creación de centros de documentación especializados. La metodología utilizada es de corte cualitativo y comparativo.

Palabras clave

LGTBI; LGBTI; LGTB; LGBT; Homosexualidad; Transexualidad; Patrimonio; Memoria histórica; Legislación autonómica; Centros de documentación; Bibliotecas especializadas; Centros de memoria histórica; España.

Abstract

In Spain, the laws of heritage, both national and those of autonomous regions do not make specific references to the lesbian, gay, transgender, bisexual and intersex (LGTBI) heritage. The few references that we can find refer to the regional laws on LGTBI equality. The present investigation has three main objectives: 1) to analyze, categorize and compare the presence and considerations on LGTBI heritage in the 9 Autonomous Communities that have legislated in terms of equality and non-discrimination in relation to LGTBI people; 2) to know if the mentions of heritage have to do with material or intangible historical heritage and historical sites in a context of timelessness, or, conversely, if allusions have to do with assets related to Francoism or of recent creation; and 3) to analyze the possible provisions that these laws may make on the presence of LGTBI-themed funds in libraries and the creation of specialized documentation centers. The methodology used is qualitative and comparative.

Keywords

LGTBI; LGBTI; LGTB; LGBT; Homosexuality; Transsexuality; Heritage; Historical memory; Autonomic legislation; Documentation centers; Special libraries; Historical memory centers; Spain.

1. Introducción

En la actualidad en países como España se está produciendo una paulatina toma de conciencia sobre la igualdad y la no discriminación de las personas LGTBI (lesbianas, gays, personas transgénero, bisexuales e intersexuales). En paralelo a esta situación se está realizando un notable esfuerzo por legislar al respecto, especialmente por parte de las Comunidades Autónomas, que se sitúan a la cabeza de la lucha por la igualdad de todas las personas sin importar su orientación sexual o género. Algunas han legislado sobre igualdad de género (**García-Luque**, 2016, pp. 249-269; **Martínez-Latre**, 2009, pp. 138-151), transexualidad o sobre igualdad y no discriminación de personas LGTBI. En esta investigación nos centraremos en las leyes promulgadas por las Comunidades Autónomas en materia de igualdad LGTBI (**Fernández-Paradas**; **Ravina-Ripoll**; **Gutiérrez-Montoya**, 2018). De manera específica se han estudiado las leyes de las 9 Comunidades que hasta el momento se han pronunciado al respecto y se han descartado las leyes de género y las específicas para transexuales.

Se han observado asimismo las leyes de memoria histórica autonómicas. Dentro de los escalafones legislativos, sólo se han analizado leyes, descartando otros medios legislativos como decretos, órdenes, u otros documentos oficiales o recomendaciones. Queremos analizar la presencia del patrimonio, en el concepto amplio del término, incluyendo patrimonios materiales e inmateriales, sitios históricos y patrimonios bibliográficos y documentales, museos, centros de documentación, etc. En todos los casos, se pretende analizar esta presencia patrimonial en las leyes autonómicas de igualdad LGTBI, sin atender a cuestiones temporales. Esto nos lleva a reflexionar acerca de si las menciones a todos estos patrimonios están relacionadas o no con la memoria histórica franquista, o con patrimonio o manifestaciones artísticas de reciente creación. En relación con estas fuentes, también hemos analizado todas las leyes autonómicas relacionadas con el patrimonio. Finalmente, analizamos las posibles disposiciones que estas leyes puedan realizar sobre la presencia de fondos con temática LGTBI en bibliotecas y la creación de centros de documentación especializados.

Si bien este paulatino proceso de ordenamiento jurídico es primordial, existen cuestiones sobre las que todavía no se ha tomado conciencia. Un ejemplo es la cuestión del patrimonio cultural e histórico y los sitios y lugares históricos relacionados con las personas LGTBI que en la actualidad están totalmente desamparados por la ley. De manera específica, hemos analizado la ley estatal de patrimonio histórico de 1985 y las 17 leyes autonómicas en la misma materia (tabla 1).

Se ha podido constatar que en ninguna de ellas se realiza ninguna mención al patrimonio y memoria LGTBI, ni a homosexuales, lesbianas, transexuales, etc. También hemos podido confirmar que en ninguna de estas leyes se hacen alusiones a las leyes de memoria histórica sobre el tema objeto de estudio.

Se ha escrito mucho en relación con el patrimonio de las mujeres (**Díez-Jorge**, 2016, pp. 9-21; **Pérez-Winter**, 2015, p. 543; **Sapriza**; **Cherro**, 2016) y cómo este ha sido sistemáticamente discriminado y ha sido usado para discriminar. Por ejemplo, con los lugares que ocupan las piezas relacionadas con las mujeres en los museos (**Carreño-Robles**, 2016, pp. 157-158). Pero no se ha publicado prácticamente nada sobre la protección del patrimonio histórico relacionado con la homosexualidad o con los colectivos LGTBI. En lo concerniente a las mujeres podemos encontrar medidas legislativas y, sobre todo, cada vez más proyectos que tienen por objetivo recuperar las voces y los patrimonios relacionados con ellas a lo largo de la historia (**Lagunas**; **Ramos**, 2007, pp. 119-134; **López-Fernández-Cao**; **Fernández-Valencia**; **Bernárdez-Rodal**, 2012). Entre las múltiples actuaciones de diversa naturaleza, pública (**Suaiden**, 2018), privada, autonómica o relacionadas con fundaciones, cabe mencionar el importante papel que viene desempeñando desde el año 1995 la *Red de Bibliotecas y Centros de Documentación de Mujeres* y de algunas asociaciones y activistas, incluyendo en algunos casos colecciones sobre lesbianas, o fondos personales de activistas lesbianas (por ejemplo, el centro *Ca la Dona* de Barcelona).
http://redcdbibmujeres.blogspot.com
https://caladona.org

La red está formada por los siguientes centros:

1) Andalucía
- *Centro Europeo de las Mujeres 'Mariana de Pineda'* del *Servicio de Igualdad de Oportunidades* gestionado por el Ayuntamiento de Granada;
- Biblioteca de la *Delegación de Igualdad y Juventud*, cuya administración depende de la Diputación de Granada;
- Biblioteca-Centro de Documentación del *Servicio de Igualdad de Género* de la Diputación de Málaga;
- *Centro de Documentación 'María Zambrano'* promovido por el *Instituto Andaluz de la Mujer*;
- Biblioteca del *Instituto de Investigación de Estudios de las Mujeres y de Género* de la *Universidad de Granada*.

2) Aragón
- Centro de documentación y biblioteca del *Instituto Aragonés de la Mujer*.

3) Castilla-La Mancha
- Centro de documentación del *Instituto de la Mujer de Castilla-La Mancha*.

4) Castilla y León
- *Centro de Documentación y Biblioteca de la Mujer* de Valladolid;
- Biblioteca del *Centro de Estudios de la Mujer* de la *Universidad de Salamanca*.

Tabla 1. Leyes estatales y autonómicas de patrimonio

España	*Ley 16/1985, de 25 de junio, del patrimonio histórico español* *https://www.boe.es/buscar/pdf/1985/BOE-A-1985-12534-consolidado.pdf*
Andalucía	*Ley 14/2007, de 26 noviembre. Ley de patrimonio histórico de Andalucía* *http://todopatrimonio.com/pdf/legislacion/Espana/Andalucia_ley_14_20071126.pdf*
	Ley 8/2007 de 5 de octubre de museos y colecciones museográficas de Andalucía *http://todopatrimonio.com/pdf/legislacion/Espana/Andalucia_Ley%208-2007_Museosycoleccionesmuseogr%C3%A1ficasAndalucia.pdf*
Aragón	*Ley 3/1999, de 10 marzo. Ley del patrimonio cultural* *http://todopatrimonio.com/pdf/legislacion/Espana/Aragon_ley_3_19990310.pdf*
Asturias	*Ley 1/2001, de 6 marzo. Normas reguladoras del patrimonio cultural.* *http://todopatrimonio.com/pdf/legislacion/Espana/Asturias_ley_1_20010306.pdf*
Canarias	*Ley 4/1999, de 15 marzo 1999. Ley del patrimonio histórico de Canarias* *http://todopatrimonio.com/pdf/legislacion/Espana/Canarias_ley4_19990315.pdf*
	Ley 11/2002, de 21 noviembre. Modifica la Ley 4/1999, de 15 marzo, de patrimonio histórico de Canarias *http://todopatrimonio.com/pdf/legislacion/Espana/Canarias_ley_11_20021121.pdf*
Cantabria	*Ley 11/1998, de 13 octubre. Ley del patrimonio cultural* *http://todopatrimonio.com/pdf/legislacion/Espana/Cantabria_ley_11_19981013.pdf*
Castilla-La Mancha	*Ley 4/1990, de 30 mayo. Regulación del patrimonio histórico de Castilla-La Mancha* *http://todopatrimonio.com/pdf/legislacion/Espana/CastillaLaMancha_ley_4_19900530.pdf*
	Ley 4/2001, de 10 mayo 2001. Regula los Parques Arqueológicos de Castilla-La Mancha *http://todopatrimonio.com/pdf/legislacion/Espana/CastillaLaMancha_ley_4_20010510.pdf*
	Ley 4/2013, de 16 mayo. Patrimonio cultural de Castilla-La Mancha *http://todopatrimonio.com/pdf/legislacion/Espana/castilla-La-Mancha-lclm_2013_114_ley_4_20130516.pdf*
Castilla y León	*Ley 12/2002, de 11 julio 2002. Ley del patrimonio cultural de Castilla y León* *http://todopatrimonio.com/pdf/legislacion/Espana/Castillayleon_ley12__lcyl_2002_393.pdf*
Cataluña	*Ley 9/1993, de 30 septiembre. Regula el patrimonio cultural* *http://todopatrimonio.com/pdf/legislacion/Espana/Catalunya_ley_9_19930930.pdf*
Extremadura	*Ley 2/1999, de 29 marzo. Ley del patrimonio histórico y cultural* *http://todopatrimonio.com/pdf/legislacion/Espana/Extremadura_ley_2_19990329.pdf*
Galicia	*Ley 8/1995, de 30 octubre. Regula patrimonio cultural de Galicia* *http://todopatrimonio.com/pdf/legislacion/Espana/Galicia_ley_8_19951030.pdf*
Baleares	*Ley 12/1998, de 21 diciembre. Ley del patrimonio histórico* *http://todopatrimonio.com/pdf/legislacion/Espana/IllesBallears_ley_12_19981221.pdf*
La Rioja	*Ley 7/2004, de 18 octubre 2004. Normas reguladoras del patrimonio cultural, histórico y artístico de La Rioja* *http://todopatrimonio.com/pdf/legislacion/Espana/Larioja_ley_7_20041018.pdf*
Madrid	*Ley 10/1998, de 9 julio. Ley del patrimonio histórico de la Comunidad de Madrid* *http://todopatrimonio.com/pdf/legislacion/Espana/Madrid_ley_10_19980709.pdf*
Murcia	*Ley 4/2007, de 16 marzo 2007. Normas reguladoras del patrimonio cultural de la Comunidad Autónoma de la Región de Murcia* *http://todopatrimonio.com/pdf/legislacion/Espana/Murcia_ley_4__2007_122.pdf*
Navarra	*Ley Foral 14/2007, de 4 abril. Ley foral de patrimonio de Navarra* *http://todopatrimonio.com/pdf/legislacion/Espana/Navarra_ley_foral_14_20070404.pdf*
País Vasco	*Ley 7/1990, de 3 julio 1990. Regulación del patrimonio cultural vasco* *http://todopatrimonio.com/pdf/legislacion/Espana/Paisvasco_ley_7_1990_238cor.pdf*
Valencia	*Ley 4/1998, de 11 junio. Ley del patrimonio cultural valenciano* *http://todopatrimonio.com/pdf/legislacion/Espana/Valencia_ley_4_19980611.pdf*

5) Cataluña
- *Centro de Recursos y Asesoramiento para las Mujeres* de Badalona. *Programa Municipal para la Mujer*;
- *Biblioteca Francesca Bonnemaison;*
- *Centre de Documentació Ca La Dona*;
- *Centro de Documentación 'Joaquima Alemany i Roca'*. *Instituto Catalán de las Mujeres*;
- *Centro de Estudios y Documentación de las Mujeres* del *Seminario Interdisciplinar de Estudios de la Mujer*. *Centre 'Dolors Piera' de Igualtat d'Oportunitats i Promoció de les Dones* de la *Universitat de Lleida*.

6) Comunidad de Madrid
- *Servicio de Documentación y Biblioteca 'Clara Campoamor'* del *Ayuntamiento de Alcobendas*;
- *Centro de Documentación de Igualdad de Oportunidades* gestionado por la *Concejalía de Familia y Bienestar Social* del *Ayuntamiento de Móstoles*;
- *Centro De Documentación. Instituto de la Mujer*. *Ministerio de la Presidencia, Relaciones con las Cortes e Igualdad* de España;
- Biblioteca del *Instituto Universitario de Estudios de la Mujer* de la *Universidad Autónoma de Madrid.*

7) Comunidad Valenciana
- *Biblioteca de la Mujer* de la *Generalidad Valenciana*.

8) Galicia
- *Centro de Documentación y Recursos Feministas* de Vigo de la *Concejalía de Igualdad* del *Ayuntamiento de Vigo*.

9) Navarra
- *Centro de Documentación-Biblioteca de Mujeres*, promovida por *Fundación IPES*;
- *Centro de Documentación*. *Instituto Navarro para la Familia e Igualdad*.

10) País Vasco
- *Centro de Documentación de Mujeres 'Maite Albiz'*;
- *Centro de Documentación. Emakunde/Instituto Vasco de la Mujer*.

11) Principado de Asturias
- *Centro de Documentación* del *Instituto Asturiano de la Mujer*.

12) La Rioja
- *Biblioteca y Centro de Documentación de la Mujer*. *Centro Asesor de la Mujer*.

Sobre la inclusión de materiales LGTBI en las bibliotecas públicas (**Gómez-Hernández**; **Pérez-Iglesias**, 2017; **Anglada**, 2019; **Triguero-García** *et al.*, 2006), cabe mencionar que si bien su ordenamiento jurídico es relativamente reciente como posteriormente podremos analizar, existen diversas actuaciones pioneras, como por ejemplo el *Grup de Treball d´Informació i Documentació Gai, Lèsbica, Bisexual i Transgènere* del *Col·legi Oficial de Bibliotecaris-Documentalistes de Catalunya* (*COBDC*) (**Rey-Martín**; **Camón-Luis**; **Pacheco-Oleo**, 2018).

El patrimonio cultural histórico relacionado con los colectivos LGTBI es un campo de estudio que, aunque ofrece múltiples posibilidades, apenas se ha desarrollado. Los objetos artísticos se diluyen en su *artisticidad* y en el caso de que sean protegidos, es bajo estos parámetros sobre los que se asientan las bases patrimoniales de su representatividad. Ahora bien, ¿qué pasa por ejemplo con aquellos sitios y lugares que están relacionados con la memoria histórica LGTBI? ¿Y con aquellos patrimonios materiales o inmateriales LGTBI que han sobrevivido al tiempo? La propia geografía urbana de la homosexualidad es un documento histórico excepcional (**Boivin**, 2011). Piénsese por ejemplo en el patrimonio documental (**Bernardo**, 2015) que generó en los años 70 el incipiente y crucial comienzo del movimiento LGTBI: actas de asociaciones, discursos, pancartas, carteles, publicidad, revistas, etc. (**Martínez**, 2018). Muchos de estos documentos y materiales se podrían proteger bajo el amparo de las leyes del patrimonio, pero la realidad es que todavía no se ha hecho y las perspectivas no son muy halagüeñas (**Colombato**, 2013, pp. 1-13).

En el momento actual estamos viviendo una serie de fenómenos trascendentales en relación con la protección del patrimonio histórico y sitios y lugares históricos relacionados con la memoria LGTBI. El 24 de junio de 2015 (*La información*, 2016), tuvo lugar uno de los hechos más relevantes en la historia el colectivo LGTB y su patrimonio. Ese día fue declarado monumento nacional *Stonewall* de Nueva York y sus alrededores por el *Comité de Preservación de Sitios Históricos*. Los fundamentos de esta declaración parten de sus valores icónicos e históricos para el estado de Nueva York, para los propios Estados Unidos y las consecuencias que acarreó para el resto del mundo. La redada de 1969 en ese bar supuso el comienzo de las luchas por los derechos LGTBI. En la actualidad, Estados Unidos, consciente de la importancia de los colectivos LGTBI para la construcción de su historia, se encuentra mapeando su propia memoria LGTBI (*IIP Digital*, 2014) por medio del *Servicio de Parques Nacionales*, dependiente del

> "*Departamento de Interior* de Estados Unidos, [que] hará un nuevo estudio para ayudar a identificar lugares y acontecimientos asociados a la historia de estadounidenses lesbianas, gays, bisexuales y transexuales (LGBT) para que sea incluida en los parques y los programas del organismo (...) Las metas de la iniciativa patrimonial del *Servicio de Parques Nacionales* incluyen la participación de académicos, conservacionistas y miembros de las comunidades para identificar, investigar y narrar las historias de las propiedades asociadas con el colectivo LGBT; animando a que parques nacionales, zonas de patrimonio nacional y otras zonas afiliadas interpreten las historias sobre LGBT asociados a éstos; identificando, documentando y nominando sitios asociados al colectivo LGBT como localidades históricas nacionales; y aumentando la cantidad de propiedades asociadas al colectivo LGTB incluidas en las listas del *Registro Nacional de Lugares Históricos*" (*IIP Digital*, 2014).

Un caso similar al del *Stonewall* se produjo en 1971 en el *Pasaje Begoña* de Torremolinos, donde se encontraban el *Toni's Bar* (1962), el primer bar gay de España, y el primer club para lesbianas, *Pourquoi pas?* (1968), entre otros establecimientos, donde a principios de los setenta se produjo una redada ordenada por el Gobernador Civil de la provincia de Málaga (**Martínez**, 2018). El *Pasaje Begoña* (**Gómez**, 2019) será, si el juego político lo permite, el primer lugar relacionado con la memoria LGTBI española protegido y amparado oficialmente por las leyes. En la actualidad se han aprobado dos propuestas no de ley que incitan a la protección de este espacio histórico. El 25 de mayo de 2018 se publicaba en el *Boletín Oficial del Parlamento de Andalucía*, n. 705, la proposición no de ley en comisión relativa a recuperación de la memoria histórica y democrática del *Pasaje Begoña* (Torremolinos) como cuna de los derechos LGTBI en Andalucía y España. Posteriormente, el 13 de febrero de 2019, la *Comisión de Cultura* del *Congreso de los Diputados* declaró mediante una proposición no de ley la recuperación e impulso de dicho lugar, como lugar de memoria histórica y cuna de los derechos LGTBI.

Un tercer hito, quizá de los más trascendentales, ha venido de la mano de la legislación autonómica que anteriormente hemos comentado en materia de igualdad y derechos LGTBI. Estas leyes son importantes porque entre su articulado se incluyen medidas de fomento y protección del patrimonio LGTBI, especialmente contemporáneo y el del franquismo. En relación con esta particular situación, cabe mencionar que salvo cuestiones específicas de patrimonios concretos, la ley nacional y las leyes autonómicas de patrimonio no realizan delimitaciones cronológicas en lo relativo a qué es patrimonio o no. En cambio, la situación que se está produciendo sobre las leyes de igualdad LGTBI autonómicas, suponen todo un hito nacional en la configuración de establecer cronologías para determinados patrimonios, como puede ser el objeto de estudio. Sirva como ejemplo un café de comienzos del siglo XX donde se reunieran homosexuales, artistas, intelectuales, etc., con una presencia en el espacio y el tiempo dilatada; sería un lugar que no estaría dentro de los preceptos de la *Ley de Memoria Histórica de Andalucía*. Para poder llevar a cabo una efectiva protección del patrimonio LGTBI (*L'armari obert*, 2014), es necesario realizar un inventario detallado que permita identificar y localizar aquellos patrimonios vinculados con el devenir histórico del colectivo LGTBI (**Norton**, 2015) y de aquellos lugares en los que se luchó por la reivindicación de la igualdad y sus derechos.

2. Objetivos

Esta investigación tiene dos objetivos. Por un lado, analizar, categorizar y comparar la presencia y consideraciones sobre el patrimonio LGTBI en las 9 Comunidades Autónomas que han legislado en materia de igualdad y no discriminación de las personas LGTBI. De manera explícita, queremos saber si las menciones al patrimonio tienen que ver con los patrimonios históricos materiales o inmateriales (*Colegas*, 2014) y los sitios históricos en un contexto de atemporalidad, o, por el contrario, si las alusiones tienen que ver con patrimonios más circunscritos a un tiempo y a un espacio (en concreto, relacionados con el franquismo o de reciente creación). En segundo lugar, queremos analizar las posibles disposiciones que estas leyes puedan realizar sobre la presencia de fondos con temática LGTBI en bibliotecas y cómo se propone en dichas leyes la creación de centros de documentación sobre la memoria histórica LGTBI.

3. Metodología

La metodología utilizada es cualitativa y comparativa, ya que se analizan los contenidos de las leyes autonómicas que regulan la igualdad de las personas LGTBI (**Sanz**, 2017). A su vez se ha aplicado un método analítico enfocado al estudio de un todo por medio de su desarticulación en partes a analizar de manera aislada, pero que finalmente nos ofrecerá una visión global (**Galán-Amador**, 2016). El instrumento de mayor uso durante la elaboración del estudio es la observación. El presente trabajo de campo puede descomponerse en cinco fases principales basándonos en las fases que **Costas-Fontán** (2015) nos presenta en su investigación "Las series de la tercera edad de oro de la ficción televisiva", a las cuales añadimos otra más a la que llamamos "preliminar":

3.1. Fase preliminar

Delimitación del objeto de estudio. Se han examinado las legislaciones específicas sobre igualdad y no discriminación de las 9 Comunidades Autónomas que hasta el momento han promulgado leyes para tal efecto

- Comunidad Valenciana, 2018
- Comunidad Foral de Navarra, 2017
- Andalucía, 2017
- Comunidad de Madrid, 2016
- Murcia, 2016
- Islas Baleares, 2016
- Extremadura, 2015
- Cataluña, 2014
- Galicia, 2014.

A fecha de 25 de febrero de 2019 no han promulgado sus leyes 8 Comunidades Autónomas (Aragón, Asturias, Cantabria, Castilla y León, Castilla-La Mancha, La Rioja, País Vasco y Canarias) ni las 2 ciudades autónomas, Ceuta y Melilla. Sólo se han analizado las Comunidades Autónomas que han publicado leyes específicas para las personas LGTBI, y en todos los casos se han descartado las leyes de género y las específicas para los transexuales.

3.2. Fase exploratoria

Se han analizado 9 leyes específicas sobre igualdad y no discriminación LGTBI. Se ha revisado la bibliografía para hallar información contextualizadora sobre la legislación en materia LGTBI y específicamente sobre la creación de centros de documentación.

Se ha tenido un primer contacto y estudio de la estructura que poseen las leyes de cada Comunidad Autónoma (número de propuestas, división en bloques…).

Tabla 2. Legislación sobre lesbianas, gays, transgénero y bisexuales (LGTB) / Diversidad sexual y de género (DSG) autonómica. Ordenada por fechas.

Comunidad Valenciana	*Ley 23/2018, de 29 de noviembre, de igualdad de las personas LGTBI.* *https://www.boe.es/buscar/doc.php?id=BOE-A-2019-281*
	Ley 8/2017, de 7 de abril, integral del reconocimiento del derecho a la identidad y a la expresión de género en la Comunitat Valenciana. *https://www.boe.es/buscar/doc.php?id=BOE-A-2017-5118*
Comunidad Foral de Navarra	*Ley Foral 8/2017, de 19 de junio, para la igualdad social de las personas LGTBI+.* *https://www.boe.es/diario_boe/txt.php?id=BOE-A-2017-8527*
Andalucía	*Ley 8/2017, de 28 de diciembre, para garantizar los derechos, la igualdad de trato y no discriminación de las personas LGTBI y sus familiares en Andalucía.* *https://www.boe.es/buscar/doc.php?id=BOE-A-2018-1549*
Comunidad de Madrid	*Ley 3/2016, de 22 de julio, de protección integral contra LGTBIfobia y la discriminación por razón de orientación e identidad sexual en la Comunidad de Madrid.* *https://www.boe.es/buscar/doc.php?id=BOE-A-2016-11096*
Murcia	*Ley 8/2016, de 27 de mayo, de igualdad social de lesbianas, gays, bisexuales, transexuales, transgénero e intersexuales, y de políticas públicas contra la discriminación por orientación sexual e identidad de género en la Comunidad Autónoma de la Región de Murcia.* *https://www.boe.es/buscar/doc.php?id=BOE-A-2016-6170*
Illes Balears	*Ley 8/2016, de 30 de mayo, para garantizar los derechos de lesbianas, gays, trans, bisexuales e intersexuales y para erradicar la LGTBIfobia.* *https://www.boe.es/buscar/doc.php?id=BOE-A-2016-6310*
Extremadura	*Ley 12/2015, de 8 de abril, de igualdad social de lesbianas, gays, bisexuales, transexuales, transgénero e intersexuales y de políticas públicas contra la discriminación por orientación sexual e identidad de género en la Comunidad Autónoma de Extremadura.* *https://www.boe.es/buscar/doc.php?id=BOE-A-2015-5015*
Cataluña	*Ley 11/2014, de 10 de octubre, para garantizar los derechos de lesbianas, gays, bisexuales, transgéneros e intersexuales y para erradicar la homofobia, la bifobia y la transfobia.* *https://www.boe.es/buscar/act.php?id=BOE-A-2014-11990*
Galicia	*Ley 2/2014, de 14 de abril, por la igualdad de trato y la no discriminación de lesbianas, gays, transexuales, bisexuales e intersexuales en Galicia.* *https://www.boe.es/buscar/doc.php?id=BOE-A-2014-5488*

3.3. Fase descriptiva

Descripción del estado de la cuestión acudiendo a diversas fuentes, tanto en papel como online, con el objetivo de trazar los paradigmas imperantes en las Comunidades Autónomas que han legislado sobre la igualdad LGTBI.

3.4. Fase comparativa e interpretativa

Realización de categorías de contenido, extraídas de las leyes. Clasificación y colección de los contenidos propuestos que ofrece cada legislación en función del tema objeto de análisis. La información se ha clasificado en diversos bloques temáticos.

3.5. Fase conclusiva

Interpretación de la información hallada y colección de los principales resultados y conclusiones tras la realización del estudio.

4. Discusión

4.1. Análisis de contenido

Para el análisis cualitativo de la legislación autonómica en materia LGTBI se han propuesto cuatro categorías de análisis:

- medidas de apoyo;
- actividades para la no discriminación;
- bibliotecas;
- centros de documentación.

4.1.1. Medidas de apoyo

En seis de las nueve leyes analizadas se repite el siguiente enunciado:

> "se adoptarán medidas de apoyo de iniciativas y expresiones artísticas, culturales, patrimoniales, recreativas y deportivas relativas a la realidad LGTBI, considerando sus formas propias de representación".

La primera comunidad en utilizarlo fue Extremadura en el año 2015. Le han seguido Valencia (2018), Andalucía (2017), Navarra (2017), Murcia (2016), Madrid (2016) y Extremadura (2015).

Galicia (2014) y Andalucía (2017), introducen enunciados propios. Galicia (2014), menciona que

> "1. La consejería competente en materia de cultura impulsará y apoyará las producciones culturales que contemplen la realidad LGTBI y potenciará referentes positivos de la homosexualidad, bisexualidad, transexualidad e intersexualidad. 2. La Xunta de Galicia promoverá y apoyará la realización, por parte de los gobiernos locales, de actividades culturales para la concienciación y la normalización del hecho LGTBI, principalmente en los municipios rurales".

Andalucía (2017) por su parte indica que se realizarán

> "estudios que tengan por objeto el análisis de los principales problemas para el reconocimiento, restablecimiento y garantía de los derechos de las personas que se reconocen LGTBI y de las familias homoparentales, así como la formulación de recomendaciones al respecto de la Administración pública".

4.1.2. Actividades para la no discriminación

Cuatro de las nueve Comunidades, Navarra (2017), Madrid (2016), Baleares (2016) y Cataluña (2015) proponen actividades para fomentar la no discriminación. El texto literal es el siguiente:

> "las administraciones públicas de Cataluña deben velar por la incorporación de actividades para la no discriminación por razones de orientación sexual, identidad de género o expresión de género en los siguientes ámbitos de la cultura, el tiempo libre y el deporte:
> - Certámenes culturales y acontecimientos deportivos.
> - Proyectos relacionados con la recuperación de la memoria histórica.
> - Espectáculos y producciones culturales infantiles y juveniles.
> - Recursos didácticos y fondos documentales en la educación no formal".

El texto es idéntico en los cuatro casos, teniendo su origen en el artículo 14 titulado "Cultura tiempo libre y deporte" de la ley catalana (2014). Madrid, aunque lo repite, incluye como novedad la necesidad de incorporar programaciones culturales y artísticas LGTBI, siendo la única comunidad que lo hace:

> "La Comunidad de Madrid promoverá programación artística relacionada con temáticas LGTBI en museos, centros culturales y salas de arte, favoreciendo el acercamiento al conocimiento y problemáticas del colectivo LGTBI".

4.1.3. Bibliotecas y colecciones LGTBI

Seis de las nueve Comunidades que han legislado en materia de igualdad y no discriminación LGTBI, introducen en su articulado la cuestión de la presencia de fondos documentales en las bibliotecas de titularidad de la Comunidad. 5 de esas 6 Comunidades (Andalucía, Navarra, Valencia, Extremadura y Murcia) obligan a que existan estos fondos en las bibliotecas de titularidad de la Comunidad. En Madrid se incluye pero no obliga. Baleares (2016) y Cataluña (2014) mencionan el acceso a bibliografía específica sobre temática LGTBI. Por su parte Galicia en 2014 propone la necesidad de crear una sección específica dentro de la *Biblioteca de Galicia*. Esta misma Comunidad en el artículo 27 denomina esta sección en la *Biblioteca de Galicia* como centro de documentación. Será en 2015 con la promulgación de la ley extremeña cuando se comience a "obligar" por ley a la creación de fondos específicos sobre contenidos LGTBI en las bibliotecas de titularidad de la Comunidad. Sera también esta Comunidad quien codifique la necesidad de crear secciones propias dentro de esas bibliotecas en función del número de habitantes, en este caso con más de 20.000. En 2016 Murcia retoma la cuestión de los habitantes (20.000), y finalmente la Comunidad Valenciana, establece el tope en 25.000 habitantes. De manera específica éstas son las alusiones que realizan las diferentes leyes:

- Valencia (2018, 29 de noviembre). Obliga a que

> "todas las bibliotecas de titularidad de la Generalitat y las bibliotecas de titularidad municipal tengan que contar con un fondo bibliográfico y filmográfico específico en materia de diversidad sexual, familiar, de género y de desarrollo sexual. El contenido de los materiales deberá ser respetuoso con los derechos humanos. En los municipios de más de 25.000 habitantes conformarán una sección específica".

- Andalucía (2017, 28 de diciembre). Artículo 35. No hace mención al número de habitantes.

> "Promoción de una cultura inclusiva. Obliga a las bibliotecas de la Junta a contar un fondo bibliográfico de temática LGTBI. Se impulsará la creación de un fondo bibliográfico de temática LGTBI, en las bibliotecas provinciales y municipales".

- Navarra (2017, 19 de junio). Todas las que son propiedad del Gobierno de Navarra contarán con un fondo. Se reconoce el sexo sentido por las personas transexuales o transgénero.

- Madrid (2016, 22 de julio). La legislación madrileña, menciona que

> "dentro del Servicio LGTBI de la Comunidad de Madrid se creará un fondo documental y bibliográfico, de temática LGTBI, que estará a disposición de todos los profesionales que requieran su consulta".
> "Se impulsará la creación de un fondo en las bibliotecas de la Comunidad de Madrid y de los Ayuntamientos",

pero no es obligatorio, y no se especifica la creación de una sección propia a partir de un determinado número de habitantes.

- Murcia (2016, 27 de mayo). Artículo 33, "promoción de una cultura inclusiva":

> 3. "Todas las bibliotecas propiedad de la Comunidad Autónoma de la Región de Murcia deberán contar con fondo bibliográfico de temática LGTBI, en cualquier caso respetuoso con los derechos humanos y nunca contrario al reconocimiento a la diversidad sexual y de identidad de género, siendo obligatorio que dichos fondos conformen una sección específica en aquellas bibliotecas de ciudades de más de 20.000 habitantes"

(Extremadura 20.000 habitantes, Valencia, 25.000).

- Baleares (2016, 20 de mayo). Propone el acceso a la bibliografía específica sobre la temática LGTBI. No hace alusión a la obligatoriedad en la Comunidad, ni al número de habitantes.

- Extremadura (2015). Obliga.

> "Todas las bibliotecas propiedad de la Junta de Extremadura deberán contar con fondo bibliográfico de temática LGBTI, en cualquier caso respetuoso con los derechos humanos y nunca contrario al reconocimiento a la diversidad sexual y de identidad de género, siendo obligatorio que dichos fondos conformen una sección específica en aquellas bibliotecas de ciudades de más de 20.000 habitantes, estando todos estos fondos coordinados con el *Centro de Memoria Democrática y Documentación LGBTI* regulado en esta misma Ley".

En Valencia eran 25.000.

- Cataluña (2014, 10 de octubre). No hace alusión a las bibliotecas. Menciona el acceso a la bibliografía específica sobre la temática LGTBI.

- Galicia (2014, 14 de abril). En el artículo 27, se enuncia como "Centro de Documentación". Se refiere a la

> "creación de una sección específica en la Biblioteca de Galicia sobre el hecho LGTBI y en materia de orientación sexual e identidad de género".

No se realizan alusiones a las bibliotecas de titularidad de la Comunidad ni al número de habitantes.

4.1.4. Centros de documentación de la memoria LGTBI

> "La historia es una construcción predominantemente heterosexual. A fin de cuentas, con certeza, ¿a cuántos homosexuales conocemos, hombres o mujeres, que hayan hecho parte de la historia? (…) A estas situaciones, nocivas para la memoria histórica LGBTI, se suma el hecho de que las prioridades del activismo LGTBI (…) no pasan por la documentación histórica, el coleccionismo o el patrimonio. Tantos años de guerra y violencia han generado prioridades distintas, encabezadas por la lucha por los derechos civiles (derecho a la vida y la integridad, matrimonio igualitario, adopción, no discriminación). Pensar en libros, documentos o memorabilia, parece un lujo impagable. Tal vez por esto el activismo local no ha generado centros de documentación, bibliotecas o museos especializados" (**Badawi**, 2017).

En la actualidad, aunque esta situación de falta de centros de documentación especializados en la materia que nos ocupa (**García-García**; **Curto-Rodríguez**, 2017), dista mucho de ser una realidad social, podemos vislumbrar en el caso español ciertos atisbos de buenas intenciones. Según Badawi,

> "existen diferentes tipos de archivos LGTBI: los de activistas, aquellas personas que estimularon los derechos civiles y que apenas son conocidos popularmente (…). Están los archivos de organizaciones o de espacios dedicados a la vida nocturna (como las discotecas), lugares que movilizan las subjetividades, los modelos de belleza y las aspiraciones. Están los archivos sociales: los documentos, diarios y fotografías de personas gays, lesbianas, bisexuales, intersexuales, travestis y transexuales, los famosos y los que no lo son. Están los archivos de negativos de fotógrafos que documentaron la vida nocturna (…); los de artistas LGTBI, que cuentan con abundante documentación acerca de sus fuentes iconográficas (…); los archivos de reinados travestis y los de casas familiares trans" (**Badawi**, 2017).

En relación con esta clasificación (**Fernández-Paradas**, 2017, pp. 115-137), pensamos que podrían agruparse en dos grandes grupos:

- aquellos que son fruto de las vidas de personas y asociaciones o promovidos por asociaciones;
- aquellos fruto de un ordenamiento jurídico particular, es decir, cuyas creaciones vienen dadas a partir de una ley, como, por ejemplo, la *Ley valenciana de igualdad LGTBI* o la andaluza.

En el caso del primer grupo podemos mencionar un ejemplo colombiano, *Arkhé: archivos de arte latinoamericano*, que

> "contará con espacio dedicado a la documentación de la memoria LGTB, el archivo queer, una colección con 25.000 fotografías y documentos originales, 76 archivos privados, 3.000 libros y 1.500 ejemplares de revistas" (**Badawi**, 2017).

Otro ejemplo que podemos mencionar es la creación del *Centro de Documentación y Archivo Histórico de la Memoria LGTB*, promovido por la *Federación Argentina LGTB* y la *Defensoría LGTB* de la *Defensoría del Pueblo* de la Ciudad de Buenos Aires junto con la *Subsecretaría de Diversidad Sexual* de la Provincia de Santa Fe.

La creación de centros de documentación de la memoria LGTBI (**Palma-Gómez**, 2011) es un fenómeno que se está produciendo en España al amparo del paulatino ordenamiento jurídico sobre los derechos e igualdades de las personas

LGTBI, pero no debemos olvidar que existen diversas actuaciones anteriores a este fenómeno legislativo que fueron pioneras en recopilar el patrimonio documental, bibliográfico, fotográfico, audiovisual y material de los colectivos LGTBI. Entre los hitos históricos más importantes cabría mencionar:

- *Casa Lambda* en Barcelona, creado en 1976;
- *Centro de Documentación Lambda* de Valencia, constituido el 25 de septiembre de 1986;
- *Aldarte* en Bilbao (*Centro de estudios y documentación por las libertades sexuales*), creado en 1994;
- *Centro de Documentación Evelyb Hooker* en Madrid, que se empez**ó** a gestar en 1998 y comenzó a ser una realidad a partir de 2004.

De las nueve Comunidades Autónomas con legislación sobre igualdad LGTBI, sólo cuatro mencionan la creación de un centro de documentación especializado en la materia objeto de estudio: Valencia (2018), Andalucía (2017), Madrid (2016) y Extremadura (2015). Al igual que en el caso de las bibliotecas, será Extremadura quien marque las pautas y el modelo a seguir, ya que los enunciados serán prácticamente los mismos en Valencia y Madrid.

De las nueve Comunidades Autónomas con legislación sobre igualdad LGTBI, sólo cuatro mencionan la creación de un centro de documentación especializado

De los cuatro centros, dos incluyen en su título la palabra "democrática". Andalucía lo denomina *Instituto de la Memoria Democrática de Andalucía*, y Extremadura lo designa como *Centro de Memoria Democrática y Documentación LGTBI de Extremadura*. Por su parte el madrileño queda designado como *Centro de Documentación y de Memoria Histórica LGTBI* y el de la comunidad valenciana como *Espai de la Memòria LGTBI*.

Las adscripciones de los cuatro centros muestran diferentes posibilidades. El extremeño, el más antiguo, aunque no indica su adscripción, se afirma que

> "estará coordinado con el sistema de bibliotecas de la Junta de Extremadura, Biblioteca de Extremadura y Filmoteca de Extremadura".

El de Madrid, aunque tampoco específica su adscripción, menciona que

> "estará coordinado con el sistema de Red de Bibliotecas Municipales de Madrid y la Filmoteca de Madrid".

El de Andalucía dependerá directamente del *Instituto de la Memoria Democrática de Andalucía*, por lo que quedarán excluidos los patrimonios y sitios históricos que no estén relacionados con el Franquismo. Finalmente el valenciano dependerá de la *Dirección General* y establecerá lazos de colaboración con el *Instituto de la Memoria Democrática*. Los cuatro centros estarán directamente relacionados con la memoria histórica y democrática, con el Franquismo. Tres de ellos repiten los mismos objetivos, establecidos por Extremadura (Valencia y Madrid):

> "relacionados con la memoria democrática y la historia de la represión del colectivo LGTBI".

En cuando a sus contenidos, de nuevo Madrid y Valencia repiten los enunciados propuestos por Extremadura en 2015:

> "albergará archivos, registros y documentación de diversa tipología, de las organizaciones LGTBI y los sectores LGTBI en general".

En relación a la constitución de un centro de documentación de la memoria LGTBI, Andalucía propone

> "la creación de un fondo documental y bibliográfico, y la promoción de la creación de un archivo sobre documentación histórica del colectivo LGTBI".

No se especifican como en Madrid, Valencia o Extremadura los tipos de fondos a contener.

Tanto Valencia, como Madrid y Extremadura incluyen la necesidad de actividades divulgativas y de investigación, la publicación de materiales y la edición de textos científicos. Andalucía (2017), no hace ninguna alusión al respecto.

En relación con los centros de documentación, de nuevo partiendo de los preceptos extremeños, Madrid y Valencia incluyen la posibilidad de firmar convenios específicos con instituciones de la comunidad. Es en este apartado donde se encuentran las principales diferencias. Extremadura alude a que se podrán

> "establecer convenios de colaboración con las organizaciones de la *Memoria Democrática de Extremadura* y con el *Festival FanCineGay*, así como con los colectivos LGBTI de Extremadura".

Madrid es más concisa, afirmando sólo que éstos serán con organizaciones sociales y colectivos LGTBI. Valencia plantea más actuaciones al poner de manifiesto que

> "la *Generalitat* podrá celebrar convenios de colaboración con las universidades, centros de arte y cultura, museos, las organizaciones de la memoria histórica, así como con los colectivos LGTBI de la Comunitat Valenciana".

De manera específica, la Comunidad de Valencia pone especial énfasis en reconocer y homenajear a los represaliados,

> "se recordará a las personas LGTBI que fueron perseguidas, torturadas y asesinadas, así como a las que, especialmente en la adolescencia y la juventud, padecieron discriminación y violencia. Así como se homenajeará a aquellas personas LGTBI destacadas en ámbitos políticos, artísticos, académicos o sociales".

Como hemos visto, cuatro de las nueve Comunidades Autónomas hacen menciones expresas a la creación de centros de documentación para la memoria LGTBI, especialmente en contextos relacionados con el Franquismo. Ahora bien, el análisis realizado pone de manifiesto que en la legislación no hay ningún tipo de alusión a la fundación de otro tipo de centros o registros como museos, centros culturales o inventarios de bienes históricos-artísticos. Tampoco se menciona la necesidad de mapear los sitios y lugares de la memoria histórica LGTBI desde una visión atemporal, esto es, que supere al contexto de antes, durante y después del Franquismo, por lo que sitios como el campo de concentración homosexual de Tefia, el *Pasaje Begoña* de Torremolinos o la primera librería gay de España quedan totalmente desprotegidos. Las características de los centros de documentación son las siguientes:

Valencia (2018)

- Adscripción: *Dirección General*.
- Objetivos:

  "promover y favorecer el conocimiento, el estudio y la investigación sobre la historia del colectivo LGTBI, mediante información bibliográfica y documental".

  Establecerá lazos de colaboración con el *Instituto de la Memoria Democrática*.
- Contenidos:

  "Albergará archivos, registros y documentación de diversa tipología, de las organizaciones LGTBI y los sectores LGTBIen general, relacionados con la memoria democrática y la historia de la represión del colectivo LGTBI. Entre sus funciones también estará digitalizar estos fondos y difundirlos".

  Repite lo enunciado en Madrid (2016).
- Actividades divulgativas y de investigación.
- Publicación de materiales.
- Publicación de libros: no se menciona de manera específica. Se mencionan "materiales relacionados".
- Convenios:

  "La Generalitat podrá celebrar convenios de colaboración con las universidades, centros de arte y cultura, museos, las organizaciones de la memoria histórica, así como con los colectivos LGTBI de la Comunitat Valenciana".
- Nota:

  "Se recordará a las personas LGTBI que fueron perseguidas, torturadas y asesinadas, así como a las que, especialmente en la adolescencia y la juventud, padecieron discriminación y violencia. Así como se homenajeará a aquellas personas LGTBI destacadas en ámbitos políticos, artísticos, académicos o sociales".

Andalucía (2017)

- Adscripción: *Instituto de la Memoria Democrática de Andalucía*.
- Objetivos: Víctimas de la represión franquista por su orientación. "Creación de un fondo documental y bibliográfico de temática LGTBI".
- Actividades divulgativas y de investigación.
- Publicación de materiales.
- Publicación de libros.
- Convenios.

Madrid (2016, 22 de julio)

Capítulo VII. "Se crea el *Centro de Documentación y Memoria Histórica LGTBI*".

- Adscripción: no se especifica.

  "Estará coordinado con el sistema de *Red de Bibliotecas Municipales de Madrid* y la *Filmoteca de Madrid*".

-Contenidos:

  "El Centro de Documentación y de Memoria Histórica LGTBI albergará los archivos, registros y documentos, incluyendo documentos audiovisuales, de las organizaciones LGTBI de la Comunidad de Madrid y los sectores LGTBI en general y la documentación relacionada con la Memoria histórica de la represión del colectivo LGTBI en Madrid".

- Actividades divulgativas y de investigación
- Publicación de materiales: relacionados con la memoria histórica, ninguna alusión al patrimonio histórico LGTBI.
- Publicación de libros.

  "Dentro de los planes anuales de publicaciones llevados a cabo por la Consejería Educación, Juventud y Deporte".
- Convenios: con organizaciones sociales y colectivos LGTBI.

Extremadura (2015)

- Adscripción:

  "Estará coordinado con el sistema de bibliotecas de la Junta de Extremadura, Biblioteca de Extremadura y Filmoteca de Extremadura".
- Contenidos:

  "El *Centro Memoria Democrática y Documentación LGBTI* de Extremadura albergará los archivos, registros y documentos, incluyendo documentos audiovisuales, de las organizaciones LGBTI de Extremadura y los sectores LGBTI en general y la documentación relacionada con la Memoria Democrática y la historia de la represión del colectivo LGBTI en Extremadura".

Estas afirmaciones serán repetidas por Madrid (2016) y Valencia (2018).

- Actividades divulgativas y de investigación.
- Publicación de materiales.
- Publicación de libros.

  "podrá acordar con la Editora Regional de Extremadura la edición de libros específicos relacionados con el colectivo LGBTI".

- Convenios:

  "podrá establecer convenios de colaboración con las organizaciones de la *Memoria Democrática de Extremadura* y con el *Festival FanCineGay*, así como con los colectivos LGBTI de Extremadura".

El enunciado es diferente a lo propuesto por Valencia.

4.2. El patrimonio histórico-artístico LGTBI en las leyes de la memoria histórica española

En los puntos anteriores hemos podido constatar que algunas de las leyes sobre la igualdad y derechos de las personas LGTBI ponen su articulado en relación con la ley de memoria histórica de la propia comunidad, especialmente las cuestiones que versan sobre los centros de documentación. Con vistas a enriquecer el objeto de estudio, hemos realizado un vaciado completo de la legislación nacional y autonómica promovida sobre la memoria histórica, buscando cuál es la presencia del patrimonio y la memoria LGTBI entre su articulado.

En la actualidad España dispone de una ley nacional y de nueve (ocho leyes y un decreto) leyes autonómicas (Andalucía, Aragón, Asturias, Baleares, Canarias, Castilla y León, Cataluña, Valencia y Navarra). Existen ocho comunidades en las que no se ha legislado: Cantabria, Castilla la Mancha, Extremadura, Galicia, La Rioja, Madrid, Murcia y País Vasco. Estos son los títulos de las leyes:

- España
  Ley 52/2007 de 26 de diciembre, *Ley de la memoria histórica*.
- Andalucía
  Ley 2/2017 de 28 de marzo*, de Memoria Histórica y Democrática de Andalucía*.
- Aragón
  Ley 14/2018, de 8 de noviembre, *de memoria democrática de Aragón*.
- Asturias
  Ley del Principado de Asturias 1/2019, de 1 de marzo, *para la recuperación de la memoria democrática en el Principado de Asturias*.
- Islas Baleares
  Ley 10/2016, de 13 de junio, *para la recuperación de desaparecidos*;
  Ley 2/2018, de 13 de abril, *de memoria y reconocimiento democráticos de las Illes Balears*.
- Canarias
  Ley 5/2018, de 14 de diciembre, *de memoria histórica de Canarias y de reconocimiento y reparación moral de las víctimas canarias de la guerra civil y de la dictadura franquista*.
- Cantabria: No. Anteproyecto
- Castilla la Mancha: No. Anteproyecto.
- Castilla y León
  Decreto 9/2018, de 12 de abril, *de la Memoria Histórica y Democrática de Castilla y León*. *Boletín Oficial de Castilla y León* de 16-04-2018.
- Cataluña
  Ley 13/2007, de 31 de octubre, *del Memorial Democrático*; complementada posteriormente por la Ley *10/2009 sobre localización e identificación de las personas desaparecidas durante la Guerra Civil y la dictadura franquista*.
- Comunidad Valenciana
  Ley 14/2017, de 10 de noviembre, *de Memoria democrática y para la convivencia*.
- Extremadura. No. Anteproyecto.
- Galicia. No
- La Rioja. No
- Comunidad de Madrid. No
- Región de Murcia. No

- Navarra:
  Ley foral 16/2018, de 27 de junio, *por la que se modifica la ley foral 33/2013, de 26 de noviembre, de reconocimiento y reparación moral de las ciudadanas y ciudadanos navarros asesinados y víctimas de la represión a raíz del golpe militar de 1936.*
- País Vasco. No.

El análisis realizado sobre las nueve leyes (ocho leyes y un decreto) que hasta el momento se han promulgado por las Comunidades Autónomas, ha puesto de manifiesto la total ausencia del patrimonio LGTBI en su articulado. De las nueve leyes estudiadas, sólo cuatro (Andalucía, Aragón, Baleares y Navarra), incluyen en su articulado alguna referencia al colectivo LGTBI. Andalucía menciona en el artículo 40, que

> "Las perspectivas de género y LGTBI serán tenidas en cuenta en la composición del grupo de trabajo o comisión".

Aragón, en el artículo 50 (competencia sancionadora), reconoce de manera específica la violencia ejercida hacia las personas LGTBI. En la misma línea se pronuncian las Islas Baleares. La gran novedad se da en Navarra (2018), que no sólo realiza una mención a las personas LGTBI, sino que en su artículo 13, titulado *Centro Documental de la Memoria Histórica de Navarra*, alude de manera específica:

> "6. Se creará una sección documental específica relativa a la memoria LGTBI+",

añadiendo una nota en la que se explicita que

> "Art. 13.6. Este apartado fue añadido por Ley foral 8/2017, de 19 de junio, para la igualdad social de las personas LGTBI+".

Anteriormente hemos mencionado que sólo Valencia, Andalucía, Madrid y Extremadura, proponían la creación de un centro documental. Navarra realiza una alusión a que las bibliotecas deben poseer este tipo de fondos documentales. Por lo tanto Navarra es el único caso en el que podemos establecer un punto de unión entre la ley de memoria histórica y la de igualdad LGTBI.

> Navarra es el único caso en el que podemos establecer un punto de unión entre la ley de memoria histórica y la de igualdad LGTBI

De los 9 documentos examinados, sólo en la Comunidad de Aragón, en el preámbulo, se hacen alusiones a los homosexuales, como objetos de represión. En la mayoría de los documentos se hace referencia a la represión hacia la orientación sexual, como motivo de inclusión a los preceptos de la ley.

Las leyes analizadas incluyen figuras patrimoniales tales como Lugar de Memoria Democrática, Sendero de Memoria Democrática, etc., al amparo de los cuales se podrían proteger patrimonios de los colectivos LGTBI, como ha pasado con el *Pasaje Begoña* de Torremolinos, siempre y cuando éstos estén relacionados con la memoria franquista, quedando de nuevo desprotegidos los patrimonios anteriores y posteriores.

5. Conclusiones

Gracias a la presente investigación hemos tenido la oportunidad de considerar la presencia del patrimonio LGTBI (lesbianas, gays, personas transgénero, bisexuales e intersexuales), el patrimonio histórico, la memoria histórica LGTBI, y los sitios y lugares históricos LGTBI en la legislación emanada de las Comunidades Autónomas sobre la igualdad y los derechos de las personas LGTBI. Se han elegido estas leyes, porque a diferencia de las leyes del patrimonio nacional y autonómicas que no hacen ningún tipo de alusión a estos patrimonios, en ellas se menciona de manera explícita este tipo de patrimonios.

Hemos podido constatar que en ninguna de las leyes de patrimonio, la nacional y las autonómicas, se realiza alguna mención al patrimonio y memoria LGTBI, ni en general a los homosexuales, lesbianas, transexuales, etc., y también hemos podido constatar que ninguna de estas leyes, al no existir el patrimonio LGTBI entre su articulado, establecen conexiones con las leyes de memoria histórica.

Igualmente, el análisis vertido sobre las nueve Comunidades Autónomas que han legislado en materia de memoria histórica ha puesto de manifiesto la total ausencia del patrimonio LGTBI. De manera excepcional, Navarra, en su *Ley de memoria histórica*, menciona la creación de un fondo documental en el centro de documentación que la ley propone crear. Además, la ley cruza el dato con la ley de igualdad LGTBI, siendo la única Comunidad que lo ha realizado.

Se han analizado las leyes de las nueve Comunidades Autónomas que han legislado de manera específica sobre la igualdad y los derechos de las personas LGTBI, descartando aquellas comunidades que han promulgado leyes sobre el género o la transexualidad, al quedar fuera del objeto de estudio. En España, en la actualidad, existen ocho Comunidades Autónomas que no han legislado sobre esta materia: Aragón, Asturias, Cantabria, Castilla y León, Castilla la Mancha, La Rioja, País Vasco y Canarias. Tampoco lo han hecho las dos ciudades autónomas de Ceu-

> En ninguna de las leyes de patrimonio, la nacional y las autonómicas, se realiza alguna mención al patrimonio y memoria LGTBI

ta y Melilla. El intervalo en que las leyes estudiadas han sido promulgadas abarca desde el 14 de abril de 2014, con la ley gallega, y el 29 de noviembre de 2018, con la promulgación de la ley de la Comunidad Valenciana. De estas leyes, una corresponde a 2014; una a 2015; tres a 2016; dos a 2017; y una a 2018.

> En España existen ocho Comunidades Autónomas que no han legislado sobre esta materia: Aragón, Asturias, Cantabria, Castilla y León, Castilla la Mancha, La Rioja, País Vasco y Canarias

Aunque la ley gallega fue la pionera en este sentido, la que ha marcado las pautas a seguir ha sido la *Ley 12/2015* de 8 de abril de Extremadura, que han copiado la mayoría de los textos restantes. Las leyes gallegas, murciana y de las Islas Baleares no realizan ninguna mención al patrimonio histórico LGTBI, ni a la fundación de centros de documentación.

Uno de los principales objetivos de este texto era analizar la presencia y medidas propuestas sobre el patrimonio histórico LGTBI en la legislación analizada. Hemos podido comprobar, que las nueve leyes propuestas no realizan alusiones al patrimonio histórico y los sitios y lugares históricos relacionados con el colectivo LGTBI. No existen medidas para su preservación, conservación, mapeo, difusión etc. Con carácter general, las leyes aluden a patrimonios, manifestaciones y expresiones o bien netamente contemporáneas o bien relacionadas con la memoria histórica y democrática, es decir, con aquellas cuestiones que tienen que ver con el Franquismo, antes, durante y después de su vigencia. Sólo cuando se mencionan los centros de documentación se describen en algunos casos los tipos de fondos documentales, de diversa naturaleza, que se incluirán en esos centros. En estos casos se resalta especialmente la documentación de la memoria histórica democrática y la represión franquista. En función de estas leyes hemos podido constatar que el patrimonio, los sitios y lugares de la memoria histórica LGTBI, en el contexto atemporal del tiempo histórico y el espacio geográfico más allá del Franquismo, no tienen ningún tipo de protección patrimonial.

De manera específica las leyes aluden a dos cuestiones importantes: por un lado, las bibliotecas y, por otro lado, a los centros de documentación. En ambas, la ley extremeña es el punto de partida y sus preceptos prácticamente ha sido calcados por otras leyes.

De las nueve Comunidades Autónomas, en las leyes de seis de ellas se menciona la cuestión de la importancia de que las bibliotecas propiedad de la Comunidad contengan fondos con temática LGTBI. Esta cuestión es obligatoria en cinco de ellas (Andalucía, Navarra, Valencia, Extremadura y Murcia). En Madrid se incluye pero no es obligatorio. Y Baleares y Cataluña reflejan una misma coletilla que hace alusión a la necesidad de que existan fondos bibliográficos al respecto. Tres de las Comunidades Autónomas establecen que a partir de un determinado número de habitantes, las bibliotecas contarán con una sección propia. En relación con los centros de documentación, de las nueve leyes analizadas, sólo aparecen recogidos en cuatro, presentando unas casuísticas similares.

En relación con la puesta en marcha de centros de documentación LGTBI que proponen cuatro de las leyes autonómicas analizadas (Valencia, Andalucía, Madrid y Extremadura), hemos constatado que en ninguna de ellas se han creado este tipo de organismos. En el conjunto de las nueve comunidades autónomas que han legislado sobre derechos e igualdad LGTBI, tampoco se han constituido organismos emanados de las leyes analizadas.

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Evolución de la popularidad de Donald Trump y otros mandatarios internacionales en *Google Trends* (2016-2019)

Evolution of the popularity of Donald Trump and other international leaders on *Google Trends* (2016-2019)

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Resumen

Las estructuras de poder internacionales presentan un patrón de transición donde Estados Unidos ya no es capaz de afianzar su poder de manera global. Los eslóganes de Donald Trump: *Make America great again* o *America first*, ejemplifican el interés mediático del presidente norteamericano en que sus electores piensen que es posible recuperar la hegemonía perdida. Este artículo examina los encuentros bilaterales de Donald Trump con los políticos Emmanuel Macron, Angela Merkel, Shinzō Abe, Theresa May, Justin Trudeau, Giuseppe Conte y Jean-Claude Juncker. Unas reuniones marcadas por saludos extravagantes y comportamientos políticamente incorrectos que parecen más propias de un *reality show* que de un encuentro bilateral de líderes políticos. Mediante los datos extraídos de la plataforma *Google Trends* se estudia el impacto de las reuniones entre Donald Trump y los jefes de estado del *G7* para examinar las variaciones de popularidad del presidente norteamericano y otros mandatarios internacionales.

Palabras clave

Poder; Medios de comunicación; Bilateral; Diplomacia; *Reality shows*; Popularidad; Políticos; Comunicación política; *Google Trends*; Donald Trump; Emmanuel Macron; Shinzō Abe; Angela Merkel; Justin Trudeau; Theresa May; Giuseppe Conte; Jean-Claude Juncker.

Abstract

International power structures present a pattern of transition, where the United States is no longer able to consolidate its power globally. The slogans of Donald Trump: "Make America great again" or "America first" are an example of the media interest of the American president in that his electors think that it's possible to gain the lost hegemony. This article examines Donald Trump's bilateral encounters with politicians Emmanuel Macron, Angela Merkel, Shinzō Abe, Theresa May, Justin Trudeau, Giuseppe Conte, and Jean-Claude Juncker. Meetings marked by extravagant greetings and politically out of place behaviors that seem more like a reality show than a bilateral encounter between political leaders. Using data results from *Google Trends* platform, we study the resonance of the meetings between Donald Trump and the heads of state of the *G7* countries to examine the variations in Trump's popularity after these meetings.

Keywords

Power; Mass media; Bilateral; Diplomacy; *Reality shows*; Popularity; Politicians; Political communication; *Google Trends*; Donald Trump; Emmanuel Macron; Shinzō Abe; Angela Merkel; Justin Trudeau; Theresa May; Giuseppe Conte; Jean-Claude Juncker.

1. Relaciones de poder bilaterales e interdependencia

Las estructuras de poder internacionales presentan un patrón en transición que no se caracteriza por las pautas clásicas de las relaciones internacionales. Desde principios del siglo XXI, Estados Unidos no es capaz de afianzar su poder e influencia en el sistema internacional. Estas capacidades están en manos de muchos actores, no sólo con respecto a las organizaciones globales, sino también frente a otros Estados que han venido incrementado sus capacidades como China, Rusia, Brasil o India (**Ghotme**, 2011).

A partir de la Guerra de Irak de 2003, el autoritarismo ruso y el partido único en China ya no ven con buenos ojos la forma en la que Estados Unidos usa su poder en el mundo (**Charillon**, 2009). Sin embargo, puesto que ninguna potencia ha desafiado militarmente a Estados Unidos, la estabilidad mundial (en el sentido de una paz generalizada) sigue siendo una constante en el sistema internacional contemporáneo que no se explica exclusivamente por razones de "acomodamiento" entre las grandes potencias (**Patrick**, 2010).

La mezcla de un sistema capitalista mezclado con el monopolio estatal ha hecho que China crezca en las últimas décadas de manera vertiginosa (**Economy**, 2010). Este liderazgo chino promueve un "ambiente internacional pacífico" en el que se consolide su crecimiento económico y pueda garantizarse el acceso a los recursos naturales y energéticos (**Economy**, 2010).

Al igual que China, Rusia ha preferido adentrarse en una especie de capitalismo autoritario, populista y antiliberal soportado por los altos precios de los recursos energéticos (**Lacqueur**, 2010). Este incremento del poder económico se ha visto reflejado en la última década en la diplomacia internacional al conseguir que Bielorrusia, Ucrania o Georgia no entren en la *OTAN* (**Urjewicz**, 2010).

Por otro lado, según **Craig** (2003), **Wendt** (2003) y **Deudney** (2007), Estados Unidos está atravesando una fase de declive propia de los ciclos de las transiciones hegemónicas. Históricamente, según **Ghotme** (2011), las potencias dominantes en las fases de transición descubren que siguen contando con las mayores capacidades de poder en el sistema internacional, pero que al mismo tiempo estas se ven "agobiadas" por aspectos internos como la deuda pública, el déficit de la cuenta o crisis políticas y/o de valores sociales (**Gilpin**, 1981; **Modelski**, 1987; **Kennedy**, 1989; **Arrighi**; **Silver**, 2001; **Wallerstein**, 2004). De ahí el éxito del *slogan Make America great again* de la campaña de Donald Trump. El magnate neoyorquino movilizó al electorado republicano con la idea de volver a convertir a Estados Unidos en la gran potencia mundial y de volver a poner a los ciudadanos americanos por encima de los demás: *America, first*, *America for the Americans*. El uso de este tipo de términos podría incitar al público norteamericano a percibir a Trump como una persona más carismática que sus contrincantes (**Ghazal-Aswad**, 2018).

El patrón de interdependencia es para **Deudney** (2007) y **Wendt** (2003) el paradigma que mejor refleja la realidad de las estructuras de poder a principios del siglo XXI. Los autores coinciden en que en un patrón de declive las fuerzas militares pierden poder y se abren múltiples canales de acceso entre las sociedades y los Estados. Esto provoca que esta estructura de poder carezca de una jerarquía definida (**Ghotme**, 2011).

Según **Wendt** (2003), parecía que había una convergencia de las transiciones democráticas y de la estandarización de política capitalista norteamericana a finales del siglo XX. Sin embargo, a principios de siglo XXI y más aún con la llegada de Donald Trump al poder en Estados Unidos, parece que las relaciones internacionales están más cerca de acuerdos puntuales y bilaterales que de una organización mundial jerarquizada. De ahí que Donald Trump no se encuentre cómodo en encuentros oficiales de estructuras de poder clásicas como la *ONU*, la *OTAN* o el *G7* y que prefiera las reuniones "cuerpo a cuerpo" (**Da-Vinha**, 2019). La política *America first* de Donald Trump se convierte según **López-García** (2017) en un intento de Estados Unidos por volver a recuperar el protagonismo perdido. Esta multipolaridad puede presentar un escenario sombrío, donde el multilateralismo sea simplemente una forma de relaciones esporádicas sin ningún interés por la búsqueda de un equilibrio global (**Ghotme**, 2011).

2. Donald Trump y el *reality show*

Donald Trump se convirtió en 2004 en una estrella de la televisión gracias a la cadena *NBC* y los *reality shows The apprentice y The celebrity apprentice*, que durante 11 años cosecharon récords de audiencia con millones de espectadores en Estados Unidos (**Cillizza**, 2018). Trump ha aparecido también en decenas de series y programas de televisión durante su carrera: *El príncipe de Bel Air*, *Spin city*, *Susan*, o *reality shows* como *Dancing with the stars*, *Comedy central*, *The X factor* o *WrestleMania*. En la mayoría de sus apariciones (12 en largometrajes y 14 en series de televisión) suele interpretarse a sí mismo, introduciéndose como un personaje real dentro de historias de ficción. Además lleva décadas colaborando con programas de televisión y radio como invitado y comentarista.

El 20 de enero de 2017, tras una turbulenta campaña electoral contra Hillary Clinton, Donald Trump se convirtió en el 45º presidente de Estados Unidos. El día de su nombramiento hubo un detalle que define al magnate neoyorkino. Mientras bajaba las escaleras del Capitolio, el presidente electo se detuvo para mirar directamente a la cámara, incitando al comentarista de televisión George Stephanopoulos a decir:

> "¡Sonríe para la cámara! Él siempre está consciente de que las cámaras están en cada paso del camino" (*ABC News*, 2017).

En gran medida este dominio de los medios de comunicación le dio la popularidad necesaria a Trump para llegar a la Casa Blanca con un presupuesto mucho menor que su rival, Hillary Clinton (**Galán-García**, 2017). Mientras el *Partido Demócrata* se gastó 700 millones de dólares durante la campaña, Trump y el *Partido Republicano* emplearon 400 millones (**Cillizza**, 2018).

Para **Street** (2019), Trump es un ejemplo de "política de celebridades". De hecho, sus incursiones en la política han derivado de la fama y notoriedad que ha adquirido, o incluso dependen de ella. **Sullivan** (2016) destaca que:

> "Donald surgió de los circos populistas de la lucha libre, los periódicos de Nueva York, los *reality shows* y *Twitter*".

Donald Trump (**Yeste**; **Franch**, 2018; **Barberá-González**; **Martín-Del-Fresno**, 2019) sabe que la popularidad mediática ha impulsado su carrera como empresario y lo está haciendo ahora como político y presidente de Estados Unidos. Un estilo que pretende llevar también a las relaciones de poder con otros políticos internacionales (**Kuper**, 2017).

Desde el inicio de su mandato, el inusual estilo de la gestión de Trump diverge significativamente del modelo tradicional de gestión presidencial; no sólo en su comportamiento como mandatario, sino en decisiones políticas de repercusión internacional, como la retirada de los acuerdos de París sobre el cambio climático, la descertificación del *Plan de Acción Integral Conjunto* sobre el programa nuclear iraní o el reconocimiento de Jerusalén como capital de Israel (**Da-Vinha**, 2019). El presidente norteamericano se ha reunido en 34 ocasiones con los representantes políticos de Francia, Inglaterra, Canadá, Italia, Japón y Alemania. Muchos de estos encuentros han tenido una repercusión mediática ajena a factores políticos. Cabe destacar el desproporcionado apretón de manos de Donald Trump a Shinzō Abe, los besos con Emmanuel Macron, la sacudida de "caspa" de su traje y la negativa a estrechar la mano de Angela Merkel. Estas acciones, que se convierten en mediáticas, han sido empleadas de manera similar por otros líderes populistas europeos (**Alonso-Muñoz**; **Casero-Ripollés**, 2018).

Según algunos autores (**Wendt**, 2003; **Deudney**, 2007), la estructura de poder está sufriendo un proceso de transición, donde Estados Unidos ha perdido el liderazgo mundial. En este clima de merma de poder, Donald Trump parece emplear a los medios de comunicación para devolver a los ciudadanos americanos la ilusión de que Estados Unidos vuelve a ser importante (**Justel-Vázquez** *et al.*, 2018). Esta situación se enmarca dentro de un entorno social donde lo fundamental es la aplicación de la información a aparatos que la generen y procesen, creando un flujo comunicativo donde el uso y la innovación se retroalimenta (**Castells**, 2005).

3. Objetivo e hipótesis

El objetivo principal de este artículo es examinar las reuniones bilaterales de Donald Trump con los principales mandatarios de potencias occidentales y valorar los aspectos relacionados con el espectáculo mediático de dichos encuentros.

El objetivo secundario es averiguar cómo afectaron en la popularidad de Trump los encuentros más destacados en las búsquedas de *Google Trends*. Asimismo se intentará resolver la siguiente hipótesis: los mandatarios internacionales aumentan su popularidad después de un encuentro con Trump.

Tabla 1. Evolución del índice de búsquedas de los encuentros de Donald Trump y los políticos Shinzō Abe, Emmanuel Macron, Angela Merkel, Theresa May, Justin Trudeau, Giuseppe Conte y Jean-Claude Juncker.
En la primera columna se indica el nombre de los representantes y se enumeran los encuentros y su fecha (E1, E2, E3, etc.). La segunda columna representa la evolución de la popularidad mediante el índice de búsquedas en *Google Trends* en la fecha inmediatamente anterior a la reunión y el de la fecha de la reunión. *Google Trends* mide su índice de búsquedas porcentualmente de 0 a 100, siendo 100 el punto de mayor número de búsquedas en el período cronológico seleccionado.

Shinzō Abe	**Popularidad**
E1 (18/11/2016)	De 5 a 51
E2 (10/02/2017)	De 8 a 100
E3 (26/05/2017)	De 5 a 8
E4 (08/07/2017)	De 4 a 8
E5 (21/09/2017)	De 9 a 9
E6 (06/11/2017)	De 8 a 35
E7 (07/06/2018)	De 5 a 15
E8 (26/09/2018)	De 7 a 11
E9 (30/10/2018)	De 4 a 5
E10 (26/04/2019)	De 4 a 7
E11 (27/05/2019)	De 8 a 20
Emmanuel Macron	**Popularidad**
E1 (25/05/2017)	De 14 a 15
E2 (13/07/2017)	De 7 a 31
E3 (18/09/2017)	De 2 a 3
E4 (24/04/2018)	De 4 a 49
E5 (08/06/2018)	De 3 a 5
E6 (11/07/2018)	De 2 a 3
E7 (24/09/2018)	De 1 a 3
E8 (10/11/2018)	De 4 a 16
Angela Merkel	**Popularidad**
E1 (17/03/2017)	De 9 a 100
E2 (06/07/2017)	De 8 a 24
E3 (27/04/2018)	De 4 a 4
E4 (11/07/2018)	De 9 a 15
Theresa May	**Popularidad**
E1 (27/01/2017)	De 4 a 34
E2 (08/07/2017)	De 5 a 4
E3 (20/09/2017)	De 3 a 7
E4 (25/01/2018)	De 3 a 4
E5 (13/07/2018)	De 3 a 17
E6 (26/09/2018)	De 4 a 3
Justin Trudeau	**Popularidad**
E1 (13/02/2017)	De 6 a 100
E2 (11/10/2017)	De 3 a 7
E3 (08/06/2018)	De 6 a 14
Giuseppe Conte	Popularidad
E1 (30/07/2018)	De 5 a 86
Jean-Claude Juncker	**Popularidad**
E1 (25/07/2018)	De 18 a 100

4. Metodología

Esta investigación realiza un análisis cuantitativo a través de los datos extraídos de la plataforma *Google Trends.* La metodología sigue el sistema usado por otros estudios (**Bokelmann**; **Lessmann**, 2018; **Mahroum** *et al.*, 2018; **Kamiński**; **Łoniewski**; **Marlicz**, 2019; **Quintanilha** *et al.*, 2019) sobre la percepción de determinados fenómenos basados en el análisis de datos extraídos de las búsquedas en *Google* a través de la citada plataforma.

Al mismo tiempo se realiza un análisis cualitativo basado en el contenido de los encuentros entre Donald Trump y otros mandatarios internacionales del *G7* (Emmanuel Macron, Angela Merkel, Shinzō Abe, Theresa May, Justin Trudeau, Giuseppe Conte y Jean-Claude Juncker) desde la bibliografía de varios autores contemporáneos (**López-Martín**; **Roig-Domínguez**; **Sádaba-Rodríguez**, 2003; **Sierra-Caballero**, 2008; **Tarín-Sanz**, 2018).

El período acotado para esta investigación va del 8 de noviembre de 2016 (día en el que Trump se proclama vencedor de las quincuagésimo octavas elecciones presidenciales de Estados Unidos) hasta el 1 de junio de 2019.

Las gráficas de *Google Trends* representan la frecuencia en la que se realiza una búsqueda de un término particular en una o varias regiones del mundo. El eje horizontal de la gráfica representa el tiempo (desde 2004), y el eje vertical la frecuencia de las búsquedas. También permite al usuario comparar las búsquedas de varios términos. En este artículo analizaremos la frecuencia de las búsquedas en *Google Trends* de los nombres de los principales mandatarios internacionales que se han reunido con Donald Trump. Se relacionará el índice de búsquedas en *Google Trends* con el aumento o disminución de la popularidad de los políticos en *Google* al tener una relación directa.

5. Análisis

5.1. Shinzō Abe

La reunión entre el primer ministro japonés y el presidente norteamericano tras tomar posesión de su cargo arroja el mayor índice de búsquedas (tabla 1, Shinzō Abe, E2). El tema central fue reafirmar el compromiso de Estados Unidos como garante de la seguridad japonesa frente a Corea del Norte. Trump estrechó la mano de Abe durante 19 segundos de una manera que los medios calificaron como "poco convencional" (**Miller**, 2017) o "incómoda" (**Cheng**, 2017). Trump estrechó al político japonés con tanta intensidad que los medios se hicieron eco del gesto del mandatario nipón tras el apretón (**Horton**, 2017). Este tipo de actos pueden considerarse como una extensión del espectáculo televisivo con fines comunicativos específicos. Del modelo propagandístico clásico (panfletos, periódicos, radio o televisión entre otros) se pasa a un nuevo enfoque donde se considera cualquier posibilidad que pueda ofrecer una posición ventajosa (**Tarín-Sanz**, 2018). La evolución de la popularidad de Shinzō Abe después del citado encuentro con el presidente de EUA pasó de 8 puntos a 100 (gráfico 1), el máximo registrado en el período analizado.

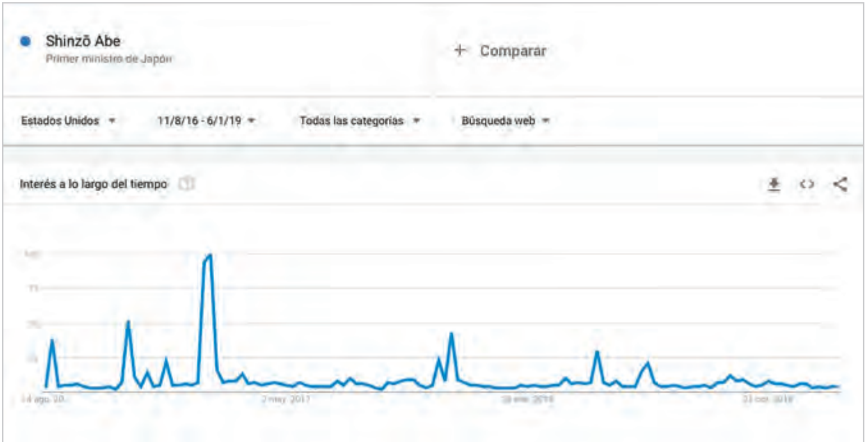

Gráfico 1. Evolución del índice de búsquedas de Shinzō Abe en Estados Unidos.

Imagen 1. Shinzō Abe se retira, tras el apretón de manos de Donald Trump el 10 de febrero de 2017

5.2. Emmanuel Macron

Enmanuel Macron y Donald Trump han mantenido ocho reuniones bilaterales. El cuarto encuentro (tabla 1, Enmanuel Macron, E4) se organizó para llegar a acuerdos militares sobre el conflicto con Irán y el Daesh. Si bien estos temas se nombran en las noticias que recogen el encuentro, los medios destacaron que los dos políticos llegan a darse dos besos (**Liptak**, 2018). Esa reunión tiene el pico en el aumento de búsquedas de los encuentros entre ambos mandatarios (de 4 a 49 puntos). En las noticias se pueden leer frases como "Macron no podía separarse de Trump" (**Ghitis**, 2018), intercambiaron "apretones, caricias, tirones" y "besos al aire" (**Simon**, 2018) o como el presidente Trump dijo, "Tenemos que dejarlo impecable" tras sacudir algunas motas de su traje (**Estepa**, 2018). El paradigma mecánico de comunicación y difusión de esquemas de pensamiento actual son tanto la televisión como lo que algunos autores consideran su extensión, internet (**Rodríguez**, 2019). Se produce una transición cultural centrada en los textos a otra centrada en la imagen (**Sierra-Caballero**, 2008). Ambos mandatarios son conscientes de esta repercusión, por lo que la importancia de sus actos pasa a un plano de importancia similar al de sus declaraciones. En el primer encuentro entre ambos (centrado en la lucha de la *OTAN* contra el terrorismo) los medios lo comentaron como un "combate de apretones de manos" (**Cresci**, 2017) o se "enzarzaron en una diplomacia de apretones de manos" (*Reuters*, 2017). Esta reunión tiene un crecimiento mínimo en el índice de popularidad (tabla 1, Emmanuel Macron, E1), quizás en parte debido a la cercanía de su elección como presidente de la República de Francia, momento de máximo interés en las búsquedas de Estados Unidos (gráfico 2).

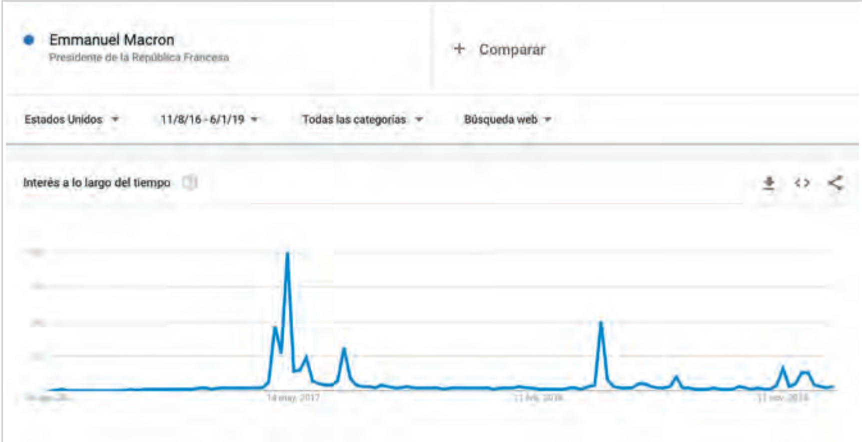

Gráfico 2. Evolución del índice de búsquedas de Emmanuel Macron en Estados Unidos

Imagen 2. Emmanuel Macron besa a Donald Trump el 24 de abril de 2018

5.3. Angela Merkel

La canciller federal de Alemania y el presidente de Estados Unidos se reunieron en cuatro ocasiones. Dos en la Casa Blanca (tabla 1, Angela Merkel, E1 y E3) y en Hamburgo (tabla 1, Angela Merkel, E2) y Bruselas (tabla 1, Angela Merkel, E4). El primer encuentro entre ambos (centrado en tratados comerciales y laborales) marca el pico de máxima popularidad (de 8 a 100 puntos). A su llegada a la Casa Blanca, Trump saludó a Merkel de manera cordial. Sin embargo, al comenzar la rueda de prensa Merkel le propone estrechar su mano y el presidente de EUA la rechaza. Los medios comentaron este suceso:

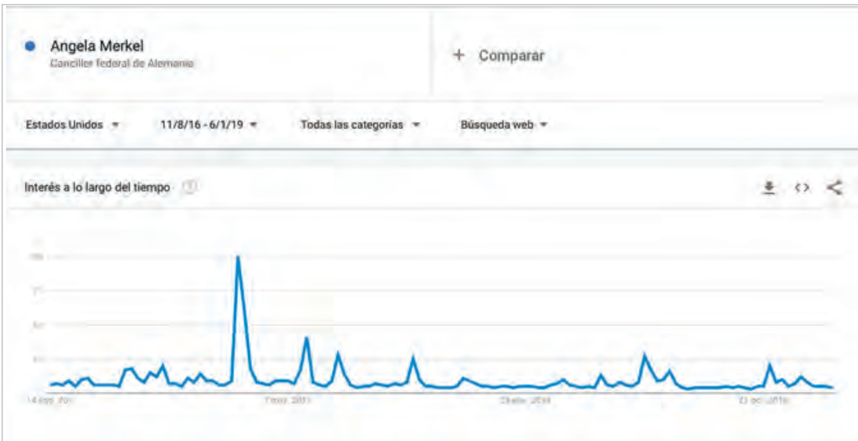

Gráfico 3. Evolución del índice de búsquedas de Angela Merkel en Estados Unidos

> "Angela Merkel le pidió al presidente Trump que le diera la mano. Él la ignoró" (**Alter**, 2017);
> "No hubo apretón de manos oficial en el despacho oval entre Trump y Merkel" (**Manchester**, 2017);
> "Donald Trump rechaza estrechar la mano de Angela Merkel" (**Williams**, 2017).

La tensión entre Estados Unidos y Alemania (englobada en las negociaciones comerciales y fiscales con la Unión Europea) se traslada al plano relacional de los mandatarios. La posición de roles tanto entre aliados como entre adversarios a nivel político ha alcanzado un grado de sofisticación similar al de las tácticas militares. Los conflictos bélicos han sido en ocasiones sustituidos por la pugna de la percepción en la opinión pública (**López-Martín**; **Roig-Domínguez**; **Sádaba-Rodríguez**, 2003).

5.4. Theresa May

May y Trump se reunieron en seis ocasiones. Su primer encuentro fue el que suscitó mayor número de búsquedas (tabla 1, Theresa May, E1), con una evolución del índice de 4 a 34 puntos (gráfico 4). Fue la primera reunión de Trump como presidente con un mandatario extranjero, y los temas tratados fueron desde la lucha contra el Daesh hasta los acuerdos con la Unión Europea. Dos de estos encuentros de Trump con May (tabla 1, Theresa May, E2 y E6) provocaron un descenso en el número de búsquedas.

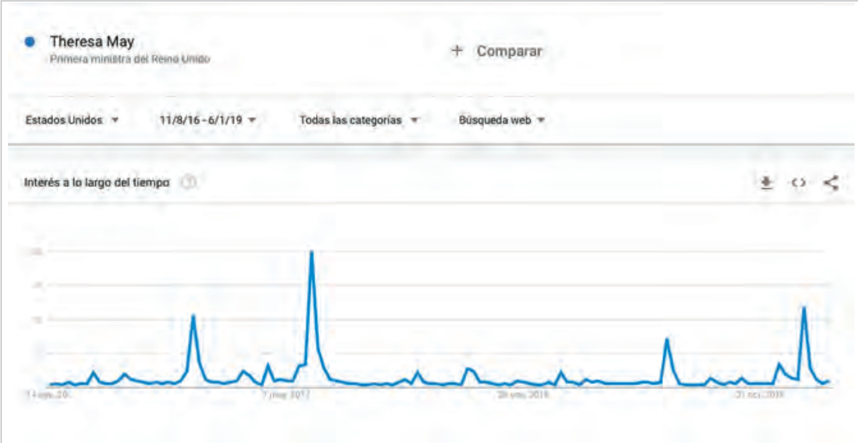

Gráfico 4. Evolución del índice de búsquedas de Theresa May en Estados Unidos

5.5. Justin Trudeau

Los representantes norteamericano y canadiense se han reunido en encuentros bilaterales tres veces. En su primera reunión (tabla 1, Justin Trudeau, E1) se produce el pico máximo de búsquedas (gráfico 5, de 6 puntos a 100). Los asuntos principales fueron la política migratoria laboral y compromisos de seguridad internacional. Sin embargo en la prensa el punto más comentado fue el hecho de que ambos se saludaran del mismo modo

> "con un fuerte apretón y palmeándose mutuamente" (**Pérez-Peña**; **Austen**, 2017);
>
> "apretando sus manos con firmeza y en silencio" (*Associated Press*, 2017).

En las imágenes se aprecia cómo durante el apretón Trump no mira a Trudeau, sino a los periodistas. Su mensaje no va dirigido tanto al primer ministro canadiense como a la opinión pública. En los dos siguientes encuentros (tabla 1, Justin Trudeau, E2 y E3) el aumento de la popularidad del mandatario canadiense en mucho menor.

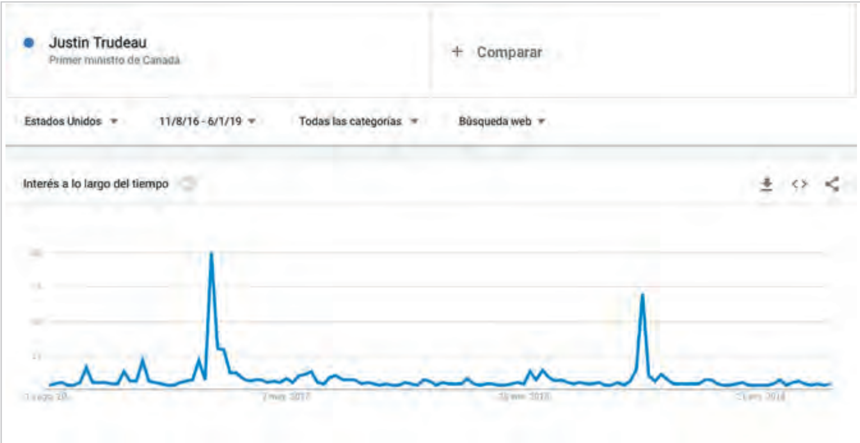

Gráfico 5. Evolución del índice de búsquedas de Justin Trudeau en Estados Unidos

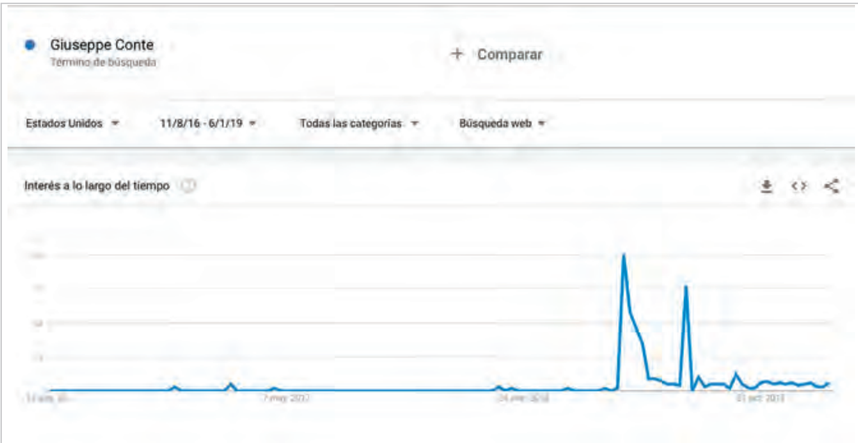

Gráfico 6. Evolución del índice de búsquedas de Giuseppe Conte en Estados Unidos

5.6. Giuseppe Conte

El presidente del Consejo de Ministros de Italia accedió a su cargo el 1 de junio de 2018. Desde entonces sólo ha tenido un encuentro con Trump (tabla 1, Giuseppe Conte, E1). La reunión bilateral, cuyo foco era la crisis migratoria mediterránea y Libia, supone el segundo punto de máximas búsquedas en ese período. El aumento de las búsquedas ascendió desde los 5 puntos hasta los 86 (gráfico 6).

5.7. Jean-Claude Juncker

El único encuentro bilateral entre el presidente norteamericano y el de la *Comisión Europea* (tabla 1, Jean-Claude Juncker, E1) aumentó en Estados Unidos el número de búsquedas desde un índice de 18 puntos hasta los 100 puntos (gráfico 7). El tema fueron la negociación de tratados comerciales entre la Unión Europea y los Estados Unidos.

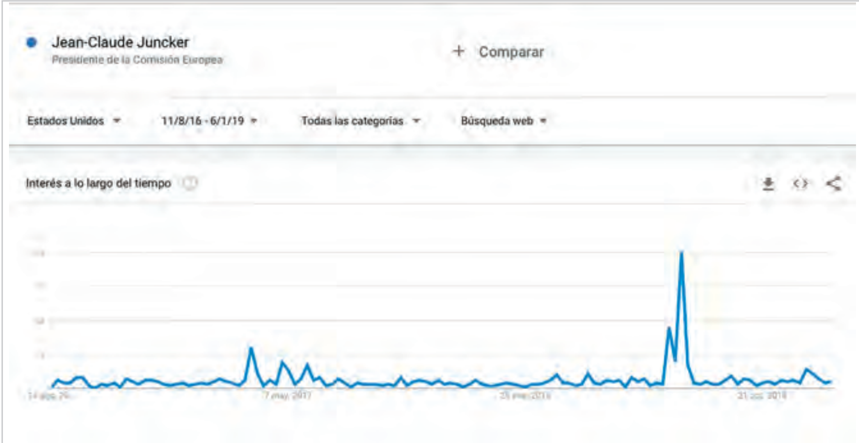

Gráfico 7. Evolución del índice de búsquedas de Jean-Claude Juncker en Estados Unidos

5.8. Donald Trump

En la tabla 2 se indican las variaciones en los índices de búsqueda del presidente Trump en las fechas con los índices más altos de las reuniones estudiadas (tabla 1). El pico más alto del período analizado, con un porcentual de 100, corresponde a la ceremonia de investidura como cuadragésimo quinto presidente de los Estados Unidos. A partir de entonces el índice presenta variaciones muy leves en las reuniones con cada mandatario. La mayor variación se produce en el rango temporal en el que se reunió por primera vez con Theresa May (de 95 a 100). Tanto el pico como el aumento pueden deberse con mucha más posibilidad a la ceremonia de investidura que al encuentro con la primera ministra del Reino Unido. Las reuniones con Abe, Macron, Trudeau y Merkel arrojan datos ascendentes, aunque sólo de uno o dos puntos. Las de Conte y Juncker son descendentes, reduciéndose en un punto con el jefe de Estado italiano y nueve con el representante de la Unión Europea.

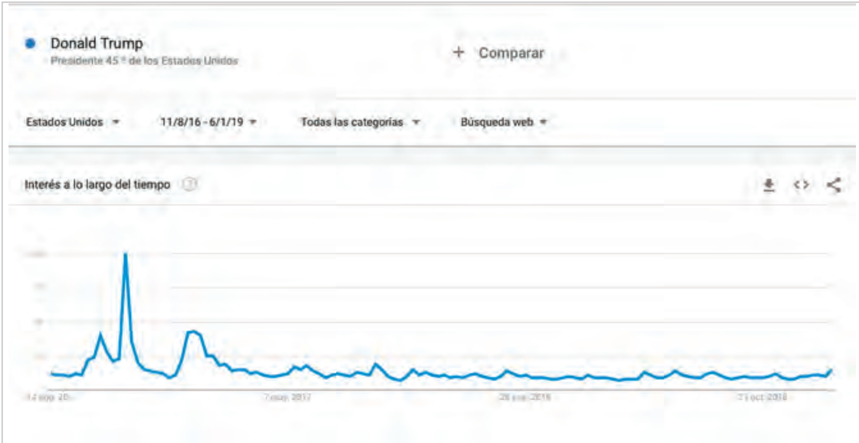

Gráfico 8. Evolución del índice de búsquedas de Donald Trump en Estados Unidos

Tabla 2. Evolución del índice de búsquedas de Donald Trump en los encuentros con los índices de búsquedas más altos de los mandatarios del *G7*.

Jefes de estado	Fecha de la reunión	Popularidad de Donald Trump
Shinzō Abe	10/02/2017	De 56 a 57
Emmanuel Macron	24/04/2018	De 22 a 24
Angela Merkel	17/03/2017	De 33 a 34
Theresa May	27/01/2017	De 95 a 100
Justin Trudeau	13/02/2017	De 56 a 57
Giuseppe Conte	30/07/2018	De 24 a 22
Jean-Claude Juncker	25/07/2018	De 33 a 24

6. Resultados

Los datos cuantitativos analizados muestran resultados sobre la evolución de los índices de popularidad en *Google Trends* (Estados Unidos) de los mandatarios internacionales después de un encuentro con Trump. Shinzō Abe aumenta su popularidad en 10 de los 11 encuentros que tiene con Trump, y sólo en uno (21/09/2017) mantiene el mismo índice. Asimismo, destaca el encuentro del 10/02/2017 donde el mandatario japonés pasa de 8 a 100 puntos, según los datos aportados por *Google Trends*.

Emmanuel Macron aumenta su popularidad en los ocho encuentros que tiene con Trump. Destaca el del 24/04/2018 donde pasa de 4 a 49 puntos.

Angela Merkel tiene cuatro encuentros con Trump y en todos aumenta la popularidad menos en uno que se mantiene igual (27/04/2018), según los datos de *Google Trends* en Estados Unidos. Destaca el primero de todos, donde la canciller alemana pasa de 9 a 100 puntos (17/03/2017).

De los seis encuentros que tiene Theresa May con Trump, en cuatro aumenta su popularidad y en dos baja (de 5 a 4 puntos el 08/07/2017 y de 4 a 3 puntos el 26/09/2018). Destaca la evolución de su popularidad de 4 a 34 puntos el día 27/01/2017.

Justin Trudeau se reúne en tres ocasiones con Trump y en todas ellas su popularidad aumenta. Destaca la del día 13/02/2017 en la que pasa de 6 a 100 puntos.

Giuseppe Conte se reúne en una sola ocasión con Trump y el índice de búsquedas de su nombre en *Google Trends* pasa de 5 a 86 puntos. Lo mismo sucede con Jean-Claude Juncker que aumenta su popularidad de 18 a 100 en su único encuentro con el presidente de EUA.

Por otro lado, la evolución de la popularidad de Trump en los encuentros con mayor número de búsquedas en *Google Trends* con otros mandatarios internacionales arroja los siguientes resultados: en cinco ocasiones el presidente norteamericano aumenta su popularidad y en dos ocasiones baja. Sin embargo, los avances en las búsquedas de Donald Trump no son tan significativos como en el resto de mandatarios. El encuentro en el que el presidente norteamericano obtiene un mejor dato de popularidad es en el de Theresa May que pasa de 95 a 100 puntos. Solamente con Giuseppe Conte y con Jean-Claude Juncker el mandatario estadounidense baja en el número de búsquedas en *Google Trends*.

7. Conclusiones

El objetivo principal del artículo era examinar las reuniones bilaterales de Donald Trump con los principales mandatarios de potencias occidentales y valorar desde la bibliografía científica actual los aspectos relacionados con el espectáculo mediático en dichos encuentros. Después del análisis realizado, llegamos a la conclusión de que Trump emplea lo que algunos autores (**López-Martín**; **Roig-Domínguez**; **Sádaba-Rodríguez**, 2003; **Sierra-Caballero**, 2008; **Tarín-Sanz**, 2018) denominan una comunicación política influida por los *reality shows* televisivos en los encuentros mantenidos con Justin Trudeau, Shinzō Abe, Emmanuel Macron y Angela Merkel. Los extravagantes saludos del presidente formarían parte de una narrativa más propia del espectáculo mediático que de la comunicación política tradicional.

> Los extravagantes saludos del presidente forman parte de una narrativa más propia del espectáculo mediático que de la comunicación política tradicional

El objetivo secundario de la investigación era averiguar el efecto que ejercieron en la popularidad de Trump los encuentros mantenidos con los líderes internacionales. Después del análisis realizado, llegamos a la conclusión de que el presidente norteamericano aumenta ligeramente el índice de búsquedas en la plataforma *Google Trends* en EUA pero no de manera tan significativa como sus interlocutores. Por ejemplo, mientras que Shinzō Abe pasa de 8 a 100 puntos, Trump solo avanza de 56 a 57 puntos. Algo que también sucede con Angela Merkel y Justin Trudeau. Esto demuestra que mientras la popularidad de los mandatarios internacionales avanza en Estados Unidos, la de Donald Trump no experimenta un cambio drástico.

Ante la hipótesis de que los mandatarios internacionales aumentan su popularidad después de un encuentro con Donald Trump, llegamos a la siguiente conclusión basada en los datos cuantitativos analizados: en 31 ocasiones los mandatarios internacionales aumentan su popularidad, en 2 casos la mantienen y sólo en uno esta popularidad disminuye. Esta conclusión coincide con el análisis de otros autores (**López-García**, 2017; **Justel-Vázquez** *et al.*, 2018; **Da-Vinha**, 2019) que relacionan las estrategias políticas de Donald Trump con las de un espectáculo mediático propio de períodos donde las potencias mundiales se encuentran en declive (**Ghotme**, 2011). Parece ser que las estrategias mediáticas de Donald Trump, aprendidas en su etapa como celebridad televisiva, surten efecto en el terreno político, por lo menos en los índices de popularidad que han sido analizados en este artículo.

Queda abierto para futuros estudios explorar la evolución de la popularidad de Donald Trump no solo en EUA, sino también en otros países, e incluso en todo el mundo. Sin embargo, hay que destacar que *Google Trends* no recoge datos significativos en países como China o Rusia, por lo que es complicado realizar un estudio científico sin esa información.

> Se pueden relacionar las estrategias políticas de Trump con las de un espectáculo mediático propio de períodos donde las potencias mundiales se encuentran en declive

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Comunicación de datos presupuestarios de administraciones públicas mediante visualización: uso de la aplicación “Dónde van mis impuestos”

Communicating public administration budget data through visualization software: Use of the tool ‘Where do my taxes go’

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Resumen

Los programas de visualización presupuestaria facilitan la comunicación de informaciones técnicas complejas. En el artículo analizamos los principales factores técnicos, individuales y organizativos que afectan a su implementación y uso. Mediante cuestionario hemos recogido datos de los responsables de la aplicación web “Dónde van mis impuestos” en 23 administraciones autonómicas y locales españolas. El análisis de resultados nos permite afirmar que estas aplicaciones informáticas tienen un reducido número de usuarios, pero que sus principales destinatarios no son la ciudadanía sino grupos particulares, principalmente medios de comunicación y agrupaciones políticas. Su adopción no es un problema presupuestario ni tecnológico, aunque una licencia de software libre otorga claras ventajas. El impulso para la adopción es principalmente político con un objetivo de transparencia financiera y presupuestaria, pero en ocasiones también de transparencia participativa o microtransparencia. Por último, en su gestión detectamos un serio riesgo de gobernanza generado por la falta de estrategias claras de transparencia y rendición de cuentas en las administraciones, así como una ausencia de procedimientos operativos para adaptarse a la cambiante estructura presupuestaria.

Palabras clave

Visualización de datos; Visualización de información; Información pública; Presupuesto; Administración pública; Innovación pública; Sitios web; Webs; Software; Aplicaciones; Transparencia; Datos; Datos abiertos.

Abstract

Budget visualization tools facilitate the communication of complex technical information. In this paper, we analyse the main technical, individual and organizational factors that affect its implementation and use. Through a questionnaire survey we have collected data from those responsible for the web application “Dónde van mis impuestos” (“Where do my taxes go?”) in 23 Spanish regional and local governments. Our findings show that these tools have a small number of users but that their main target are not citizens but specific groups, mainly media and political groups. Its adoption is neither a budgetary nor technological problem, although the free software license gives clear advantages. The impulse for adoption is mainly political with the main focus on financial and budgetary transparency but sometimes also on participatory transparency or microtransparency. Finally, we detect a serious risk of governance generated by the lack of clear transparency and accountability strategies in the administrations, as well as an absence of operational procedures to adapt to the changing budgetary structure.

Keywords

Data visualization; Information visualization; Public information; Budget; Public administration; Public innovation; Web sites; Webs; Software; Transparency; Data; Open data.

1. Introducción

El presupuesto es un instrumento básico de gestión pública que supone la expresión económica, financiera y contable detallada de las políticas llevadas a cabo por una administración durante un año natural, tanto a nivel de previsión como de ejecución realizada. Su esencia se encuentra en el corazón mismo del proceso democrático de legitimidad y rendición de cuentas, plasmando la relación entre los recursos que una administración pública obtiene de los ciudadanos y el uso que se hace de ellos. Se evita de este modo el ejercicio arbitrario y abusivo del poder y se asegura un funcionamiento eficiente y eficaz del sector público. Por ello debería ser de uso frecuente para el debate de lo público, manejable por amplios sectores de la población, comprensible en sus contenidos y fácilmente accesible en sus formatos digitales. La realidad es que su acceso se produce a través de documentos con formas y contenidos difícilmente inteligibles para el ciudadano medio, ya que prima su función como herramienta de gestión de los recursos públicos en detrimento de una comunicación efectiva para impulsar su papel en la rendición de cuentas.

El concepto de gobierno abierto, con su énfasis en los datos públicos abiertos como fuente de transparencia, participación y colaboración, ha sido en los últimos tiempos el paradigma fundamental para la rendición de cuentas de las administraciones públicas. Multitud de datos han pasado a estar a disposición del público en formatos digitales reutilizables y con licencia abierta. Con base en ellos, terceros ajenos a la administración pública han podido construir aplicaciones, visualizaciones o informaciones. Resulta evidente que estos datos abiertos no deben hurtarse al público, particularmente por la relativa sencillez de su divulgación, pero esta simplicidad puede convertir la publicación en un fin y no en un medio. Corremos el riesgo de que la problemática se reduzca a "subir la hoja de cálculo" sin ninguna evaluación de la demanda de los datos o del valor de lo ofrecido para la sociedad. Al mismo tiempo, el mito del dato abierto como "dato en crudo", que implícitamente atribuye absoluta neutralidad para su uso, pudiera sesgar la problemática de la rendición de cuentas hacia una élite de usuarios capacitados para su manejo y tratamiento. Creemos que no existe esa neutralidad, pues desde el momento en que se opta por qué, cómo y cuándo se recoge un dato y de qué forma se presenta al público, tenemos decisiones humanas con impacto en las conclusiones que se pueden extraer de ellos. Por ello, si bien no deben abdicar de su labor y deber de divulgar, las administraciones deben convertirse en los primeros reutilizadores de sus datos con el fin de cumplir con su obligación de rendir cuentas del modo más eficiente y eficaz posible, particularmente con el objetivo de hacerlo ante amplios sectores de la población.

> Nos arriesgamos a que los datos abiertos se reduzcan a "subir la hoja de cálculo" sin ninguna evaluación de su demanda o del valor de lo ofrecido para la sociedad

Con esta motivación, abordamos el estudio de la adopción y uso de aplicaciones gráficas de visualización de información presupuestaria. Se dice que "una imagen vale más que mil palabras", y por ese procedimiento estas aplicaciones convierten en accesibles los presupuestos, haciendo uso de figuras geométricas proporcionales para representar visiones globales y los pesos de distintas actuaciones, en las que se puede ir descendiendo jerárquicamente en su desglose al mismo tiempo que se observan las cifras y se obtienen evoluciones interanuales. Nuestro estudio trata el uso y utilidad de las aplicaciones de visualización sobre datos presupuestarios en las administraciones públicas españolas. Con él se pretende mejorar el conocimiento sobre qué lleva a una administración pública a adoptar este tipo de software y cómo enmarcamos esta decisión en el marco general de datos abiertos, transparencia y rendición de cuentas. En la bibliografía académica ya existen estudios sobre implantación y contenidos de portales de transparencia en general, y particularmente centrados en España. El presente trabajo aporta como novedad una focalización específica a los datos presupuestarios y a un software para mejorar su comunicación hacia los usuarios finales.

En los siguientes apartados plantearemos un breve marco teórico que nos sirva de apoyo al estudio de la cuestión, tanto desde la óptica de la divulgación informativa como de la adopción tecnológica. Posteriormente, plantearemos la metodología en la que nos hemos basado para obtener evidencia empírica sobre el fenómeno. Por último, expondremos los resultados y conclusiones obtenidas.

2. Antecedentes y estado actual del tema

En primer lugar se expone el estado de la cuestión respecto a la divulgación de información presupuestaria, particularmente basada en datos abiertos, en un entorno de creciente desinformación. Posteriormente nos centramos en la fundamentación teórica de la adopción tecnológica sobre la que basamos parte del cuestionario empleado en la investigación.

2.1. Procesos verticales de rendición de cuentas

Siguiendo el modelo clásico de **O'Donell** (1994), la rendición de cuentas se puede establecer horizontal o verticalmente.

El modelo horizontal se refiere a las condiciones autoimpuestas por el gobierno, principalmente por unos órganos sobre otros, por ejemplo, intervención, fiscalización o control externo. En una sociedad democrática supone indirectamente un control y rendición de cuentas a la ciudadanía, pero con expertos y elementos técnicos interpuestos que convierten sus informaciones en lejanas y de difícil comprensión.

El modelo vertical es en puridad el control y rendición de cuentas directo a los ciudadanos, que reaccionarían con aprobación o desaprobación de las propuestas y actuaciones mediante el uso de canales participativos de debate público, acciones de protesta o apoyo y, en última instancia, el proceso electoral. La verticalidad no excluye el uso de intermediarios ajenos a gobierno y administración, principalmente medios de comunicación y colectivos ciudadanos, o el denominado activismo de datos (**Fuchs**, 2010; **Gutiérrez**, 2018), que pueden incluso hacer uso de informaciones generadas en los procesos horizontales.

> En un escenario de creciente desinformación, la primera cifra que se recibe ancla el pensamiento y condiciona la conducta del receptor

No obstante, en la actualidad observamos cómo el proceso vertical de rendición de cuentas se encuentra condicionado por fenómenos como las denominadas *fake news*, informaciones inventadas que replican las formas de divulgación clásicas de los medios de comunicación pero no sus procesos internos editoriales para asegurar la corrección y credibilidad (**Lazer** *et al.*, 2018). Algunos autores prefieren como más riguroso el término "desinformación", refiriéndose al proceso más que a la noticia concreta, por considerar que *fake news* no captura toda la complejidad de las formas de manipulación informativa (**Nielsen**; **Graves**, 2017; **Rodríguez-Fernández**, 2019) y, particularmente, aquella información que no es propiamente falsa sino incorrecta, parcial, errónea, tendenciosa o engañosa. La desinformación siempre ha estado presente en la sociedad, pero ha adquirido niveles de complejidad y escala sin precedentes en nuestro escenario interconectado y crecientemente polarizado (**Wardle**; **Derakhshan**, 2017), fomentada por la enorme disminución de las barreras de entrada a la publicación y la divulgación periodística y por el respaldo y apoyo implícito que constituyen la compartición y los *me gusta* en redes sociales. Este tipo de informaciones se difunden por medios digitales mucho más rápidamente y por más personas que las informaciones veraces, particularmente cuando su temática es de carácter político (**Vosoughi**; **Roy**; **Aral**, 2018). Destaca en este sentido el concepto de meme como idea contagiosa que logra captar la atención y guiar el comportamiento y opinión basándose en las emociones humanas y que está cada vez más presente en el debate político (**Rodríguez**, 2013). Es especialmente relevante cuando en el debate hay cifras de por medio, como es el caso de las magnitudes económicas, financieras y presupuestarias de los gobiernos, debido al fenómeno denominado "efecto ancla" (**Kahneman**, 2016) consistente en que la primera cifra que se recibe "ancla" el pensamiento y condiciona la conducta del receptor. En un mundo de abundancia de datos, al que las administraciones públicas se han sumado, ofrecer datos e informaciones de una forma accesible y contextualizada se convierte casi en una obligación para conseguir los objetivos de transparencia y rendición de cuentas inherentes a cualquier gobierno. A este fin se han de buscar los métodos y herramientas de comunicación que mejor combatan los problemas de información anteriormente mencionados.

Dentro del modelo vertical de rendición de cuentas, en los últimos años hemos asistido al auge del gobierno abierto; un nuevo escenario de relación entre gobiernos y ciudadanos basado en la transparencia para fomentar la participación y la colaboración entre ambos. Los datos abiertos u *open data* son su herramienta esencial, alterando el equilibrio de información en favor del ciudadano en la problemática de agencia en que se enmarcan transparencia y control (**García-García**, 2014).

Existen numerosas definiciones de datos abiertos presupuestarios y políticas de gobierno abierto. **Clarke** y **Francoli** (2014) y **Gray** (2015) presentan sendos compendios, centrados en los aspectos legales y técnicos. Hay un elevado consenso en las definiciones, pero no tanto respecto a su utilidad oscilando las visiones entre un extremo de transparencia financiera importante por sí misma, independientemente del método, y otro extremo de datos abiertos importantes como herramienta con independencia de para qué se usen. En palabras de **Gray** (2015) este abanico podría responder a las diferentes agendas y visiones de la política fiscal. En cualquier caso, los datos presupuestarios fueron de los primeros en seguir este camino de libre divulgación en la Red, bien como simples datos, primero en las webs institucionales y luego en portales de transparencia (principalmente documentos PDF conteniendo los presupuestos íntegros), o bien como *open data* en los portales de datos abiertos (formatos estructurados bajo licencias que permiten su libre reutilización). Como investigadores llevamos ya largos años centrándonos en el estudio de la divulgación basada en la tecnología digital y datos abiertos y, en nuestra experiencia, coincidimos con los diagnósticos de:

> Los expertos y medios de comunicación pueden ver facilitada su labor de canalizadores de información a la ciudadanía haciendo uso de estas herramientas

- **Heald** (2012): en lo que denomina el problema de los *missing user*s (usuarios perdidos) en referencia a la brecha entre expectativas y uso real de la información puesta a disposición del público.
- **Meijer** (2013): se refiere a la relación entre transparencia y rendición de cuentas como un problema de *caja negra*, en tanto que pareciendo que existe una estrecha relación entre ambas, realmente la bibliografía académica y los análisis de casos prácticos no han podido ofrecer una evaluación generalizada de sus efectos.
- **Gray** (2015): señala el nulo análisis de la demanda de información presupuestaria suministrada como datos abiertos y el amplio desconocimiento existente sobre cómo, para qué y con qué fin se usa.
- **Worthy** (2015): para el Reino Unido recoge la necesidad señalada en entrevistas personales, tanto por el gobierno británico como por usuarios de la información presupuestaria, de disponer de herramientas accesibles y sencillas para los usuarios que permitan localizar y visualizar la información en un contexto.

Los diagnósticos apuntan todos en un mismo sentido. A pesar de divulgar información, no se está usando lo suficiente. Además desconocemos cuál es el mecanismo por el que causa sus efectos y desconocemos qué quieren exactamente los ciudadanos; aunque parece que demandarían una información sencilla, accesible y contextualizada. Esto último es lo que pueden ofrecer las aplicaciones gráficas de visualización de la información presupuestaria en la Web. Los datos abiertos tienen como objetivo facilitar su reutilización para elaborar informaciones o visualizaciones más complejas. También presuponen que el usuario que accede a ellos tiene conocimientos presupuestarios y sobre el software para poder operar con ellos.

> Las herramientas de visualización ofrecen una información sencilla, accesible y contextualizable

Por el contrario, la visualización de información permite que datos complejos puedan cobrar sentido y, como complemento a las representaciones textuales o verbales, ofrecen un amplio potencial para servir de apoyo al conocimiento y a la comunicación en temas complejos como son los presupuestos de las administraciones publicas. Su objetivo principal es facilitar la comprensión a personas no versadas en la materia de las cantidades consignadas para determinadas políticas y partidas. Para ello se sirven de una vista global de los gastos e ingresos a partir de la cual se puede ir descendiendo jerárquicamente de mayor a menor nivel de detalle, examinar la participación sobre el total y su evolución temporal, y comparar con otras políticas y partidas del mismo período o anteriores.

Es por ello que una de las funciones más frecuentes de los datos presupuestarios abiertos ha sido crear visualizaciones, tanto desde las propias administraciones como desde el activismo de datos. Fundamentalmente, a través del software libre generado en los proyectos:

- *Where does my money goes?*
  http://app.wheredoesmymoneygo.org
- *Open spending*
  https://openspending.org
- *OffenerHaushalt*
  https://offenerhaushalt.de
- *Open budget*
  http://make.opendata.ch/wiki/project:open_budget

de la asociación *Open Knowledge* y sus adaptaciones a los entornos locales, pero también a través de portales de software privativo elaborados para administraciones públicas por las empresas *OpenGov* y *Socrata*.
https://opengov.com
https://socrata.com

Es especialmente destacable que, aunque sea facilitado en la descarga de los datos como abiertos, se abstrae parcialmente la complejidad de la información técnica presupuestaria centrando la visualización en políticas (estructura económica y funcional del presupuesto: cómo se gasta y en qué se gasta) en vez de en órganos de ejecución presupuestaria (estructura orgánica).

A modo de ejemplos se pueden consultar las aplicaciones:

- *Presupuestos abiertos del Ayuntamiento de Madrid*
  https://presupuestosabiertos.madrid.es/es
- *Presupuestos de Aragón*
  https://presupuesto.aragon.es

Resulta evidente que este tipo de aplicaciones gráficas facilitan el examen, la comparación y la contextualización de la información a personas con menores conocimientos en materia presupuestaria. En el caso de los conjuntos de datos abiertos, tal y como se ha expuesto, el grado de reutilización que permiten de la información es mayor, pero requieren de un cierto conocimiento informático de tratamientos de datos. Véase a modo de ejemplo:

- *Presupuesto de gastos del Ayuntamiento de Gijón 2018*
  http://transparencia.gijon.es/set/economia/presupuestos_gastos_ayto_2018

- *Presupuestos generales de Navarra*
  https://gobiernoabierto.navarra.es/es/open-data/datos/presupuestos-generales-navarra-2019

No obstante, ambas formas de divulgar son preferibles al clásico documento PDF, que exige de conocimientos presupuestarios para su comprensión, no permite un sencillo examen, comparación o contextualización, además no permite su tratamiento con herramientas digitales para extraer datos y construir informaciones. Véase por ejemplo:

- *Presupuestos generales del Principado de Asturias 2019*
  https://tematico.asturias.es/presupuestos/2019/Presupuestos/TOMO_I.htm

2.2. Adopción de la innovación tecnológica

Las herramientas de visualización son aparentemente accesibles para las administraciones públicas como software libre, y responden a una demanda de información asequible en su comprensión, así como contextualizable en las magnitudes para el ciudadano medio. Pretendemos profundizar en el conocimiento acerca de su adopción y uso y para ello las situamos en el plano de las innovaciones en las administraciones públicas, distinguiendo la innovación pública propiamente dicha de la innovación social (**Edwards-Schachter**; **Matti**; **Alcántara**, 2012):

- Innovación pública: el proceso de innovación se produce dentro de la administración respondiendo tanto a incentivos internos como externos (demandas sociales).
- Innovación social: la iniciativa parte de la ciudadanía, aunque las administraciones e incluso el sector privado puedan brindar apoyo, colaboración o participación.

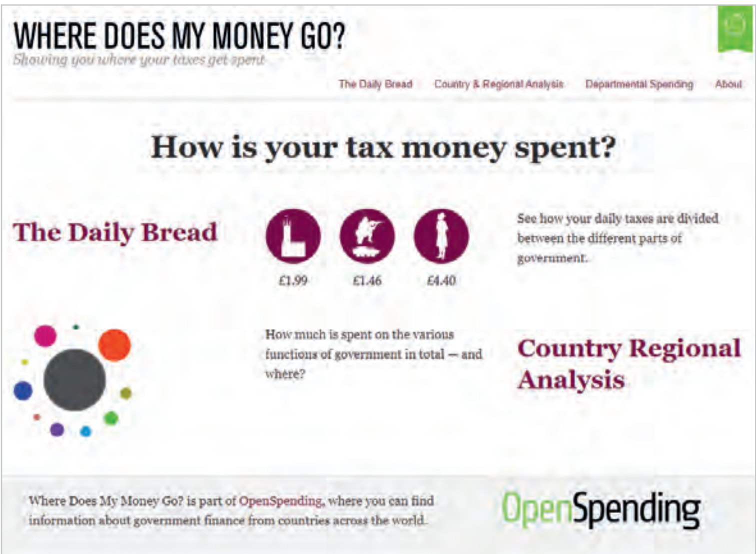
Esta frontera también se vuelve permeable cuando hablamos de innovación pública abierta, considerada como un proceso de generación de nuevas ideas, prácticas y herramientas que no sólo se nutre de los recursos internos de las administraciones públicas, sino que integra al conjunto de la sociedad en su generación, en la línea del concepto descrito por **Chesbrough** (2003) para el sector privado. En todo caso, este proceso innovador deberá implicar siempre ideas parcialmente nuevas y no sólo mejoras, que sean ejecutadas en la práctica y no se queden en el campo conceptual, así como que tengan realmente un impacto positivo en la creación de valor público (**Mulgan**, 2007).

Existen múltiples teorías cuyo objetivo es explicar la adopción de una tecnología o innovación concreta por usuarios individuales u organizaciones, pero previamente debemos considerar que el uso de una herramienta se corresponde con la consecución de unos fines. No estaríamos hablando en este momento de factores propiamente enunciados en teorías de adopción tecnológica, sino en la práctica sobre divulgación de información contable y presupuestaria y datos abiertos. Para su enunciado nos hemos basado fundamentalmente en el estudio de **Worthy** (2015) sobre el impacto de los datos abiertos en Reino Unido. Encontramos en este apartado explicaciones de divulgación como respuesta a la demanda ciudadana, simplemente de información, o también de datos para reutilizar en procesos de participación y colaboración, cumpliendo con unos plazos de tiempo oportunos a la naturaleza de la información divulgada. También el tipo de información que se divulga; entre la más destacada en la normativa y práctica en España nos encontramos con presupuestos y ejecuciones, listas de gastos, gráficos explicativos, saldos bancarios o datos de contratación. Asimismo resulta de interés conocer los destinatarios de la información divulgada. En este caso hemos optado por mejorar la lista de **Worthy** (2015) incluyendo a los partidos políticos y empresas contratistas en vez de usar la lista de usuarios de la información contable pública incluida en el *Plan General de Contabilidad Pública de 2010*, ya que en palabras de la *IGAE*

> "entre los destinatarios de la contabilidad pública se abre una gama muy amplia de colectivos (…) en general, cuantos colectivos se vean afectados de una u otra manera por la actividad económico-financiera del sector público, que prácticamente son, por una u otra razón, y desde diferentes ópticas, todos los que componen el tejido político, económico e institucional de la sociedad" (*IGAE*, 1991).

Por último, tenemos en cuenta las potenciales barreras que pueden dificultar o impedir la implantación de una tecnología y que, de nuevo con base en **Worthy** (2015), consideramos que son:

- resistencia jerárquica;
- falta de capacidad tecnológica en hardware o software;
- falta de recursos humanos;
- dinámica cultural pobre;
- ausencia de una estrategia clara en transparencia y rendición de cuentas;
- fata de disponibilidad presupuestaria.



http://app.wheredoesmymoneygo.org

Centrándonos exclusivamente en la bibliografía sobre adopción de nuevas tecnologías, existen múltiples teorías explicativas. Una primera división es entre explicaciones de carácter conductista y de carácter ambiental.

Las teorías conductistas suponen que cuando alguien tiene una intención de actuar, será libre de actuar sin limitaciones. Este es esencialmente el postulado de la *Teoría de la acción razonada*, las actitudes estarían determinadas por las creencias que los observadores asocian con un objeto y todos los individuos valorarán sus creencias para formar actitudes y ejecutar acciones, pero estas creencias serán distintas según el individuo. Las creencias basadas en experiencias directas con el objeto son más accesibles que las creencias basadas en experiencias indirectas, por lo que en el primer caso las actitudes correspondientes predicen mejor las conductas basadas en ellas que las previstas en el segundo caso (**Fishbein**; **Ajzen**, 1975; **Ajzen**; **Fishbein**, 1977). No obstante, es evidente que el mero deseo de actuar no es suficiente para explicar la conducta, pues pueden existir limitaciones para su ejecución. En este punto la *Teoría de aceptación de la tecnología* extiende los postulados anteriores, pues explica que ante una nueva tecnología existe un conjunto de factores que determinan la decisión sobre cuándo y cómo se utilizará. Los factores condicionantes de la conducta de adopción no basados en creencias previas son principalmente la utilidad esperada de la tecnología y la facilidad percibida de uso (**Davis**, 1989; **Bagozzi**; **Davis**; **Warshaw**, 1992; **Venkatesh**; **Davis**, 2000) y se han mostrado en diversos contextos como determinantes para conocer la aceptación de la tecnología (**Turner** *et al.*, 2010; **Marangunić**; **Granić**, 2015).

Paralelamente a ésta, la *Teoría del comportamiento planeado* trata de explicar también el comportamiento deliberado, teniendo en cuenta que puede no ser completamente voluntario o estar bajo total control del sujeto, y sería conducido por:

- creencias de comportamiento: referidas a las consecuencias probables del comportamiento;
- creencias normativas: sobre la presión social percibida o norma subjetiva;
- creencias controladas: sobre factores que puedan facilitar o impedir el desempeño del comportamiento (**Ajzen**, 1985; 1991).

Estas tres creencias combinadas conducen a la formación de un comportamiento intencional en la adopción tecnológica. Como regla general, cuanto más favorable la actitud y la norma subjetiva mayor será el control percibido y, consecuentemente, mayor será la intención de adopción tecnológica, que además se vería reforzada residualmente por comportamientos pasados sobre otras adopciones tecnológicas previas (**Ajzen**, 2002).

Finalmente, ligado a las consecuencias probables del comportamiento, la *Teoría de la motivación* (**McClelland**, 1987), establece entre otras las necesidades de excelencia en el desempeño, afiliación grupal e incremento de poder organizacional como motores complementarios de la conducta.

Las teorías de carácter ambiental no se basan en características subjetivas de las personas responsables de la implementación tecnológica, sino en las características objetivas de la organización que realiza la adopción. El marco teórico tecnología-organización-ambiente explica cómo el proceso por el cual una entidad implementa innovaciones tecnológicas se ve influido por el contexto tecnológico, organizativo y ambiental (**DePietro**; **Wiarda**; **Fleischer**, 1990; **Baker**, 2012). El contexto tecnológico incluye tecnologías internas y externas a la organización, y tanto activos como procesos. El organizativo se refiere a las características y recursos de la organización como tamaño, centralización, formalización, estructura directiva, recursos humanos, principales recursos escasos y relaciones internas y externas. Finalmente, el ambiental comprende el marco externo general en el que opera la organización y, en el caso en estudio, el marco regulatorio y de buenas prácticas.

Por último, debemos considerar también la *Teoría de difusión de la innovación* que explica cómo, por qué y a qué ritmo se expanden las nuevas ideas y tecnología en el tiempo en un proceso de comunicación social (**Rogers**, 2003). Parte de sus factores explicativos se pueden considerar incluidos a grandes rasgos en las teorías previamente expuestas. No obstante, consideramos de interés los factores explicativos referidos al papel del liderazgo en el proceso (basado en autoridad, en influencia o en consenso) y a la necesidad de un seguimiento para la confirmación de la idoneidad del proceso innovador, que no se encuentran claramente definidos en las teorías previas. Para interpretar los resultados recogidos con base en cualquiera de estas teorías de adopción tecnológica debemos ser siempre cautelosos, pues como alerta Rogers, existirán potenciales sesgos de observación debido a la actitud generalmente positiva hacia la innovación.

3. Metodología

Hemos focalizado nuestra investigación en la aplicación de visualización denominada *¡Presupuesto Abierto de Aragón - Aragón Open Budget!* financiada por el proyecto *Aragón Open Data* por ser la más extendida en las administraciones públicas españolas.
https://github.com/aragonopendata/presupuesto

La aplicación tiene licencia de software libre *European Union Public Licence 1.1* que otorga libertad de uso, reutilización, adaptación y modificación, con la única condición de mantener el código fuente resultante también como software libre. Con frecuencia, esta aplicación se encuentra también denominada como *Dónde van mis impuestos*, nombre empleado por la *Fundación Civio*, que fue su creador para el proyecto *Aragón Open Data* y que realiza la mayor parte de las adaptaciones para las administraciones españolas, que pueden encontrarse en su repositorio de *GitHub*.
https://github.com/civio

Esta última denominación es la que, generalmente, se encuentra en las webs institucionales para la aplicación, combinada con otras como por ejemplo *Cuentas claras* o *Presupuestos visuales*. El desarrollo del código fuente de esta herramienta se enmarca en el plano de las innovaciones sociales, si bien su rápida adopción por el sector público hace que comparta rasgos de innovación pública abierta.

La determinación de la población objeto de estudio se ha centrado en la aplicación con independencia del nombre que reciba por parte de la administración, y la forman las 32 administraciones públicas españolas que en mayo de 2019 la tenían en uso en su web institucional y la mantenían actualizada (véase anexo 1: 6 comunidades autónomas, 24 ayuntamientos y 2 consejos insulares). La cobertura es de cerca de 17 millones de habitantes, algo más de un tercio de la población española, que pueden emplear la aplicación para visualizar los presupuestos de sus administraciones locales y/o autonómicas.

https://presupuesto.aragon.es

Como instrumento de investigación se emplea un cuestionario de 16 preguntas estructuradas (anexo 2), principalmente escalas Likert de 1 a 5 o respuesta múltiple e incluyendo respuesta abierta cuando proceda. Estas preguntas fueron elaboradas sobre la base de la fundamentación teórica expuesta en el apartado anterior. Se agruparon en tres bloques (general, actitudes individuales y contextos) simplemente por operatividad del cuestionario. Las preguntas del bloque general se basaron principalmente en el estudio de **Worthy** (2015) para importancia subjetiva y atribuida para la administración de ciertos factores en la divulgación (P1 y P2), grupos de usuarios (P4) y barreras a la adopción (P5); y en la práctica divulgativa de las administraciones públicas para la importancia de los contenidos (P3). En el bloque de actitudes individuales se basan:

- en la *Teoría de la acción razonada* las preguntas sobre creencias previas respecto al tipo de transparencia generada (P6) y experiencia en el uso de la tecnología y datos abiertos (P7A y P7B);
- en la *Teoría de aceptación de la tecnología* las preguntas sobre utilidad percibida de la herramienta (P8A, P8B, P8C y P8D) y facilidad percibida en la implementación (P9A, P9B, P9C y P9D);
- en la *Teoría de la motivación* y la *Teoría del comportamiento planeado* las preguntas sobre motivaciones personales para la implementación (P10A y P10B);
- en el marco tecnología-organización-ambiente las preguntas sobre capacidad tecnológica (P11), acceso a la tecnología (P12A y P12B), variables de entorno organizativo (P13) y marco regulatorio y proactividad (P14);
- en la *Teoría de difusión de la innovación* las preguntas sobre tipo de liderazgo (P15) y seguimiento (P16).

Antes de su difusión, el cuestionario fue probado con expertos en la materia para verificar su pertinencia y funcionalidad.

El cuestionario se dirigió a los responsables de la aplicación de visualización, definidos como aquella persona con capacidad de decisión y responsabilidad sobre la misma, su implantación, mantenimiento, actualización o retirada. A lo largo del mes de mayo se le hizo llegar al responsable de cada administración por correo electrónico, facilitando un URL para la recogida de datos, y posteriormente por correo postal a aquellas entidades de las que no se hubiera obtenido respuesta tras un recordatorio. La recogida de respuestas había finalizado días antes de la constitución de los nuevos gobiernos surgidos de las elecciones locales y autonómicas del 26 de mayo, evitando así potenciales interferencias por la llegada de nuevos responsables. La tasa de respuesta fue en total de 23 entidades, de las 32 que integraban la población en estudio, la totalidad de las comunidades autónomas y un 70,83% de los ayuntamientos (6 comunidades autónomas y 17 ayuntamientos).

> En mayo de 2019, 32 administraciones españolas tenían en uso el sistema de visualización en su web institucional

A continuación analizamos los resultados obtenidos en los diferentes apartados conforme a los objetivos propuestos.

4. Resultados

4.1. Bloque general

En este apartado se perfila una serie de características genéricas relativas a la divulgación de información de las administraciones, particularmente presupuestaria, y a las barreras que le pueden afectar.

4.1.1. Importancia de algunos factores para publicar la información

Para iniciar el cuestionario se hacían dos preguntas sobre la importancia concedida a tres factores (gráfico 1) a la hora de publicar información.

La primera pregunta era sobre la importancia que les concedía el encuestado y la segunda sobre la importancia que el encuestado creía que les atribuía su entidad, valorando de 1 a 5 de poco a muy importante. Como muestra la figura 1, para los tres factores los responsables de la aplicación les atribuían mayor importancia que la que creían les concedía la entidad.

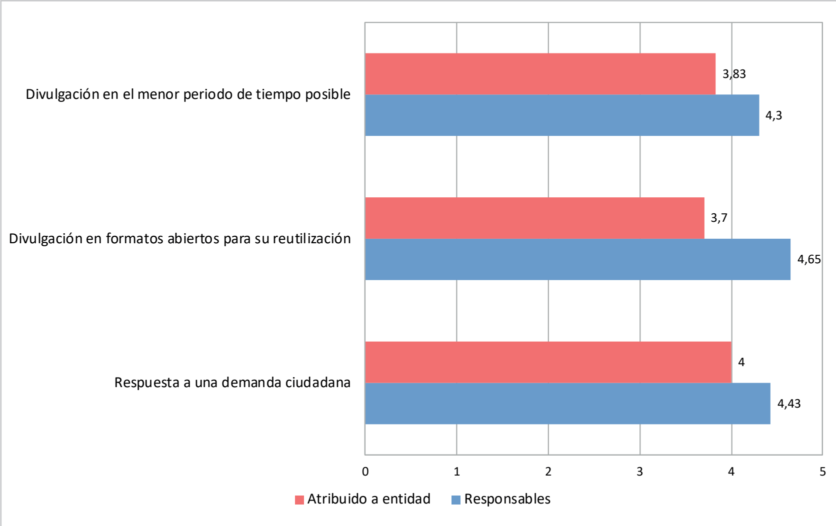


Gráfico 1. Importancia de factores para publicar la información (promedio)

No existen grandes diferencias entre los factores, tanto para los valorados por los encuestados como por los atribuidos a la entidad, pero sí se produce una brecha de expectativas entre ambos. La mayor de ellas en la divulgación en formatos abiertos para la reutilización, que es al mismo tiempo el más valorado por los encuestados pero el que menos importancia consideran que le atribuye su entidad. En ningún caso se producían desviaciones típicas anormales, aunque eran mayores en el caso de las respuestas sobre importancia atribuida por la entidad. En la importancia otorgada por los responsables a la divulgación en formatos abiertos (4,65) la desviación típica fue extraordinariamente reducida (0,48), indicando un elevado consenso.

4.1.2. Importancia concedida a los contenidos

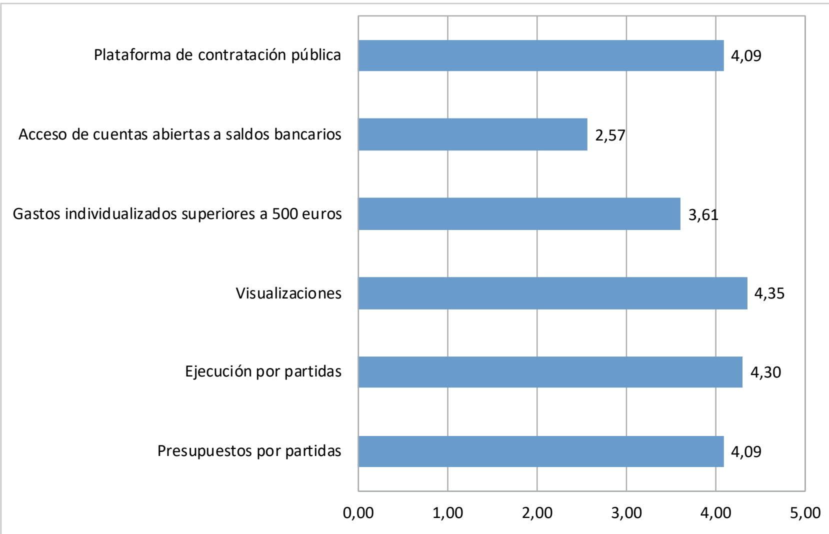


Gráfico 2. Importancia concedida a los contenidos (promedio)

En el cuestionario se preguntaba a los responsables por la relevancia para el ciudadano medio de algunos datos e informaciones comúnmente divulgadas, valorando la relevancia en una escala de 1 a 5 entre nada y muy relevante.

Se otorgó la mayor relevancia a las visualizaciones gráficas y a la divulgación de la ejecución de información presupuestaria (en cualquier formato). Destaca el rechazo generalizado al llamado acceso de cuentas abiertas extendido en algunas administraciones españolas en estos últimos años, consistente en divulgar los saldos mantenidos en las entidades bancarias y sus movimientos con carácter periódico. Asimismo, también destaca la escasa importancia concedida a la publicación periódica de listados de gastos superiores a 500 euros, a semejanza de la obligación existente para los municipios británicos desde el inicio de sus programas de datos abiertos. En ningún caso se observaron dispersiones anormales en las respuestas recogidas.

4.1.3. Grupos de usuarios interesados en la información presupuestaria

Se incluía en el cuestionario una pregunta en la que se pedía a los responsables que identificaran el interés de distintos grupos de usuarios en la información presupuestaria, valorando en una escala entre 1 y 5, siendo 1 nada interesado y 5 muy interesado. Con ella se pretendía determinar cuáles eran los grupos a los que se estaba enfocando la información generada por la aplicación. Entre las valoraciones obtenidas en este apartado, sin duda la más sorprendente es que los ciudadanos individuales son los menos interesados en la información presupuestaria. Los partidos políticos son, con una amplia diferencia, los más interesados en estos datos, seguidos de los medios de comunicación. Que éstos aparezcan entre los mejor valorados es coherente con la concepción vertical de la transparencia y rendición de cuentas, sirviendo de intermediarios entre ciudadanía y administración. No obstante, nos resulta más difícil de encajar la extraordinaria valoración que reciben los partidos políticos, aunque es evidente que los datos presupuestarios son la materia prima de su trabajo, particularmente en plenos y parlamentos. En todas las categorías las desviaciones típicas son muy similares.

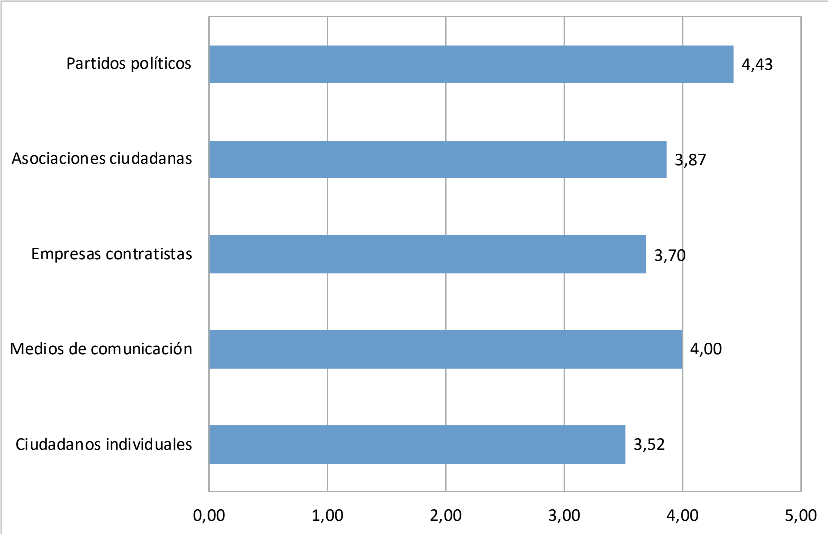


Gráfico 3. Usuarios interesados en la información presupuestaria (promedio)

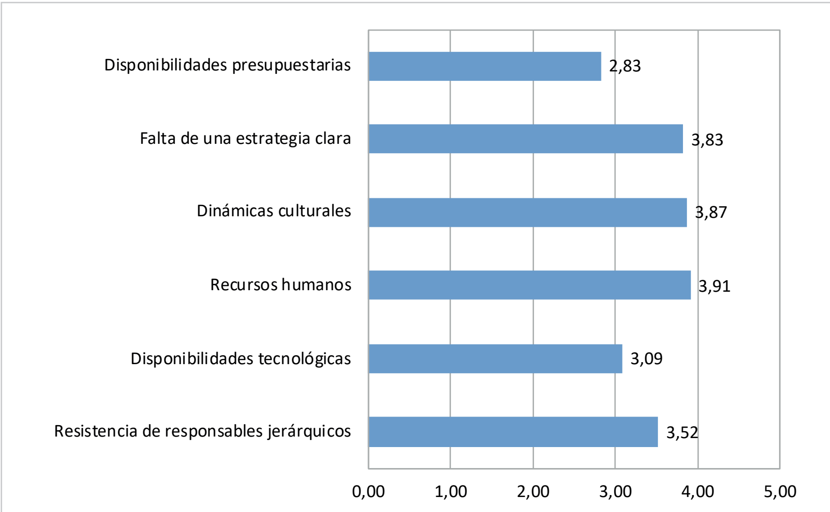


Gráfico 4. Barreras a la adopción de la herramienta (promedio)

4.1.4. Barreras a la adopción del software de visualización

Por último, en el bloque general se hacía una primera evaluación sobre barreras a la adopción de la aplicación, valorando entre 1 y 5 si la barrera era nada importante o muy importante. En las respuestas recogidas en esta pregunta se manifiesta por primera vez claramente que adoptar esta aplicación no ha sido un problema de dinero, ni tampoco de capacidad tecnológica. Entre las barreras más importantes hay tres claramente organizativas:

- falta de recursos humanos, entendida como personal que se pueda hacer cargo del mantenimiento y actualización;
- dinámicas culturales de la organización (procedimientos habituales de hacer las cosas);
- falta de una estrategia clara en transparencia y rendición de cuentas.

Creemos que estos tres factores pueden formar parte de una misma definición del problema: acciones que se ponen en marcha para reforzar la imagen positiva de transparencia en la organización, sin contar con una planificación clara que permita encauzar recursos de manera sostenida hacia la consecución de unos objetivos claramente definidos. En esta pregunta nos encontramos para cada barrera con desviaciones típicas superiores a las habituales, indicando un menor grado de consenso para todas las valoraciones.

4.2. Bloque de actitudes individuales

En este apartado, se ofrecen respuestas a cuestiones de carácter individual sobre la implantación y mantenimiento de la aplicación.

4.2.1. Creencias sobre el tipo de transparencia generada y experiencias previas

En esta parte del cuestionario se pretendía conocer cuál era el objetivo principal que debería tener la aplicación. Para ello los encuestados sólo podían elegir una de las opciones disponibles. Siendo la aplicación para la visualización de presupuestos, no ha de ser una sorpresa que la mayoría de los encuestados consideren que mejorar la transparencia financiera y presupuestaria es su principal función. Más interesantes son el resto de respuestas, pues el apoyo de la aplicación en procesos participativos (transparencia participativa) o su uso para localizar

> Los ciudadanos individuales son los menos interesados en la información presupuestaria y los partidos políticos los más interesados

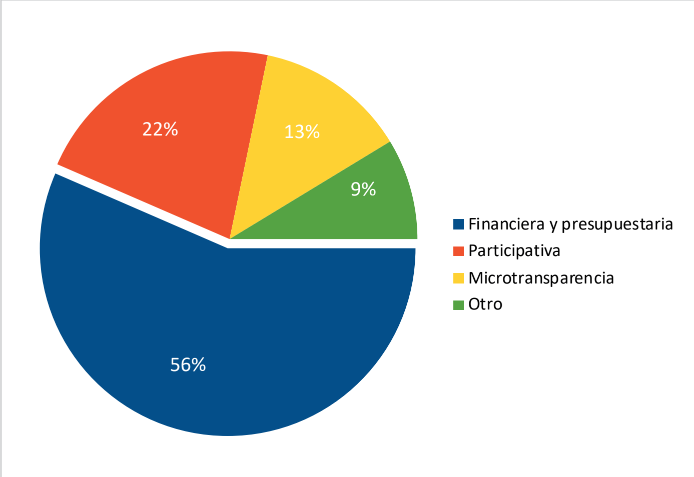


Gráfico 5. Tipo de transparencia generada

datos particulares de información sobre los ciudadanos (microtransparencia) obtienen porcentajes de respuesta significativos como función principal. Incluso se recoge un pequeño residual de otros usos como función principal que en los comentarios a la respuesta se explican como uso ilustrativo en notas de prensa o campañas de concienciación fiscal. Es evidente que una herramienta no puede tener un sólo objetivo, pero estas respuestas muestran cómo lo que a priori parece una función clara y directa no lo resulta tanto, planteándose otros objetivos principales alternativos. Particularmente transparencia participativa y microtransparencia, a los que podemos considerar como usos más sofisticados ya que entroncan con los objetivos de participación y colaboración propios de los modelos de gobierno abierto, estarían en la línea de lo que cabría esperar de entidades innovadoras que dan pasos proactivos más allá de lo exigido por la normativa.

Se quiso también conocer cuál era la experiencia previa en implementación de datos abiertos y otras aplicaciones de visualización de información que tenían los responsables. Sólo cerca del 40% de los encuestados respondieron afirmativamente, refiriendo fundamentalmente responsabilidad en la creación y mantenimiento de portales o conjuntos de datos abiertos, principalmente en su misma entidad actual. Por tanto, mayoritariamente, los responsables no habían tenido experiencia previa en el campo de la apertura de datos públicos.

4.2.2. Utilidad percibida de la aplicación

Resultaba de interés conocer la percepción de los responsables sobre los beneficios obtenidos por el uso de la aplicación. Por ello, se les facilitó una lista con tres objetivos con respuesta dicotómica sí/no en función del conocimiento que tuvieran sobre la utilización de la misma. Además, se pedía que explicaran alguna situación de uso o por qué este uso no se le había dado. El uso de la aplicación se ha considerado de un modo destacado como beneficioso para la investigación periodística y, ya en menor grado, para pedir explicaciones a la administración o responsables políticos sobre gasto público y acciones de gobierno o gestión. Ambos usos reúnen un amplio consenso con más respuestas afirmativas que negativas. Por el contrario, el uso en procesos de decisión es negado en un mayor porcentaje. Ambos resultados son coherentes con los obtenidos previamente respecto a los usuarios con mayor interés en la información presupuestaria, donde el principal grupo eran los partidos políticos seguidos de los medios de comunicación; y con el principal objetivo de transparencia, donde la transparencia participativa y microtransparencia no resultaban ser los principales pero obtenían tasas de respuesta considerables.

Esto ofrece una doble visión respecto a usos y usuarios apareciendo un primer escenario que comprende a medios de comunicación y grupos políticos que harían uso de la aplicación para buscar y contextualizar información en torno a ingresos, gastos y acciones de la administración en una actividad claramente enmarcada en la rendición de cuentas. En un segundo escenario, más reducido, es un entorno participativo, que seguiría marcado por los mismos usuarios principales pero con el objetivo de ayudar a comprender e ilustrar las acciones de la administración.

> El uso de la aplicación se ha considerado beneficioso para la investigación periodística y, en menor grado, para pedir explicaciones a la administración o responsables políticos

Insistimos de nuevo en los resultados obtenidos acerca de los usuarios, pues en los comentarios recogidos de los encuestados hay reiteradas menciones al limitado uso de la ciudadanía por falta de conocimientos básicos presupuestarios y a la necesidad de potenciar la aplicación con algún tipo de campaña informativa sobre su existencia, uso, posibilidades y contenidos para redundar en un efectivo impacto en la rendición de cuentas directa a la ciudadanía. Por tanto, no ha de resultar extraño que el uso de la aplicación venga de otros grupos que realizan tareas representativas o que se encargan de elaborar informaciones con los datos para destinarlos al consumo general.

Adicionalmente, en el apartado Otros se refiere el uso propio de la aplicación para explicaciones y detalles visuales de partidas o comparativas interanuales en documentos de uso interno o para campañas de divulgación sobre determinadas actuaciones. Este empleo no había sido recogido a priori en el cuestionario, pero su tasa de respuesta resulta ser considerable.

4.2.3. Motivaciones personales

Con esta pregunta pretendíamos conocer las razones últimas por las que se decide implantar la herramienta, mediante la proyección del comportamiento personal en la atribución del comportamiento de la entidad. Para ello, los responsables debían valorar de 1 a 5, entre nada importante y muy importante, tres motivaciones posibles. A ellas se les sumó una pregunta de respuesta dicotómica sí/no sobre mejora de la posición jerárquica o de influencia del responsable tras una exitosa implantación. Entre las motivaciones recogidas en el gráfico 7, existe un amplio consenso en el deseo de lograr la excelencia en la rendición de cuentas y transparencia como principal elemento motivador y, en menor medida, el deseo de unirse a un grupo de entidades innovadoras. Por el contrario, la respuesta a la presión social en pro de la rendición de cuentas y transparencia no habría resultado determinante. La desviación típica en las respuestas resulta bastante cambiante. El deseo de excelencia genera amplio consenso (0,34), la unión a un grupo de entidades innovadoras presenta valores normales (0,94), mientras que la respuesta a la presión social muestra amplia variabilidad en las valoraciones con una elevada dispersión (1,35).

Respecto a la carrera profesional, tan sólo un 35% de los encuestados consideraron que la implantación podría mejorar la posición jerárquica o de influencia en la organización del responsable, por lo que no debemos considerarlo especialmente relevante como factor motivador.

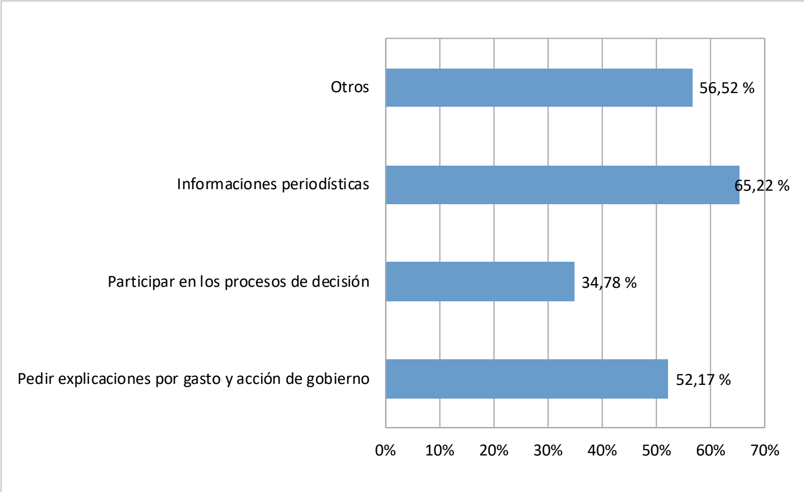


Gráfico 6. Utilidad percibida (promedio)

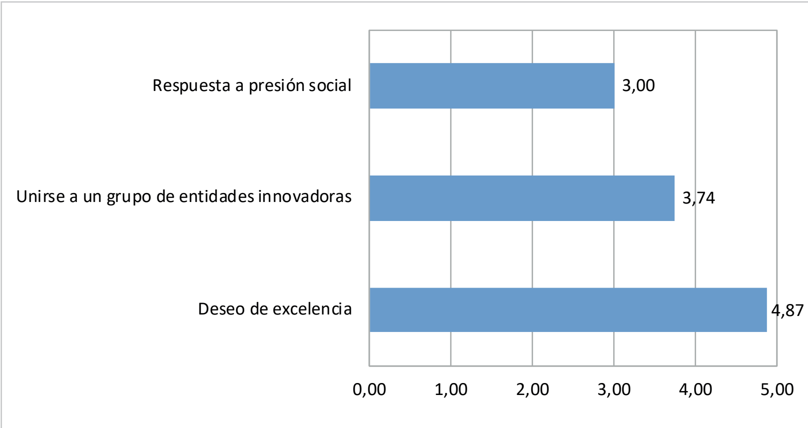


Gráfico 7. Motivaciones personales (promedio)

4.3 Bloque de contextos

En este apartado se perfila el entorno organizativo y externo de las entidades en estudio.

4.3.1. Facilidad de implementación, mantenimiento y acceso a la tecnología

Para responder esta cuestión empleamos respuestas tanto del bloque de actitudes individuales (P9) como del bloque de contextos (P11 y P12). Se ha considerado conveniente agruparlas para poder realizar una interpretación conjunta reforzada, como se muestra en el gráfico 8.

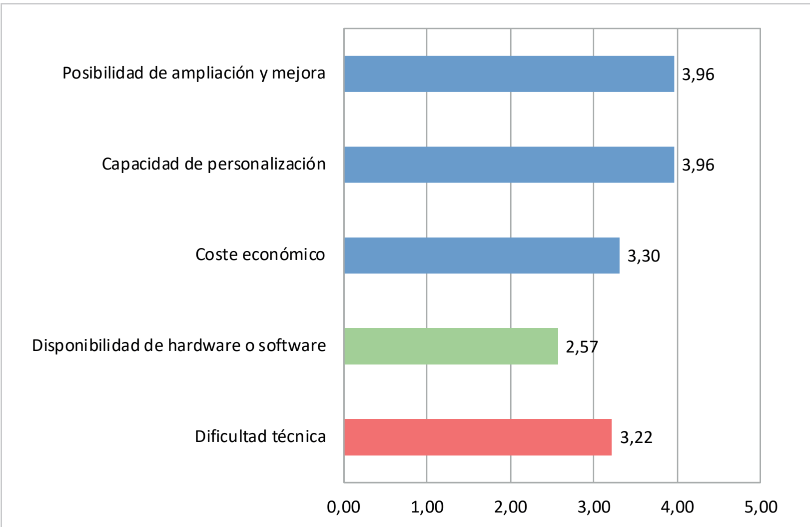


Gráfico 8. Facilidad de implementación, acceso y mantenimiento (promedio)

En cuanto a la facilidad percibida de uso, se valora como intermedio el grado de dificultad de implantación y mantenimiento técnico de la aplicación en la organización (3,22 puntos sobre 5, siendo 1 muy fácil y 5 muy difícil), habiendo sido en casi el 80% de los casos contratada con terceros la instalación y puesta en marcha. La mayor dificultad técnica, referida por la mayoría de los encuestados, ha sido trasladar los datos del software de gestión contable y presupuestaria a la aplicación de visualización. Particularmente debido a cambios de partidas entre áreas de presupuesto por reestructuraciones administrativas, lo que requiere de un elevado consumo de recursos humanos para lograr una correcta atribución de datos que permita comparativas interanuales. También se refieren problemas de gobernanza, en concreto, referidos a procedimientos prestablecidos para determinar quién, cómo y cuándo debe resolver la problemática de traslado y proceder a la publicación y actualización de los datos. Destacamos que precisamente los momentos anterior y posterior a estos problemas (esto es, el proceso de obtención de los datos en bruto y la posterior carga de los datos ya depurados) son mencionados como las cuestiones de menor dificultad técnica.

> Existe un problema de gobernanza que a la larga puede poner en peligro su uso, y que se manifiesta como un coste oculto en tiempo de recursos humanos

La disponibilidad de hardware o software por parte de la entidad no ha sido considerada una barrera relevante para la implantación. Sin embargo, el modelo de licencia de la aplicación no parece neutral, pues aproximadamente un 55% de los encuestados afirman que las libertades que garantiza por ser software libre fueron determinantes en su adopción, preguntados como respuesta dicotómica sí/no. También se pidió valorar de 1 a 5, entre nada relevante y muy relevante, tres factores relacionados con el acceso a la tecnología. En este sentido, se calificaron como factores relevantes para la decisión la capacidad de personalización del software y la posibilidad de ampliación o mejora futuras, pero no tanto su coste económico. Para todas las categorías de respuesta de este apartado se obtienen desviaciones típicas elevadas (entre 1,14 y 1,33) salvo para la posibilidad de ampliación y mejora que obtiene una desviación típica que podríamos calificar como normal (0,95).

4.3.2. Entorno organizativo, marco regulatorio y proactividad

El objetivo de estas preguntas era conocer el efecto de la estructura organizativa de la entidad en la implantación de la herramienta, así como el entorno exterior determinado por el marco regulatorio o por acciones de voluntariedad y proactividad. Para ello se pidió valorar la importancia de 1 a 5 de una serie de factores organizativos cuyos resultados se muestran en azul en el gráfico 9. El tamaño de la entidad es considerado como más determinante (si bien con una elevada desviación típica), junto con los recursos humanos, las disponibilidades presupuestarias y una formalización organizativa y jerárquica clara. Por el contrario, el menos determinante resultan ser las relaciones externas informales. Debemos ser cautelosos al interpretar estos factores como determinantes, pues el tamaño de la entidad resulta evidente que siempre va a constituir una ventaja, aunque sólo sea por mayor disponibilidad de recursos para unos costes de puesta en marcha con un nivel mínimo fijo. De manera similar, la disponibilidad presupuestaria fue establecida previamente como barrera no excesivamente relevante, por lo que debemos entender que su elevada valoración como determinante se corresponde con un escaso coste relativo a la disponibilidad. En general todas las desviaciones típicas podemos considerarlas como normales, salvo la mencionada para el tamaño de la entidad.

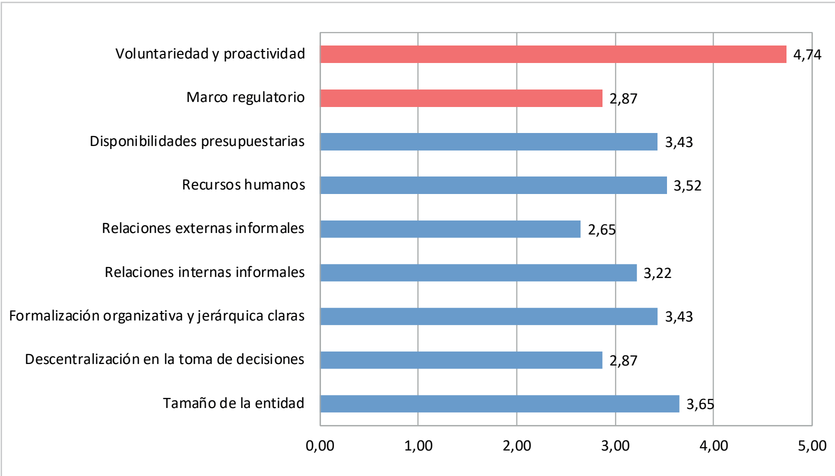


Gráfico 9. Entorno organizativo y marco regulatorio (promedio)

Más interesantes resultan las respuestas respecto al contexto normativo, en rojo en el gráfico 9. En un entorno en el que cada vez más la transparencia se considera una cuestión ligada a la exigencia de una normativa, las razones de proactividad y voluntariedad son consideradas abrumadoramente por los encuestados como las más relevantes para la adopción de la herramienta por encima de cualquier marco regulatorio que imponga obligaciones de divulgación, siendo además su desviación típica muy reducida (0,44). Es evidente que el cumplimiento de las obligaciones legales de transparencia presupuestaria se puede satisfacer facilitando los estados presupuestarios en un simple documento PDF o en datos abiertos, y que disponer de este tipo de aplicaciones de visualización es ir más allá, de un modo que no está contemplado expresamente en ninguna normativa.

4.3.3. Liderazgo y seguimiento

También deseamos conocer el tipo de liderazgo que había impulsado la innovación, por ser clave para entender su adopción. Para ello se plantearon cinco tipos de impulsos para los que se solicitó a los responsables que seleccionaran uno exclusivamente como fuente de la iniciativa. Conforme a las respuestas que muestra el gráfico 10, nos encontraríamos mayoritariamente ante una decisión de autoridad, nacida de un responsable político (60,87% de los casos), y seguido, a mucha distancia, de una decisión de consenso entre distintos roles (21,74%). En ningún caso se registró el impulso procedente de empleados sin capacidad jerárquica para la decisión.

Por último, hemos creído oportuno conocer si se realizaba un seguimiento del uso de la aplicación. Para ello, se solicitó a los encuestados que valoraran de 1 a 5 (entre muy bajo y muy elevado) su uso, pidiendo que explicaran la valoración otorgada.

Una vez lanzada y puesta en marcha la herramienta, los encuestados califican su nivel de uso como medio (3,35 sobre 5, con desviación típica de 1). Principalmente por una falta de cultura de acceso a la información que lleva a que sólo la empleen grupos reducidos, combinado con falta de divulgación e instrucción sobre su uso por parte de las administraciones. No obstante, en este seguimiento hemos encontrado varias voces que destacan su valor como medio intermedio entre la dificultad del dato abierto para su tratamiento (formatos de texto estructurado, CSV) y la poca versatilidad para el examen y análisis de los documentos en PDF, por lo que consideran que es una inversión que merece la pena.

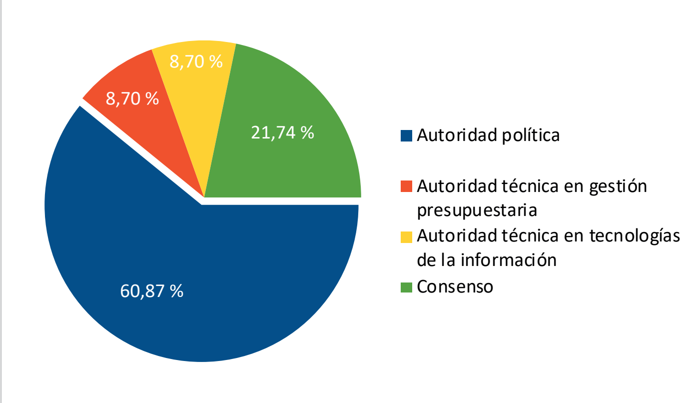


Gráfico 10. Tipo de liderazgo

5. Discusión y conclusiones

Los sistemas de visualización rebajan los niveles de conocimiento requeridos al ciudadano para poder acceder a la información presupuestaria. Por ello, se convierten en un instrumento adecuado para la rendición de cuentas a la ciudadanía, sin perjuicio de otros más formales. Esta investigación ha recogido información mediante cuestionario a los responsables de la puesta en funcionamiento de la aplicación de visualización más popular en las administraciones públicas españolas, sobre su uso e implementación. Hemos obtenido una tasa de respuesta del 71,87% por lo que estimamos que los resultados pueden ser generalizables.

Nuestros resultados en el bloque general van en la línea de los obtenidos por **Gray** (2015) y **Worthy** (2015) para Reino Unido, que describían un escaso interés de los ciudadanos en general por los datos abiertos, con la necesidad de disponer de intermediarios o de elaborar aplicaciones o interfaces que permitan un acceso sencillo a la información y su contextualización. Este estudio se ha basado precisamente en la existencia de esas aplicaciones para un conjunto de datos perfectamente identificados, no habiendo encontrado un consenso claro sobre que haya despertado un especial interés en los ciudadanos, tal y como señala **Heald** (2012).

En esta línea, también nuestros resultados son coincidentes en la no existencia de un usuario medio, sino más bien de grupos con intereses muy concretos en informaciones particulares. A pesar de ello, la herramienta cumpliría con su cometido, pues estaría creando caminos más sencillos para acceder a unos datos que, de otro modo, requerirían de expertos para su obtención y contextualización. Coincidimos con **Clark** *et al.* (2015) en que este tipo de tecnologías digitales destinadas a rendir cuentas al conjunto de ciudadanos acaban en una actividad dependiente de pequeños grupos y en consecuencia su uso se caracterizaría por una cierta inestabilidad según vayan y vengan las necesidades de estos grupos. No deberíamos identificarlo con escaso interés en los datos, sino más bien con la necesidad de que sigan existiendo expertos para crear y contar una historia al público en base a esos datos. Aun resultando más accesibles que en la era pre-digital o en los primeros años de la divulgación online, sigue siendo necesario que sean obtenidos, contextualizados, interpretados y canalizados hacia el usuario lego en la materia. Esto supone una inversión de tiempo y recursos que el ciudadano, destinatario final de la rendición de cuentas, no puede (ni probablemente deba) afrontar en solitario y para la que necesita de intermediarios, normalmente medios de comunicación u otros grupos que realizan la misma función, para canalizar información ya elaborada a los medios. Por tanto, no deberíamos calificar el escaso número de usuarios de estas aplicaciones como un fracaso, sino simplemente indicar que quizá se ha puesto el foco y las expectativas en un grupo de usuarios inexacto, lo que podría contribuir a explicar el fenómeno de caja negra expuesto por **Meijer** (2013).

También debemos destacar la brecha de expectativas detectada respecto a la importancia de responder a la demanda informativa ciudadana, a la reutilización de datos, y a la oportunidad de la divulgación. Nuestros resultados describen que los responsables otorgan mayor importancia a estos factores de los que creen que sus administraciones les atribuyen, coherente con lo expuesto por **García-García** y **Curto-Rodríguez** (2019) de que muchas iniciativas de datos abiertos existen y se mantienen gracias a personas concretas que ponen su empeño personal en ello más allá de cualquier plan o estrategia de transparencia, participación o rendición de cuentas.

Una segunda brecha de expectativas es la referida anteriormente entre el público objetivo teórico (ciudadanos) y mayoritariamente real (medios de comunicación), las creencias previas no se verían totalmente satisfechas lo que creemos que podría frenar en el futuro la expansión de estas herramientas si el objetivo es llegar directamente a la ciudadanía y no uno más amplio de facilitar su acceso a los datos. Este hecho, combinado con las dificultades que pudieran generar los problemas de conciliar la cambiante estructura presupuestaria con la herramienta y con la aspiración declarada de buscar la excelencia para lo que pudiera resultar decepcionante un instrumento que no llega al público en general, refuerza nuestra sensación de que existe un riesgo de freno en su expansión.

En sentido positivo, merece la pena destacar que entre las variables del entorno no hay grandes rasgos organizativos que de manera concluyente sumen o resten en la posibilidad de adopción. Además, ésta no es dependiente de criterios presupuestarios o tecnológicos, posiblemente debido a la licencia de software libre que además genera expectativas sobre posibilidad de mejoras o adaptaciones futuras. En nuestra opinión, otro rasgo destacable en el entorno, y que entronca con la brecha de expectativas sobre los destinatarios finales, es que el impulso innovador sea mayoritariamente político. Desconocemos hasta que punto se pueden estar generando procesos de adopción impulsados por las modas y el deseo de disponer de aquello que ya disponen otros con independencia de cualquier evaluación previa de objetivos, por ejemplo, conocer a los usuarios reales o lograr un tipo concreto de transparencia. Así se convertiría la adopción de la aplicación en un caso particular del fenómeno de *openwashing* (**Heimstädt**, 2017). En cualquier caso, dado el reducido coste de la implementación de estas aplicaciones de visualización y la relevancia de la información ofrecida, creemos que es algo que siempre debería existir y que nos lleva a cuestionar el porqué del escaso número de administraciones que las emplean en su web institucional. En este sentido, líneas futuras de investigación deberían preguntar a cualesquiera destinatarios finales de estas herramientas sobre el uso que realizan de ellas y sus necesidades informativas, de modo que pudieran optimizarse tanto respecto a los usuarios como a las formas de presentar los contenidos.

Uno de los problemas emergentes para los expertos en las políticas de apertura de datos es su gobernanza, esto es, la interacción conjunta de normas, estándares, programas, principios, procesos y decisiones que determinan qué datos se liberan, cómo y por quién (**Brandusescu** *et al.*, 2019). Este problema, que se manifiesta cuando un proceso de apertura de datos se extiende en volumen y en el tiempo, nos apareció claramente reflejado en la mayor parte de las respuestas en referencia al problema de casación entre la cambiante estructura presupuestaria y las necesidades de estabilidad requeridas por la aplicación para poder realizar comparativas. La falta de un procedimiento claro de en qué momento debe realizarse, si debe formar parte del propio proceso de elaboración de presupuestos, o de quién debe realizarlo, señala claramente un problema de gobernanza que a la larga puede poner en peligro el uso de la herramienta o actuar como barrera a la extensión a nuevas administraciones. Al fin y al cabo se constituye en un coste oculto que se abonará en términos de tiempo de recursos humanos. Como bien señalan **Abella**, **Ortiz-de-Urbina-Criado** y **De-Pablos-Heredero** (2019) las manipulaciones manuales o con herramientas no específicas requieren de tareas repetitivas de escaso valor añadido, que con el tiempo irán abandonándose a medida que el impulso inicial decaiga. Los positivos deseos de proactividad y de lograr la excelencia deberían enfocarse a resolver este problema de gobernanza. Para ello se ha de partir de la formulación de una estrategia de transparencia y rendición de cuentas que enlace con una operativa perfectamente establecida y desarrollando, si fuera necesario, nuevas rutinas, procedimientos o incluso aplicaciones de software que permitan reducir o erradicar estos costes ocultos.

En definitiva, las aplicaciones de visualización presupuestaria constituyen una innovación tecnológica que por su capacidad para reducir las asimetrías informativas deberían estar mayoritariamente extendidas entre las administraciones públicas. No obstante, no debemos caer en ningún tipo de tecnofetichismo que les otorgue propiedades casi mágicas, pues como cualquier tecnología su adopción y uso se verá condicionado por una serie de factores y cualidades que siempre deberán ser controlados para su eficaz desempeño. El Premio Nobel de Economía **Ronald Coase** (1994) afirmó que los aspectos del sistema económico que son difíciles de medir tienden a descuidarse. Deberíamos extender esta afirmación a los aspectos difíciles de comunicar pues si no, corren el riesgo de ser abandonados por la ciudadanía en su función última de evaluación y control de gobiernos y administraciones.

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Anexo 1. Instalaciones activas en mayo de 2019

Comunidades autónomas	
Aragón	*https://presupuesto.aragon.es*
Castilla–La Mancha	*https://castillalamancha.dondevanmisimpuestos.es*
Euskadi	*http://aurrekontuak.irekia.euskadi.eus*
Islas Baleares	*https://pressupostsillesbalears.cat*
Murcia	*https://presupuestos.carm.es*
Navarra	*http://presupuesto.navarra.es*
Ayuntamientos	
A Coruña	*http://ondevanosmeusimpostos.coruna.gal*
Alhama de Murcia	*https://alhama.dondevanmisimpuestos.es*
Arona	*https://arona.dondevanmisimpuestos.es*
Arroyomolinos	*https://misimpuestos.ayto-arroyomolinos.org*
Barcelona	*http://ajuntament.barcelona.cat/estrategiaifinances/pressupostobert*
Castelló de la Plana	*https://onvanelsmeusimpostos.castello.es*
Cheste	*https://cheste.dondevanmisimpuestos.es*
Eibar	*https://dondevanmisimpuestos.eibar.eus*
El Prat de Llobregat	*https://onvanelsmeusimpostos.elprat.cat*
Las Palmas de Gran Canaria	*https://laspalmasgc.dondevanmisimpuestos.es*

Madrid	*https://presupuestosabiertos.madrid.es*
Málaga	*http://lascuentasclaras.malaga.eu*
Maó	*https://mao.dondevanmisimpuestos.es*
Montmeló	*https://onvanelsmeusimpostos.montmelo.cat*
Moralzarzal	*https://moralzarzal.dondevanmisimpuestos.es*
Pinto	*https://pinto.dondevanmisimpuestos.es*
Polinyà	*https://pressupostos.ajpolinya.cat*
Santa Coloma de Gramenet	*https://gramenet.dondevanmisimpuestos.es*
Santiago	*https://orzamentoaberto.santiagodecompostela.gal*
Silla	*https://silla.dondevanmisimpuestos.es*
Torrelodones	*https://presupuestos.torrelodones.es*
Vall d'Uixó	*https://lavallduixo.dondevanmisimpuestos.es*
Valladolid	*http://cuentasclaras.valladolid.es*
Vilanova i la Geltrú	*http://pressupostos.vilanova.cat*
Consejos Insulares	
Eivissa	*https://eivissa.dondevanmisimpuestos.es*
Menorca	*https://menorca.dondevanmisimpuestos.es*

Anexo 2. Cuestionario

Bloque general

P1. Importancia subjetiva. Valore de 1 a 5 la importancia que usted concede a las siguientes cuestiones a la hora de publicar la información (siendo 1 nada importante y 5 muy importante).

- Que sea respuesta a una demanda ciudadana.
- Que se realice en formatos abiertos para facilitar su reutilización.
- Que se publique en el menor plazo de tiempo posible.

P2. Importancia para la administración. Valore de 1 a 5 la importancia que cree que su entidad concede a las siguientes cuestiones a la hora de publicar la información (siendo 1 nada importante y 5 muy importante).

- Que sea respuesta a una demanda ciudadana.
- Que se realice en formatos abiertos para facilitar su reutilización.
- Que se publique en el menor plazo de tiempo posible.

P3. Importancia de contenidos. ¿Qué tipo de información considera más relevante para la transparencia y rendición de cuentas al ciudadano medio? Valore cada uno de los siguientes tipos en una escala de 1 a 5 (siendo 1 nada relevante y 5 muy relevante):

- Presupuestos de gastos e ingresos, por partidas presupuestarias (en cualquier formato: PDF, CSV, XLS, etc.).
- Ejecución presupuestaria de gastos e ingresos por partidas presupuestarias (en cualquier formato: PDF, CSV, XLS, etc.).
- Visualizaciones gráficas sobre previsión y ejecución de gastos e ingresos.
- Datos individualizados sobre todos los gastos superiores a 500 euros (en cualquier formato: PDF, CSV, XLS, etc.).
- Acceso de cuentas abiertas a los saldos de las cuentas bancarias de la entidad.
- Plataforma de contratación pública (Administración General del Estado o propia de la entidad).

P4. Grupos de usuarios. ¿Qué grupos considera más interesados en los datos presupuestarios? Valore de 1 a 5 (siendo 1 nada interesado y 5 muy interesado):

- Ciudadanos individuales.
- Medios de comunicación.
- Empresas contratistas.
- Asociaciones ciudadanas.
- Partidos políticos.
- Otros (por favor, especifique cual).

P5. Barreras. Valore de 1 a 5 (siendo 1 nada importante y 5 muy importante) la actuación de cada uno de los siguientes factores como barrera a la adopción de la herramienta:

- Resistencia de los responsables jerárquicos.
- Disponibilidades tecnológicas (hardware o software).
- Recursos humanos (personal que se pueda hacer cargo).
- Dinámicas culturales (procedimientos habituales de hacer las cosas).
- Falta de una estrategia clara en transparencia y rendición de cuentas.
- Disponibilidades presupuestarias

Bloque: Actitudes individuales

P6. Actitud individual: creencias previas. En su opinión ¿Qué tipo de transparencia creará la herramienta que no se alcance por medios de divulgación tradicionales? (marque sólo una):

- Transparencia financiera y presupuestaria (sobre gastos).
- Transparencia participativa (implicar a los ciudadanos en procesos participativos).
- Microtransparencia (permite a los ciudadanos encontrar pequeños datos de información presupuestaria relevantes para ellos).
- Ninguno de los anteriores.
- Otra (por favor, especifique cual):

P7. Experiencia en el uso de la herramienta.

- ¿Con anterioridad a la implantación de la herramienta había colaborado en la implantación de algún tipo de conjunto de datos abiertos o herramienta de visualización en su entidad u otra? Responda SÍ/NO
- ¿Podría especificar el tipo de datos abiertos (portal, subconjunto particular, etc.) o herramienta y si fue en su misma entidad u otra?

P8. Utilidad percibida de la herramienta.
A) ¿Tiene conocimiento de que la herramienta haya sido usada en alguna de las siguientes situaciones? Responda SÍ/NO

- Pedir explicaciones a la administración o responsables políticos por su gasto público o acciones de gobierno/gestión.
- Participar en los procesos de decisión de la administración.
- Informaciones periodísticas
- Otros (por favor, especifique cual)

B) Por favor, refiera alguno de los usos anteriores de los que tenga conocimiento o explique por qué cree que no han tenido lugar.
C) ¿Ha existido dentro de su organización algún uso interno de la herramienta de visualización por parte de responsables políticos o administrativos? Responda SÍ/NO.
D) Si la respuesta anterior fue afirmativa ¿Qué tipo de información se buscó y con qué fin?

P9. Facilidad percibida en la implementación.
A) Valore de 1 a 5 (siendo 1 muy fácil y 5 muy difícil) el grado de dificultad que ha supuesto la implantación y mantenimiento técnico de la herramienta en su organización.
B) ¿Cuál ha sido en su opinión el factor de mayor dificultad técnica (no económica) a la hora de implantar la herramienta?
C) ¿Y el de menor dificultad?
D) La implementación de la herramienta ha sido llevada a cabo principalmente con (marque lo que proceda, sólo una opción):

- Medios propios.
- Contratación con terceros.
- Voluntariado.

P10. Motivación personal.
A) Valore de 1 a 5 (siendo 1 muy poco importante y 5 muy importante) la importancia de los siguientes factores para su entidad a la hora de decidir la implantación de la herramienta:

- Deseo de lograr la excelencia en la rendición de cuentas y transparencia.
- Deseo de unirse a un grupo de entidades innovadoras.
- Respuesta a la presión social de la ciudadanía en pro de la transparencia y rendición de cuentas.

B) Dentro de su entidad ¿Cree que una exitosa implantación de la herramienta puede mejorar la posición jerárquica o de influencia del responsable de la implantación?

Bloque: Contextos

P11. Capacidad tecnológica. ¿Ha supuesto la disponibilidad de hardware o software en la organización una barrera relevante para la implantación de la herramienta? Valore de 1 a 5 (siendo 1 muy poco relevante y 5 muy relevante).

P12. Acceso a la tecnología.
A) ¿Que la herramienta esté disponible como software libre ha sido determinante para su adopción por razones de coste o personalización? Responda SÍ/NO.
B) Valore de 1 a 5 la relevancia de los siguientes factores en la adopción de la herramienta (siendo 1 muy poco relevante y 5 muy relevante).

- Coste económico.
- Capacidad de personalización.
- Posibilidad de ampliación y mejora futura.

P13. Entorno organizativo. Valore de 1 a 5 la importancia de los siguientes factores para implantar la herramienta (siendo 1 muy poco importante y 5 muy importante):

- Tamaño de su entidad (comunidad autónoma, ayuntamiento, cabildo, etc.).
- Descentralización en la toma de decisiones.
- Formalización organizativa y jerarquía claras.
- Relaciones internas informales entre miembros de su organización.
- Relaciones informales de colaboración con entidades ajenas a su organización.
- Recursos humanos en su organización.
- Disponibilidades presupuestarias.

P14. Marco regulatorio. ¿Para implantar la herramienta ha resultado más determinante la existencia de un marco regulatorio que imponía una obligación de divulgación (p.e. normativa sobre transparencia y buen gobierno) o han primado razones de voluntariedad y proactividad en la divulgación? Valore de 1 a 5 (siendo 1 muy poco importante y 5 muy importante):

- Marco regulatorio.
- Voluntariedad y proactividad.

P15. Liderazgo. En su opinión, el impulso a la iniciativa de implementación de la herramienta surgió principalmente de (marque lo que proceda, sólo una opción):

- Autoridad política (presidente, alcalde, consejero, concejal, etc.).
- Autoridad técnica en gestión presupuestaria.
- Autoridad técnica en tecnología de la información.
- Empleados sin capacidad jerárquica para la decisión.
- Consenso entre diferentes roles de los citados.

P16. Seguimiento. ¿Cómo considera el uso de la herramienta de visualización? Valore de 1 a 5 (siendo 1 muy bajo y 5 muy elevado). Si lo desea, puede explicar su valoración en el espacio en blanco provisto a continuación.

CTXT: hacia un modelo de negocio posible para el periodismo digital independiente

CTXT: Towards a possible business model for independent digital journalism

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Resumen

El presente trabajo tiene por objetivo profundizar en el conocimiento de *CTXT*, un semanario digital independiente de información general fundado en enero de 2015 por periodistas procedentes de diarios españoles de referencia y que en apenas cuatro años ha conseguido hacerse un hueco en el ecosistema mediático actual. A partir de una investigación etnográfica en curso sobre este nuevo cibermedio, nos centramos aquí en el análisis de su modelo de negocio, un aspecto central en el nacimiento y desarrollo de una pequeña empresa como *CTXT*, que emergió como una cuestión clave durante nuestro trabajo de campo. En un contexto de gran dificultad para levantar una nueva empresa periodística independiente, este modelo ha sido posible gracias a un continuo esfuerzo de búsqueda, experimentación y diversificación de las fuentes de ingresos y gracias a la pasión por el periodismo y al trabajo poco remunerado o gratuito de periodistas y otros profesionales muy cualificados. El esfuerzo del equipo se ha orientado a hacer productivo su importante capital simbólico (para construir la marca de un periodismo cualificado, independiente y alternativo al *mainstream*) y su capital social (sus redes con personas y con otros medios afines) para, pese a su reducido capital financiero, hacerse relevante en la esfera mediática. El periodismo que propone *CTXT*, atento a ser reflexivo, crítico y de calidad, ha sabido encontrar su nicho de audiencia y hacer oír su voz en la escena mediática.

Palabras clave

Periodismo; Periodismo digital; Prensa digital; Medios digitales; Cibermedios; Modelo de negocio; Financiación; Etnografía; Estudio de caso; CTXT.

Abstract

The aim of this paper is to deepen knowledge of *CTXT*, an independent digital weekly magazine founded in January 2015 by journalists from leading Spanish newspapers and that in just four years has managed to carve a niche in the current media ecosystem. Based on an ongoing ethnographic research, in this article we will focus on the analysis of its business model, a central aspect in the birth and development of a small company such as *CTXT*, which emerged as a key issue during our field work. In a context of great difficulty to start a new independent journalism company, this model has been possible thanks to a continuous effort of search, experimentation and diversification of sources of income and thanks to the passion for journalism and the low-paid or free work of journalists and other highly qualified professionals. The team's effort has been focused on making productive its important symbolic capital (to build the brand of a qualified, independent and alternative journalism) and its social capital (its networks with people and other related media) for, despite its small financial capital, become relevant in the media sphere. The type of journalism that *CTXT* proposes, attentive to being thoughtful, critical and of quality, has managed to find its audience niche and make its voice heard in the media scene.

Keywords

Journalism; Digital journalism; Online journlism; Digital press; Digital media; Cybermedia; Business model; Financing; Ethnography; Case study; CTXT.

1. Introducción y estado de la cuestión

CTXT es un semanario digital independiente fundado en enero de 2015 por periodistas procedentes de diarios españoles de referencia como *El país* y *El mundo*. En apenas cuatro años, el medio ha logrado ser sostenible económicamente y posicionarse en el ecosistema mediático español ocupando un espacio apenas presente en el mercado de medios digitales, el del semanario. A partir de este formato semanal y una apuesta decidida por recuperar un periodismo de calidad y "de servicio público", como lo denominan, *CTXT* ha conseguido atraer y afianzar a un amplio número de lectores durante su corta existencia.

> *CTXT* forma parte de una nueva generación de cibermedios (*eldiario.es*, *InfoLibre*, etc.) nacidos en un contexto de crisis y metamorfosis del periodismo

Esta publicación forma parte de una nueva generación de cibermedios (*eldiario.es*, *InfoLibre*, etc.) nacidos en un contexto de crisis y metamorfosis del periodismo que ha modificado sustancialmente el escenario mediático (**López-García**, 2011) y está transformando la profesión en un conjunto dinámico de prácticas y expectativas (**Deuze**; **Witschge**, 2017). Tras los ERES y reducciones de plantilla llevados a cabo a partir del año 2008 por muchos diarios, entre ellos, *El país*, *El mundo* o *ABC*, y la desaparición en febrero de 2012 de la edición en papel del diario *Público* (**Fernández-Sande**, 2013), varios periodistas despedidos de estos grandes medios de información general y sin ofertas de trabajo en un panorama de drástica reducción de plantillas, se vieron obligados a "reciclarse", implicándose en nuevos proyectos periodísticos o incluso creando nuevos diarios digitales. Esta situación dio lugar a una eclosión de medios digitales sin precedentes que guarda ciertas similitudes con la irrupción de nuevos medios durante la Transición, ya que, al igual que entonces, estos proyectos logran encontrar o crear un nicho de demanda:

> "se apoyan en una demanda de información por parte de un significativo número de usuarios, cuya pretensión es resarcirse de las presiones de una preagenda mediática con sujeción a numerosos poderes fácticos" (**García-Santamaría**; **Clemente-Fernández**; **López-Aboal**, 2013, p. 143).

La crisis y los despidos se convirtieron así en un hervidero de nuevos medios digitales –muchos nacidos de la iniciativa y el trabajo, a menudo no remunerado, de los propios periodistas–, medios que están transformando el trabajo periodístico y las formas de pensarlo, imaginarlo, practicarlo y financiarlo (**Peñamarín**, 2016).

Esta vitalidad del periodismo digital forma parte de una tendencia global en nuestro entorno postindustrial: surgen nuevas empresas periodísticas, *start-ups* en red, creadas por profesionales cualificados y con experiencia que se encuentran en paro. Estas empresas generalmente pequeñas desarrollan modelos de negocio, formas organizativas y tácticas nuevas adaptadas a los usos y posibilidades de los entornos y recursos digitales. Y promueven una visión propia del periodismo. Según **Deuze** (2017), muchas de esas nuevas empresas se presentan como críticas con el *statu quo* del periodismo y afirman buscar en la Red la posibilidad de crear un medio que recupere el "verdadero" periodismo. Defienden sobre todo el principio de autonomía del periodismo respecto a los poderes económicos y políticos y su papel clave en democracia, su obligación de servir al público información independiente y de calidad. Esa pasión por su trabajo, que encuentran los investigadores en el estudio de veintiuna de estas *start-ups* de diferentes países (**Deuze**, 2017), permite a los profesionales afrontar condiciones laborales muy duras y exigentes, con bajas retribuciones y poca seguridad. A pesar de ello, manifiestan sentirse fuertemente vinculados a esas nuevas empresas donde trabajan de acuerdo a sus valores y donde pueden pertenecer a un equipo que comparte esa orientación.

En España, si bien medios como *eldiario.es* o *InfoLibre* han sido objeto de publicaciones científicas (**González-Esteban**, 2014; **Rubio-Jordán**, 2014; **García-Orosa**, 2016; **López-García**, 2016), en el caso de *CTXT* nos encontramos con una absoluta falta de estudios académicos sobre este novedoso medio digital, actor relevante en el actual panorama informativo. Este artículo es un intento de llenar este vacío académico.

2. Objetivos y metodología

La presente investigación tiene por objetivo profundizar en el conocimiento de un nuevo medio digital, *CTXT*, que defiende un periodismo crítico y de calidad y que aspira a la autosuficiencia económica, esto es, a la independencia como condición de libertad para el ejercicio de ese tipo de periodismo. Como veremos, *CTXT* ha contado con el compromiso de numerosos profesionales cualificados, con el capital inicial de sus socios fundadores, así como con el apoyo económico y el interés de sus lectores y suscriptores, pero la batalla por los recursos económicos sigue centrando buena parte de los esfuerzos de su equipo, de ahí que el problema del modelo de negocio emergiera como una cuestión clave durante nuestra investigación.

https://ctxt.es

El análisis que aquí presentamos deriva de un trabajo de campo en curso de corte cualitativo y etnográfico sobre *CTXT*. El enfoque etnográfico está permitiendo aproximarnos al objeto de estudio desde el análisis de las prácticas y discursos de los mismos actores en su actividad cotidiana, con métodos como la observación directa, la participación del investigador en el contexto estudiado, la realización de entrevistas en profundidad (**Hammersley**; **Atkinson**, 1994; **Guber**, 2004) y el seguimiento de la actividad online (**Hine**, 2004; **Lovink**, 2011).

Nuestro interés por realizar una investigación etnográfica en *CTXT* se orienta a entender cómo los profesionales involucrados dan sentido a lo que hacen en el cambiante campo del periodismo digital (**Deuze**, 2017). Esto requirió de varias conversaciones y explicaciones que contaron siempre con una actitud abierta y colaboradora por parte de las tres personas fundadoras y responsables del medio, en las que centramos nuestra observación. Se discutieron y negociaron los roles, objetivos y límites que como investigadores nos correspondían (**Guber**, 2004; **Kawulich**, 2005). Como *participante-observador* (y siempre aclarando sus fines de investigación) una persona de nuestro equipo ha asistido a las sesiones del *Consejo de redacción* de *CTXT* al menos una vez al mes durante 3 años y a su grupo de *WhatsApp*. Otro de nosotros ha sido admitido como *observador-participante* en la sala de redacción de *CTXT* (septiembre de 2018) y en algunos de sus grupos internos de *WhatsApp* (enero de 2019), lo cual nos ha permitido conocer de primera mano la gestión del día a día del trabajo periodístico del medio, tanto en el espacio real o físico como en el espacio online, los cuales consideramos como formando un mismo espacio o contexto de investigación (**Ardèvol**, 2013).

> *CTXT* ha contado con el compromiso y la contribución económica de sus socios fundadores, así como con el apoyo económico y el interés de sus lectores y suscriptores

En cuanto a las entrevistas, realizamos una primera tanda de entrevistas extensas por separado con las citadas tres personas fundadoras y actuales cargos directivos de *CTXT* en abril de 2018 y una segunda serie en enero de 2019, ésta enteramente focalizada a la cuestión del modelo de negocio. Las entrevistas han resultado centrales para este trabajo, pues constituyen una eficaz forma de identificar la memoria de unos sujetos, su experiencia y visiones en un momento determinado (**García-Espín**, 2016).

¿Qué puede aportar la etnografía al conocimiento del modelo de negocio de un medio digital nuevo? Como veremos, al hablar de modelo de negocio nos referimos a los instrumentos que el medio utiliza para organizar los recursos, competencias y actividades con el fin de crear valor. La investigación etnográfica nos permite indagar los fines y los valores de los actores y la forma en que los actualizan en su práctica, y acercarnos así a aspectos fundamentales de estos procesos de creación de un nuevo medio periodístico.

3. Transformación de los modelos de negocio

La discusión sobre los modelos de negocio en el ecosistema mediático actual se ha convertido en un debate recurrente en el contexto académico y profesional (**Rojo-Villada**, 2008; **Casero-Ripollés**, 2010; **García-Avilés**; **González-Esteban**, 2012; **Vara-Miguel**; **Díaz-Espina**, 2012; **Cook**; **Sirkkunen**, 2013; **García-Santamaría**; **Clemente-Fernández**; **López-Aboal**, 2013; **García-Santamaría**; **Pérez-Serrano**; **Maestro-Espínola**, 2016; **Wagemans**; **Witschge**; **Deuze**, 2016; **Deuze**, 2017; **Bittner**, 2019). Como ha recordado **Campos-Freire** (2010; 2011), el concepto de modelo de negocio es tan antiguo como los propios orígenes del estudio científico de la gestión empresarial, pero ha resurgido con fuerza en los últimos años ante el cambio que ha supuesto la transformación de la sociedad de la información, la generalización de internet y, más recientemente, el auge de las redes sociales y las aplicaciones móviles.

El modelo de negocio puede definirse como la manera en que la empresa estructura su actividad y genera ingresos (**Rojo-Villada**, 2008). Como señala Campos-Freire, el concepto de modelo de negocio es

> "mucho más que la síntesis comercial y productiva de una empresa o sector, es un instrumento de gestión estratégica que describe y sintetiza la organización de los recursos, competencias y actividades para crear valor" (**Campos-Freire**, 2010, p. 17).

El modelo de negocio es, además, parte del mensaje de la empresa que lo pone en marcha, puesto que los modelos

> "afectan en gran medida a lo que se produce, cómo se produce/distribuye y cuál es el usuario final que lo consume" (**Cerezo**, 2017, p. 4).

En el actual contexto mediático, la crisis y sus consecuencias sobre la generación de ingresos ha obligado a una revisión y redefinición de los modelos de negocio que afecta tanto a los medios de comunicación tradicionales como a los nuevos medios digitales propios de la cibercultura. En los últimos años, la digitalización ha transformado los hábitos de comunicación y con ellos la cadena de valor en su conjunto, tanto en lo que se refiere al modelo de producción como al de distribución y, por lo tanto, al modelo de negocio, ante lo cual los medios tradicionales no han tenido otra opción más que reinventarse. En este último campo, tras años de pruebas y errores, no se ha encontrado un modelo de negocio universal y estable, sino una suerte de combinación de diferentes fuentes de ingresos (**Cerezo**, 2017).

El entorno de los cibermedios periodísticos que operan exclusivamente en internet (es decir, sin referente impreso, radiofónico o audiovisual) es generalmente muy precario y competitivo y muchas de las empresas que se ponen en marcha fracasan (**Wagemans**; **Witschge**; **Deuze**, 2016, p. 161). Como en el caso de los medios tradicionales que han tenido que reinventarse para adaptarse al ecosistema digital, no existe un único modelo de negocio rentable y estable para los cibermedios sino que resulta ser siempre una combinación de diferentes fórmulas y fuentes de ingresos entre las que se incluyen la publicidad, el patrocinio, la intermediación, la explotación de la información, la venta de productos, la suscripción, la franquicia, el *crowdfunding*, los videojuegos, la realidad aumentada, la venta de apps, etc. (**Rojo-Villada**, 2008; **García-Avilés**; **González-Esteban**, 2012; **Canavilhas**, 2015; **Deuze**, 2017).

4. Hacia la construcción de un modelo de negocio

4.1. Los comienzos: trabajo gratuito, financiación participativa y campañas de *crowdfunding*

"Pusimos primero el periódico y después la empresa". Esta frase, pronunciada por uno de los fundadores de *CTXT* durante una de las entrevistas de nuestro trabajo de campo, resume los intereses del medio durante sus primeros años de vida y las dificultades a la hora de pensar en él en términos de empresa. De hecho, sus fundadores reconocen que no tenían "ni idea de empresa ni de qué negocio íbamos a hacer", por lo que el modelo de negocio se tuvo que ir improvisando sobre la marcha:

> "Nosotros sabíamos de periodismo, pero no sabíamos gestionar una empresa, no sabíamos de marketing, no sabíamos de gerencia, no sabíamos de cuentas, en fin, es un proyecto hasta cierto punto un poco loco, de periodistas, y poco a poco le hemos ido dando una cierta estructura empresarial" (Fundador/a A).

Sí creían, sin embargo, que podían aportar un valor como medio:

> "Nuestro modelo es la prensa anglosajona y la americana también. La idea de *CTXT* es recuperar las mejores cosas de la mejor tradición periodística, es decir: las buenas entrevistas, los buenos reportajes, los buenos editoriales, géneros que en internet habían desaparecido, estaban desapareciendo (…) Y ese rescate de géneros es también un planteamiento ético, es decir, esos géneros ayudan a clarificar en un momento de mucha confusión […] Tenemos que ser complementarios a todos esos (medios digitales), el complemento de calidad y de reflexión que a ellos les falta (Fundador/a B).

CTXT se fundó como tal el 15 de enero de 2015 gracias a 14 periodistas que aportaron un capital inicial de 20.000 euros y que se comprometieron a trabajar gratis durante el primer año en las tareas de edición y redacción del medio hasta que la situación de su pequeña empresa les permitiera tener un salario. Comenzaron a trabajar en un medio que ni siquiera contaba con una redacción física, sino que el trabajo se realizaba en casa de cada uno y en el salón de casa de uno de sus socios fundadores:

> "La empresa era tan minúscula que es que no había empresa: no había nóminas, no había inversión en tecnología, no había mobiliario, no había redacción, es decir, no había nada. Había una casa y catorce periodistas trabajando" (Fundador/a B).

> Las redes interpersonales del grupo fundador y su experiencia previa en diarios como *El país* o *El mundo* les permitieron contactar con las personas que necesitaban para impulsar el nuevo medio y empezar a llenarlo de contenido y funcionalidad

Junto al capital simbólico aportado por esos 14 competentes profesionales contaban con un importante capital social: las redes interpersonales del grupo fundador y su experiencia previa en diarios como *El país* o *El mundo*, que les permitieron contactar con las personas que necesitaban para impulsar el nuevo medio y empezar a llenarlo de contenido y funcionalidad. Gracias a ello se logró tejer una red de más de cien colaboradores altamente cualificados dispuestos a apostar por este medio en ciernes, entre los que se encontraban periodistas, analistas, editores, viñetistas, ilustradores, fotógrafos e informáticos. Nos hemos referido al trabajo "distribuido", no localizado en una redacción física, para la que no había en estos comienzos dinero, sino distribuido en diferentes lugares conectados al equipo central. Se trataba de una forma, entonces todavía precaria, del actual periodismo de equipos siempre conectados, o periodismo *networked* (**Deuze**, 2017). El diseño de la revista fue un asunto central y se resolvió en forma original y atractiva tomando como inspiración el diseño visual de la revista estadounidense *The New Yorker*.

El primer problema para el grupo fundador fue cómo hacer frente a los pagos por el trabajo de los colaboradores. El *crowdfunding*, por aquel entonces un mecanismo colaborativo de moda para la financiación de proyectos, se presentó como una posible solución:

> "decidimos hacer un *crowdfunding* antes de haber salido, lo cual era muy arriesgado porque tú estás diciendo 'pon dinero aquí, que es una web que va a salir…'. Hicimos un vídeo muy bonito, contamos nuestra filosofía, qué es lo que iba a ser aquello, y la verdad es que funcionó, conseguimos el dinero que pedimos" (Fundador/a A).

La campaña se inició antes de la salida del primer número y en la descripción del proyecto ya quedaron sentados los principios editoriales del nuevo medio, en los cuales puede verse la importancia de la ideología ocupacional del periodismo tradicional como recurso en la nueva ola de periodismo emprendedor, tal y como han demostrado **Wagemans**, **Witschge** y **Deuze** (2016):

> "Los fundadores de *CTXT* sabemos que sin prensa libre no hay democracia. Y pensamos que el actual descrédito de la prensa de referencia se debe, sobre todo, a su alianza con el poder político y económico. En *CTXT* queremos recuperar el viejo espíritu de la buena prensa independiente: ser un servicio público, escribir para la ciudadanía desconfiando de las verdades oficiales y de la propaganda que pone en circulación el poder. Nuestro lema será *contexto y acción* porque queremos ayudar a que la gente se forme un criterio propio para que pueda actuar de forma responsable y coherente".
> *https://www.verkami.com/projects/10753-ctxt*

"El viejo espíritu de la buena prensa independiente", "servicio público", "para la ciudadanía", desconfiar de "las verdades oficiales y del poder". Estos son los argumentos principales con los que *CTXT* quiere atraer a una audiencia que espera sea sensible a ellos. Son también las razones, o los valores, por los que un buen grupo de periodistas y otros profesionales colabora con este medio, sin cobrar o con una retribución escasa y de futuro incierto. Esto presupone un malestar de al menos una parte de los periodistas y del potencial público con los medios periodísticos convencionales, que se detecta en España y en muchos otros lugares del mundo.

> "Uno de los principales argumentos de compra (*selling point*) del periodismo profesado por *Mediapart* es el que desafía y aporta una alternativa a la prensa *mainstream* francesa".

Una alternativa enraizada en el ideal del viejo buen periodismo (**Wagemans**; **Witschge**; **Deuze**, 2016, p. 175). En la hipótesis de *CTXT*, ese malestar latente en el público se une a una disposición activa a contrarrestarlo, a participar en proyectos que proponen una alternativa. Una importante red de profesionales se pone en marcha para captar a esa audiencia prevista.

La campaña de *crowdfunding* se resolvió con éxito y, gracias a ello, el medio pudo cumplir el primer objetivo que se había marcado: pagar durante los primeros tres meses el trabajo de los colaboradores de la publicación (sobre todo a los informáticos, imprescindibles para asegurar la funcionalidad del medio en red, que "se llevaron casi todo el dinero que conseguimos"). El *crowdfunding* fue una salida para garantizar la sostenibilidad de la publicación durante sus primeros meses, coincidiendo con una época en la que este sistema de financiación alternativo se estaba convirtiendo en una interesante

> "vía de arrancar un proyecto o de testar si el producto es interesante antes de lanzarlo e invertir recursos",

o lo que es lo mismo,

> "una forma de poner en contacto la energía emprendedora del creador con la demanda interesada de los usuarios" (**Martínez-Sánchez**; **Martínez-Polo**, 2017, pp. 227-228).

Para los fundadores de *CTXT*, el *crowdfunding*, además de dar a conocer el proyecto e incorporar a más público, fue la alternativa para lograr financiación evitando a los bancos u otras entidades o instituciones que acabaran comprometiendo su libertad editorial:

> "Nosotros no podíamos, por ejemplo, acudir a un fondo de capital […] no estábamos en la disposición de asegurar ninguna rentabilidad porque era una cosa muy precaria y hecha con muy poco dinero. Desde luego, habíamos decidido no pedir ningún préstamo a los bancos para no depender de nadie" (Fundador/a A).

Ante los buenos resultados conseguidos durante la primera campaña, *CTXT* ha recurrido en otras ocasiones al *crowd-*

funding como vía de financiación y parte de su modelo de negocio. En su segundo año, en febrero de 2016, sus fundadores iniciaron una nueva campaña en la plataforma *Goteo.org* que ellos denominan "*crowdfunding* de consolidación" y en la que se pedía financiación a los lectores para lograr consolidar el proyecto. La campaña, titulada *El contexto lo es todo*, volvía a destacar la filosofía editorial de la publicación, incidiendo en la necesidad de realizar un "periodismo de contexto" y de servicio público.
https://www.goteo.org/project/ctxt

Los fundadores de *CTXT* han ido descubriendo la posibilidad de la financiación participativa, que consideran un modelo de negocio "muy sano"

Esta nueva campaña obtuvo una financiación de 72.883 euros de un presupuesto mínimo de 52.000 euros y óptimo de 77.000, dinero que se utilizó nuevamente para pagar las colaboraciones e incluso subir su importe, permitiendo así "crear un equipo sólido de trabajo que pueda vivir de su trabajo" y apoyar la independencia de la publicación.

Los fundadores de *CTXT* han ido descubriendo la posibilidad de la financiación participativa, que consideran un modelo de negocio "muy sano":

> "Creo que es importante que los lectores hayan confiado en que el proyecto empresarial era viable. Y yo creo que ese es un poco el modelo que decía Julia Cagé que había que poner en marcha. Y además es muy sano que tengamos una empresa en la que todos los socios son lectores o colaboradores" (Fundador/a B).

CTXT ha publicado varios artículos de Julia Cagé, economista doctorada en Harvard, quien sostiene que

> "La información es un bien público que debe ser accesible a todos. Y por ello hay que proteger su producción, lo que hoy significa repensarla" (**Cagé**, 2016, p. 27).

Esta autora defiende la "financiación participativa" de los medios independientes y propone

> "favorecer la multiplicidad de accionistas y evitar un exceso de concentración en manos de una o dos personas" (**Ralle-Andreoli**, 2016).

En este sentido, la sociedad *CTXT* ha realizado varias ampliaciones de capital a lo largo de sus cuatro años de existencia:

> "Hemos ido sumando socios, hemos abierto la empresita, tiene ahora 140 o 150 socios, entonces cada año hemos ido haciendo ampliaciones de capital populares para que la gente que nos leía y nos apoyaba y se suscribía pudiera ser también accionista. Y eso es lo más interesante del proyecto, yo creo, que hay 150 personas dispuestas a poner el dinero" (Fundador/a B).

Así, si como han señalado autores como **Canavilhas** (2015), los nuevos medios deberían implementar estrategias de lealtad basadas en la valoración de una red propia que pueda involucrar al usuario y crear sentimientos de pertenencia (ofreciéndoles, por ejemplo, la posibilidad de interactuar con sus periodistas, participar en foros internos, etc.), en el caso de *CTXT* este sentimiento de pertenencia se construye y se impulsa no sólo mediante la interacción con los periodistas y la participación en foros y encuentros, sino también ofreciendo a sus lectores la posibilidad de convertirse en accionistas del medio y ser parte activa de él.

4.2. El modelo de suscripciones

En octubre de 2016, unos meses después de la finalización de la campaña de *crowdfunding* de *Goteo.org*, el grupo fundador de *CTXT* decide experimentar con otra vía de financiación: las suscripciones. Sus fundadores entendían que el periodismo de "servicio público" implica la accesibilidad total y gratuita de los contenidos, por lo que tuvieron que pensar un modelo de suscriptores que pagaran por algo que es gratis, porque "nunca nos planteamos cerrar la página, o sea, hacer el modelo de *InfoLibre*, hacer un muro de pago". De ahí que, al modo de las campañas de *crowdfunding* llevadas a cabo anteriormente, el grupo fundador, además de apelar al valor del medio y a la libertad de prensa, propusiera distintos tipos de "recompensas" para que los lectores estuvieran dispuestos a pagar por un medio esencialmente gratuito: acceso a espacios y contenidos sólo para suscriptores, tazas, camisetas, bolsas de tela, regalo de entradas, etc.

Las suscripciones se han convertido en la principal fuente de ingresos de *CTXT*, gracias a la cual en diciembre de 2017 la revista logró alcanzar el hito de los 5.000 suscriptores, que aportaron el 53% de los ingresos totales. A día de hoy, el número de suscriptores ha aumentado hasta los 7.500 y en 2018 supuso la fuente principal de ingresos, el 33%, si bien el objetivo final del medio para cubrir los gastos de la empresa era de 10.000 suscriptores.

El modelo de suscripciones ha ido variando desde su implantación en octubre de 2016 y en la actualidad cuenta con tres tipos de suscripción anual que incluyen acceso a "El saloncito" (una zona de contenido exclusivo para suscriptor@s, con videos de entrevistas a pensadores estadounidenses, *El tintero de CTXT*, *Eventos CTXT*, Libros *CTXT*, etc.), carta semanal en exclusiva y adelantos editoriales. Durante su rutina semanal, los responsables del medio dedican varias horas a la gestión de las suscripciones y el contacto directo con los suscriptores, que son tratados como "defensores" del periodismo libre e independiente que postula *CTXT*. Requiere unos suscriptores peculiares, que han de ser efectivamente "defensores" de la "causa" *CTXT*, en la que participan con su aportación económica. El *crowdfunding* de consolidación y las suscripciones conseguidas (sumadas al resto de fuentes de financiación que mencionaremos) permitieron alquilar en 2017 un local para la redacción y estabilizar una plantilla mínima. A mediados de 2018, afirma uno de los fundadores,

> "hemos subido apreciablemente las tarifas de los colaboradores y nos hemos puesto un sueldo digno para poder pagar el alquiler. Y hoy estamos contratando a tres jóvenes periodistas en prácticas" (Fundador/a B).

A finales de ese año 2018, *CTXT* pagaba regularmente siete sueldos a periodistas. Para ello ha tenido que encontrar otras fuentes de ingresos.

4.3. La cesión de tráfico

Junto al modelo de suscripciones, otra vía de financiación paralela con la que *CTXT* logra actualmente parte de sus ingresos es la cesión de tráfico. Sus fundadores reconocen que esto es algo que hacen los medios pequeños para lograr una mayor visibilidad. El diario digital *Público* contactó con *CTXT* para ofrecerles un contrato de cesión de tráfico, contrato que actualmente mantienen y que supone en torno al 11% de sus ingresos. Sin embargo, aunque reconocen la afinidad entre ambos medios en línea editorial, los responsables de *CTXT* son críticos con este contrato de cesión de tráfico, pues, afirman, "nos canibaliza un poco la marca":

> "Si pudiéramos no tener esa cesión de tráfico, porque nos canibaliza un poco la marca, pues no lo haríamos. Nosotros cedemos nuestros lectores, es decir, nuestros números, ellos obtienen más publicidad y a nosotros nos llega una parte, que supone eso, el 11% de nuestros ingresos. También supone que los contenidos que nosotros les mandamos a ellos aparezcan en su portada y es verdad que como *Público* es un medio muy masivo, nuestros contenidos se leen más. Eso tiene la parte buena de que se nos ve más, pero tiene la parte mala de que hay gente que cree que *CTXT* forma parte de *Público*" (Fundador/a A).

> "Público es un periódico de audiencia masiva y de última hora, hacen poco análisis, y nosotros somos un medio mucho más reposado, mucho más analítico" (Fundador/a A),

de ahí que el lema de la publicación sea "Orgullosas de llegar tarde a las últimas noticias". Durante 2018 se realiza un pequeño cambio en el diseño de la cabecera, de modo que el logo de *Público* no aparece ya aislado, debajo del logo de *CTXT*, sino unido al de *The Buffler* –una revista americana de crítica cultural y política con la que el medio comparte artículos–, bajo el epígrafe "Medios asociados", lo que ha reducido el peligro de confusión y de "canibalización de la marca".

4.4. La publicidad

Aunque los responsables de *CTXT* mantienen un discurso crítico con la publicidad "cuando condiciona la línea editorial", ésta supone otra parte de sus ingresos. En su rendición de cuentas del año 2017, la publicidad supuso en torno al 14% de los ingresos de la publicación, y en el 2018 el 11,9%. Para ellos, la publicidad cumple un papel "residual" o "marginal" dentro de su modelo de negocio, y señalan que

> "probablemente seamos el medio que menos banners tiene por centímetro cuadrado" (Fundador/a A).

La filosofía del medio –crítico con el mercado publicitario actual, basado en la lógica del "pinchazo" o *clickbait*– y su formato de semanario lo hacen poco atractivo para los anunciantes y agencias de publicidad:

> "Nosotros no garantizamos ningún tipo de tráfico ni de audiencia, ni de *clicks*, ni nada de eso, porque es imposible" (Fundador/a C).

> "Nosotros no vamos a bulto. Al ser un medio que no va a volumen y no hacemos contenido patrocinado, entonces no interesamos ni a los anunciantes ni a las agencias. Somos como la migajilla" (Fundador/a B).

Los ingresos derivados de la publicidad provienen principalmente de empresas e instituciones públicas como ayuntamientos o museos. También bancos como *Bankia* o *Ibercaja* han aportado algo, pero muy poco –"una miseria"– lo que no les impide, por ejemplo, informar sobre los juicios de Rato u otros asuntos relacionados con los bancos:

> "La ventaja de tener tan poca publicidad es que eres libre para escribir sobre todas esas empresas" (Fundador/a B).

Por último, aunque el porcentaje y visibilidad de la publicidad en *CTXT* es pequeño comparado con el de muchos otros medios informativos españoles, sus responsables no son partidarios de eliminarla por completo pues consideran que

> "un medio que no tenga publicidad, ninguna publicidad en portada, parece que es un medio que esté moribundo, que no está en el mercado" (Fundador/a B).

4.5. Otras vías de financiación

A las vías de financiación señaladas anteriormente se unen otras fuentes de ingresos de diversa procedencia entre las que destacaremos, en primer lugar, el patrocinio de empresas e instituciones. En este sentido, los entrevistados señalan que el patrocinio de *La Caixa* es para dar noticias sociales que a la *Fundación La Caixa* le interesa difundir, pero que son elegidas por los propios responsables del medio:

La filosofía del medio –crítico con el mercado publicitario actual, basado en la lógica del "pinchazo" o *clickbait*– y su formato de semanario lo hacen poco atractivo para los anunciantes y agencias de publicidad

> "No es contenido patrocinado, sino que es contenido que nosotros elegimos y decidimos Es una especie de publicidad indirecta, pero no hay ninguna sumisión editorial".

Además, señalan, este tipo de contenido es coherente con la línea editorial que *CTXT* ha seguido desde el principio:

> "son temas sociales, temas de exclusión, temas de educación, en fin, temas que tocan asuntos que nosotros ya estábamos haciendo" (Fundador/a B).

Otra fuente adicional de ingresos es el denominado *El dobladillo*, una publicación en papel en formato desplegable inspirada en la publicación francesa *Le 1* y a la que el medio se refiere significativamente como "el papel interactivo y ecológico de *CTXT*". Esta publicación impresa nació como un regalo para los suscriptores, aunque actualmente se vende también de forma separada y suele llevar piezas rescatadas de la web, así como piezas totalmente nuevas.

Los eventos *Fuera de contexto* son otra fuente de ingresos. Se trata de una serie de entrevistas a personajes del mundo de la política y las artes que la publicación realiza cada cierto tiempo en el Teatro del Barrio de Lavapiés. Para los responsables de *CTXT*, estos eventos son, junto con *El dobladillo*,

> "una forma de tener una presencia física en la calle" y señalan que "nos dan algo de dinero, es una pequeñita vía de financiación, pero no lo hacemos tanto por el dinero que nos da sino por el contacto directo con la gente", los lectores actuales y potenciales (Fundador/a A).

CTXT ha fundado además la *Colección contextos*, con la editorial *Lengua de Trapo*, con la que a comienzos de 2019 lleva publicados 5 libros, lo cual ha supuesto otra vía de ingresos,

> "en la que ellos (*Lengua de Trapo*) invierten el capital (y aportan el trabajo editorial) y nosotros ponemos los autores de *CTXT*, la marca y la difusión en redes y la venta online" (Fundador/a B).

Este medio ha establecido también acuerdos de intercambio de artículos con otros medios periodísticos digitales: *Social Europe*, *The baffler*, *Political critic*, *Inpiù*, *Italy*, *El estornudo*…, con los que *CTXT* participa en la formación de redes de personas, espacios y recursos típica de estas nuevas formas de periodismo (**Deuze**, 2017). De esta forma, cuenta con piezas de estos medios a cambio, no de dinero, sino de poner a su disposición artículos de *CTXT*.

CTXT experimenta continuamente con otras fórmulas con las que lograr nuevos ingresos que permitan sostener su independencia. En este sentido, el medio ha organizado las *I Jornadas internacionales feministas*, celebradas los días 8 y 9 de noviembre de 2018 en la ciudad de Zaragoza, que han permitido a *CTXT* obtener una subvención de la fundación *Open Society* para su celebración, y que, con sus packs de suscripción, venta de *gadgets*, etc., supuso en torno al 7% de los ingresos anuales de ese año.

Todo ello ha llevado a *CTXT* a tener un elevado número de lectores y una influencia, afirman, en la agenda pública:

> "La influencia se mide en la cantidad de temas que nosotros hemos metido en la agenda que no estaban (…) Hemos tenido posturas claras en muchos temas que la prensa *mainstream* no estaba tratando o estaba ignorando" (Fundador/a B).
>
> "Hay 600.000 personas todos los meses que se meten, son 120.000 a la semana, o sea 120.000 por número que leen 12 minutos de media cada vez que entran y eso es mucho. Para un país como este donde no hay tampoco tradición de leer mucho, yo creo que sí, que hay un nicho de lectores que necesitaba esto claramente" (Fundador/a B).

5. Conclusiones

La construcción de un modelo de negocio sostenible y estable es uno de los grandes retos a los que se enfrentan actualmente los medios digitales. Después de varios años de existencia de la cultura digital, los cibermedios siguen desarrollando un alto grado de experimentación e investigación de fórmulas con las que lograr la financiación necesaria para hacer viables sus proyectos informativos (**Rojo-Villada**, 2008; **García-Avilés**; **González-Esteban**, 2012; **García-Santamaría**; **Pérez-Serrano**; **Maestro-Espínola**, 2016; **Deuze**, 2017; **Bittner**, 2019).

En el caso de *CTXT* hemos visto cómo la combinación de diferentes fuentes de ingresos, desde las campañas de *crowdfunding* hasta los ingresos por suscripciones, cesión de tráfico, publicidad o patrocinio, ha generado un modelo de negocio híbrido que está en transformación permanente y que no termina de asentarse totalmente, algo que sus responsables relacionan no sólo con su propia experiencia sino con la situación global del periodismo digital:

> "El modelo de negocio de los digitales está en construcción, está en transformación permanente y va pareciendo cada vez más claro que la independencia real sólo se va a conseguir si hay una masa suficiente de suscriptores que te permitan no depender de la publicidad o de otras formas de presión política como es la publicidad institucional" (Fundador/a B).

Es siempre difícil conseguir la masa de suscriptores necesaria para cubrir todos los gastos de una empresa periodística[1]. El modelo de negocio de *CTXT* está condicionado por el principio (que podemos llamar ético o ideológico) de no cobrar por contenidos, no hacer "muro de pago" sólo para suscriptores, como hacen muchos otros digitales, lo que incrementa esa dificultad, pues los suscriptores de *CTXT* han de pagar por algo que es básicamente gratuito. El equipo está atento a la fluctuación del número de lectores y de suscriptores-defensores, que señalan el acierto o el fracaso del medio para convencerlos en cada número y son el motivo para seguir esforzándose en lograr su objetivo. Siguiendo una estrategia común a la mayoría de las actuales *start-ups* periodísticas digitales en todo el mundo, reducen todo lo posible los costes de producción y combinan diferentes fuentes de ingresos. Entre éstas se encuentran algunas que suponen decisiones difíciles y en cierto modo contradictorias con la filosofía editorial de *CTXT*, como la inclusión de publicidad de bancos (aunque mantenida en un porcentaje mínimo que no condicione su línea editorial) o la cesión de tráfico a un medio afín en cuanto a su línea editorial, pero muy distinto a ellos, como *Público.*

> Los fundadores de *CTXT* están convencidos de que su publicación es un modelo periodístico posible, un modelo "casero" pero sostenible, en el sentido de que con muy poco dinero se ha llegado muy lejos

En cuanto a la reducción de costes, además de por el aprovechamiento, a menudo creativo, de las condiciones que permite la tecnología digital (el acceso a la información y al público, la producción en red de equipos conectados a distancia, etc.), *CTXT* ha sido posible en buena parte gracias a la pasión por el buen periodismo y al trabajo "atípico" (**Deuze**, 2017) de periodistas muy cualificados, que ha sido gratuito por parte de 14 de ellos durante el primer año y de tres durante dos años:

> "El concepto de trabajo no encaja con esto, porque entonces pareceríamos locos o estaríamos enfermos. Es que esto es un modo de vida, es nuestra prioridad vital" (Fundador/a C).

El entusiasmo que potencia este capital simbólico, unido al capital social formado por las redes interpersonales y digitales tejidas por este medio y por sus profesionales, ha sido fundamental para realizar un periodismo exigente, crítico y de calidad que ha sabido encontrar –y también crear– su nicho de audiencia.

Los fundadores de *CTXT* están convencidos de que su publicación es un modelo periodístico necesario y posible, un modelo "casero" (*do-it-yourself*) pero "sano" y sostenible, en el sentido de que con muy poco dinero se ha llegado muy lejos:

> "Yo creo que *CTXT* es un modelo posible para crear medios digitales. Creo que no ha habido un medio que haya salido al mercado con menos dinero que este. *CTXT* sirve para que se entienda que un medio de internet no necesita una gran inversión. Con una mínima inversión y el compromiso de un grupo de periodistas suficientemente amplio se puede crear un medio y además se puede crear un medio de calidad y un medio que no tenga casi competencia, porque si eliges bien tu nicho eso te va a permitir distinguirte de los otros" (Fundador/a B).

A comienzos de 2019, aunque la estabilidad parece lograda y el semanario se enorgullece de haber cerrado el 2018 con unos 30.000 euros de beneficios, "sin un euro de deudas, ni un favor debido a nadie poderoso", la búsqueda de recursos económicos sigue siendo un problema con el que el equipo de *CTXT* tiene que lidiar cotidianamente.

6. Notas

1. El francés *Mediapart*, digital que se promueve como desafío y alternativa a la prensa convencional, fue pionero en el modelo de suscripciones, gracias al cual se mantiene (**Wagemans**; **Witschge**; **Deuze**, 2016). Sin embargo, como reconoce **Bittner** (2019), aunque algunos periódicos pueden conseguir ingresos significativos mediante el modelo de suscripciones, incluso medios de comunicación importantes como *The New York Times* no pueden ser sostenidos únicamente mediante suscripciones, lo cual hace necesario la búsqueda continua de nuevas fuentes de ingresos.

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