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Trends in academic articles on ICTs and social web in the 2013-2017 period

Tendencias de los artículos académicos sobre TIC y web social en el período 2013-2017

Tendências dos artigos acadêmicos sobre TIC e web social no período 2013-2017

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ABSTRACT | This paper aims to understand the way in which ICTs and the social web, main agents of the current digital society, have been studied in academic articles. The goal is, therefore, to make a balance of the research published in the Spanish and Latin American journals with the greatest impact, indexed in *Scimago Journal & Country Rank* in the category of Communication, during the five-year period 2013-2017. To do this, we methodologically triangulated bibliometric research and content analysis, which allowed to consider aspects such as the authorship or the articles' funding, as well as to identify the objects of study, theories, and the most used methodologies in the 425 manuscripts of the sample. In light of the results, it is possible to state that scientific production experiments permanent growth throughout the time series analyzed. The modal pattern of the works' authorship, which usually lacks additional funding, is up to three authors, something that denotes the collaborative nature of this investigation. From an instrumental point of view, the studies are mostly empirical and centered on the analysis of messages. Finally, regarding the comparison between the manuscripts included in the Spanish and Latin American journals, there are significant differences in terms of parameters such as the impact factor, the use of quantitative or qualitative methods, and the epistemological paradigms in which the articles are included.

KEYWORDS: ICTs; social web; research; communication; journals; Spain; Hispanic America.

HOW TO CITE

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RESUMEN | *Este trabajo pretende comprender el modo en que las TIC y la web social, elementos vertebradores de la actual sociedad digital, han sido tratadas en los estudios de índole académica. El objetivo es, por tanto, efectuar un balance de la investigación publicada en las revistas españolas e hispanoamericanas con mayor impacto durante el quinquenio 2013-2017, indexadas en Scimago Journal & Country Rank en la categoría de Comunicación. Para ello, se triangularon metodológicamente la investigación bibliométrica y el análisis de contenido, lo que permitió considerar aspectos como la autoría o la financiación de los artículos, e identificar los objetos de estudio, las teorías o las metodologías más empleadas en los 425 manuscritos de la muestra. A la luz de los resultados, es posible afirmar que la producción científica experimenta un crecimiento permanente a lo largo de la serie temporal analizada. El patrón modal de la autoría de los trabajos, que suelen carecer de financiación adicional, asciende a tres autores, lo que denota el carácter colaborativo de esta investigación. Desde el punto de vista instrumental, los estudios más habituales son empíricos y están centrados en el análisis de contenido de los mensajes. Por último, en lo que respecta a la comparativa entre los manuscritos incluidos en las cabeceras españolas y las hispanoamericanas, se observan diferencias significativas en función de parámetros como el factor de impacto, el empleo de métodos cuantitativos o cualitativos y los paradigmas epistemológicos en los que se engloban los artículos.*

PALABRAS CLAVE: *TIC; web social; investigación; comunicación; revistas; España; Hispanoamérica.*

RESUMO | Este trabalho visa perceber o modo como as TIC e a web social, elementos estruturantes na atual sociedade digital, foram tratados nos estudos de natureza acadêmica. O intuito é, portanto, fazer um balanço da pesquisa publicada nas revistas espanholas e hispano-americanas com maior impacto no quinquénio 2013-2017, indexadas ao Scimago Journal & Country Rank na categoria de Comunicação. Para isto, a pesquisa bibliométrica e a análise de conteúdo foram trianguladas metodologicamente, o que permitiu considerar aspetos como a autoria ou o financiamento dos artigos, bem como identificar os objetos de estudo, as teorias ou as metodologias mais utilizadas nos 425 artigos da amostra. Considerando os resultados obtidos, pode-se afirmar que a produção científica registra um crescimento permanente no período analisado. O padrão modal da autoria dos trabalhos, que costuma carecer de financiamento adicional, é de 3 autores; um fato que denota o carácter colaborativo desta pesquisa. Do ponto de vista instrumental, os estudos mais habituais são empíricos e estão focados na análise de conteúdo das mensagens. Por último, no que diz respeito à comparação entre artigos incluídos nas revistas espanholas e hispano-americanas, observam-se diferenças significativas em função de parâmetros como o fator de impacto, o uso de métodos quantitativos ou qualitativos e os paradigmas epistemológicos em que se enquadram os artigos.

PALAVRAS-CHAVE: TIC; web social; pesquisa; comunicação; revistas; Espanha; Hispanoamérica.

INTRODUCTION

In recent decades there have been many voices that, based on the concept of digital society, highlight the role that information and communication technologies –hereinafter, ICTs–, the World Wide Web and social networks play in the more varied areas of daily life (Anderson, 2007; Benkler, 2006; Boyd & Ellison, 2007; Castells, Fernández-Ardèvol, Qiu, & Sey, 2007; Gitelman, 2006). Although the reflections of these authors cover all areas of knowledge, it cannot be ignored that the communicational dimension is one of the most outstanding. This work is framed in the field of communication, with the aim of understanding how ICTs, Internet and the social web have been studied in academic articles. To do so, we systematically and quantitatively observe a sample of 425 manuscripts published between 2013 and 2017 in the main Spanish and Latin American journals, triangulating bibliometric research with content analysis. Although most of the analyzed works are empirical, within the findings it stands out that the Spanish newspapers tend to publish more quantitative studies, while the Latin American have, frequently, qualitative approaches.

Before presenting these results, we will address some conceptual notions that will act as a guiding theme throughout the article, followed by a list of analytical studies that have shed light on the state of research on these domains.

STATE OF THE ART

Brief notes on ICTs and social web

There are more than 5.1 trillion people who own a mobile phone, with two thirds being smartphones (Data Reportal, 2019). These and other similar tools, grouped under the acronym ICTs, have revolutionized all areas of society: the economy, education, politics, science, cultural industries, and the media have been deeply affected by these advances. What is to be understand by ICTs? Establishing a universal definition is a complex task due to the transversal nature of the applications, goods, skills, infrastructures, methodologies, and services that make up ICTs (Zuppo, 2012). Even so, the following one stands out:

> ICTs are means that humans use for creating, disseminating, and consuming information about the world. The computer and networked computer systems are particular technologies that, unlike traditional media (radio, television, newspapers, etc.), allow not just the consumption of information but its production, coproduction, and dissemination (Fuchs, 2017, p. 2433).

Therefore, it is a wide range of computer and electronic devices —hardware, including computers, mobile phones and smartphones, tablets, smartwatches, and other wearables; in general, those objects are equipped with what is called Internet of Things (IoT), a multidisciplinary ecological system capable of creating intelligent environments (Pejanović Djurišić, Gavrilovska, & Fratu, 2017).

As far as software is concerned, ICTs involve all kinds of computer programs and applications executed through those physical devices, and among which the Internet stands out as the main technological tool. It is "a network of interconnected computer networks comprising a range of platforms, devices and protocols facilitating a global flow of data that can be used, shared, stored and retrieved by users" (Coleman, 2017, p. 2). It is, in short, a technology transformed into a means of communication, where multiple services have a place. One of the most popular and widely used is the WWW, developed in the early 1990s by Tim Berners-Lee (Castells, 1999). Other functionalities with which users are very familiar are email, textual or audiovisual conversations online and in real time, file transfer, or digital social networks, vehicular agents of the social web.

The concept of social web was popularized by Tim O'Reilly (2005). Also known under the names of collaborative web or 2.0 Web, it refers to a repertoire of utilities that reinforce the role of users, granting them the ability to be producers and consumers of online content (Newman, Chang, Walters, & Wills, 2016). Broadly speaking, it has entailed a very outstanding qualitative advance compared to the pioneer 1.0, going from a static environment to another diametrically opposed, much more dynamic and participatory (Rudman & Bruwer, 2016), in which prosumers are protagonists of a network characterized by collective creation. The social web stands, therefore, as "platform on which peers contribute to the development of tools, content, and communities on the Internet" (Shang, Li, Wu, & Hou, 2011, p. 178), and in which digital technologies reconfigure the traditional logics of centralized communication, thus transforming it into a new space for public articulation and emerging self-expression (Coleman, 2017) thanks to blogs, wikis, social networks, and other digital platforms (Olsson, 2014).

Although often used indiscriminately, there are significant differences between the concepts of Web 2.0, user-generated content (UGC) and social media. According to Kaplan and Haenlein (2010), Web 2.0 describes a new way of using the WWW, where not only the creation and publication of content stand out, but also the permanent possibility of modifying it. From Web 2.0, UGC can be considered as the different types of content created by users and available on the web. Social media, on the other hand, is a group of applications that allow the creation and sharing of user-generated content. Dahlgren (2014) clarifies that these media encompass a varied set of platforms such as blogs, microblogs —for example, Twitter— and social networking sites, such as Facebook.

In short, it is a new and complex media ecosystem (Canavilhas, 2015), in which concepts such as Big Data (Arcila-Calderón, Barbosa-Caro, & Cabezuelo-Lorenzo, 2016; Arcila-Calderón, Álvarez, & Vicente-Mariño, 2019), engagement

(Ballesteros & Díez-Garrido, 2018; Lawrence, Radcliffe, & Schmidt, 2018; Valenzuela, Arriagada, & Scherman, 2014) or meme (Johann & Bülow, 2019; Martínez-Rolán & Piñeiro Otero, 2016; Piñeiro-Otero & Martínez-Rolán, 2016), all of them considered in our subsequent empirical analysis.

Academic research on ICTs and the social web

There are numerous studies whose purpose is to analyze, either at a bibliometric or instrumental level, the treatment of ICTs and the social web in academic production. At the international level, Kim and Weaver (2002) conduct a content analysis of 561 articles published in 86 journals during the 1996-2000 five-year period, whose objects of study are the Internet and the WWW. Its main findings indicate that 26.7% of the works use quantitative methods –mostly surveys and content analysis–, while 17.1% use a specific theoretical framework, with the Theory of Uses and Gratifications —hereinafter, TUG— standing out.

Peng, Zhang, Zhong, and Zhu (2012) examine, through automated content analysis, 27,340 articles limited to the decade 2000-2009 and present in the *Social Sciences Citation Index* (SSCI) and in the *Arts & Humanities Citation Index* (A&HCI), both belonging to the former Institute for Scientific Information (ISI) of the Web of Science (WoS). All these articles have one feature in common: they are included under the *Internet Studies* label, although it should be noted that their analysis units are limited to the abstracts and keywords of each manuscript. They point out that 31% of the articles use some specific theory or conceptual notion, while 59% uses quantitative methodologies: the survey (23%) and the experiment (15%) are the most frequent techniques. At a qualitative level, the case study (8%) would be the most recurrent.

Some years later, Borah (2017) once again implements a content analysis, this time based on a large sample of 3,316 articles belonging to 66 journals and published over 16 years (1998-2013). The general theme of the works was, in its most generic sense, emerging technological communication, since it included different sub-themes such as the Internet, ICTs, the social web, or mobile devices. After a meticulous work, the author concludes that only 30.4% of the papers uses a theory or conceptual paradigm, among which the TUG and the Diffusion of Innovation (DoI) stand out. She also determines that 76.3% of the articles are empirical, although the quantitative and qualitative dimensions would be very balanced. In any case, the most used specific methods are content analysis (26.1%) and the survey (16.6%).

Regarding communication mediated by mobile devices, Kim, Kim, Kim, and Wang (2017) selected 131 articles published in 10 journals from 1999 to 2014, which they reviewed using content analysis. These authors affirm that the most

widespread topics are the effects of said communication, followed by the uses that individuals confer to the devices with which they interact. They also maintain that 48.1% of the works use some theoretical model, among which the Technology Acceptance Model (TAM), the DoI and, once again, the TUG, stand out (6.9%, 5.3% and 4.6% of articles, respectively). Regarding the methods, the quantitative ones (58.8%) prevail over the qualitative ones (37.4%) and the mixed ones (3.8%); the survey, the content analysis, and the interview are the most popular.

To finish with the studies focused on international academic production, we would like to refer to a bibliometric work by López-García, Silva-Rodríguez, Vizoso-García, Westlund, and Canavilhas (2019) which characterizes a sample of 199 articles published in journals indexed in the WoS during the 2008-2018 time series. The theme of these works is common —mobile journalism—, and the authors indicate that there is a notorious increase in production throughout the years analyzed, whose authorship tends to be single or simple.

In the Spanish context, Ramos, del Pino, and Castelló (2014) address the issue of Web 2.0 and social networks through a new content analysis of 119 articles from the top 10 magazines in the *In-Recs* ranking —2011-2013 triennium. This sample represents 14% of the 889 total articles, a significant proportion. They determine, after collecting their data, that 71.4% of the studies are of an empirical nature and that quantitative methods —specifically content analysis (29%) and surveys (20%)— outnumber the qualitative ones, where the case study (26%) is the prevailing technique.

Finally, Martínez-Nicolás, Saperas, and Carrasco-Campos (2019) focus on a sample of 1,098 papers published between 1990 and 2014 in six leading Spanish journals: *Anàlisi, Communication & Society, Estudios sobre el Mensaje Periodístico, Zer, Comunicar* and *Revista Latina de Comunicación Social*. They show that, as of 2005, 30% of scientific production focuses on digitalization.

Based on the findings summarized in table 1, we posit various research questions and hypotheses. In the first place, and at a bibliometric level, we will contrast the following questions:

> *H1.* The increase in academic production on ICTs and the social web, limited to the Spanish and Latin American sphere, will be constant and remarkable throughout the 2013-2017 period.
> *RQ1.* How will this academic production behave in terms of impact, authorship, affiliation, discipline, funding, and internationalization?

Authors (year)	Research method	Data collection units	Sample analysis	Time period	Object of study	Main findings
Kim & Weaver (2002)	Content analysis	86 journals	561 articles	1996-2000	Internet and WWW	Specific theoretical framework: 17.1% (TUG predominance) Quantitative methods: 26.7% (predominantly survey and CA)
Peng et al. (2012)	Automated content analysis	27,340 papers SSCI and A&HCI	Summary and keywords of the 27,340 papers	2000-2009	Internet studies	Specific theoretical framework: 31% (TUG predominance) Quantitative methods: 59% (survey and experiment predominance)
Borah (2017)	Content analysis	66 journals	3,316 articles	1998-2013	Emerging technologies in general	Specific theoretical framework: 30.4% (predominantly TUG and DoI) Empirical studies: 76.3% (CA and survey predominance)
Kim et al. (2017)	Content analysis	10 journals	131 articles	1999-2014	Mobile devices	Specific theoretical framework: 48.1%, predominantly TAM, DoI and TUG Quantitative methods: 58.8% (survey and CA predominance)
López-García et al. (2019)	Bibliometric analysis	31 journals	199 articles	2008-2018	Mobile devices	Remarkable increase in production One author
Ramos et al. (2014)	Content analysis	10 journals	119 articles	2011-2013	Web 2.0 and social networks	Empirical studies: 71.4% CA predominance (29%), case study (26%) and survey (20%)
Martínez-Nicolás et al. (2019)	Content analysis	6 journals	1098 articles	1990-2014	Communication in general	From 2005: 30% production focused on digitalization

Table 1. Summary of previous meta-research.

Source: Own elaboration.

From an exclusively instrumental point of view, it is appropriate to observe the following particularities of the investigation:

H2a. The most abundant types of work will be of an empirical nature.
H2b. In this regard, the quantitative methodologies will be more frequent than the qualitative ones, and content analysis and the survey will prevail over the others.
H3a. The works will not tend to use theoretical frameworks, nor specific conceptual notions.
H3b. Those that do, will use the TUG or specific paradigms such as the DoI and the TAM.

On the other hand, and in a more generic sense, we will answer the following questions:

RQ2. What object of study will be the most common?

RQ3. What epistemological paradigm will dominate research in ICTs and the social web?

RQ4. Will there be differences between Spanish and Latin American journals in terms of their publication trends?

RQ5. Will there be differences between the different types of articles according to their impact factor?

The methodological procedures used to collect the research's empirical data are explained in the next section.

METHODOLOGY

The main objective of this work, as stated in the introduction, is to take stock of Spanish and Latin American research on ICTs and the social web published during the 2013-2017 five-year period. To do so, we methodologically triangulated (Denzin, 2012) bibliometric research and content analysis, widely used in works of this nature, as we have verified in the previous section. This made it possible to address aspects such as the articles authorship or funding, as well as to identify the objects of study, i.e., the theories or the research methodologies used in the sample manuscripts, which served as analysis units. To design of said sample, we used a multi-stage plan (Neuendorf, 2017) organized in different phases. We initially selected the Spanish and Latin American journals with the highest impact index in 2017, present in the communication category of the international platform

Scimago Journal & Country Rank[1]. It was stipulated that the journals had to appear in the first two quartiles to be qualified for impact, which gave rise to a total of seven titles (table 2). Likewise, we went as far as five years ago, until 2013, to provide a necessary temporal perspective to the corpus of analysis.

Once the journals, which acted as data collection units, were identified, the next step was to insert terms such as ICTs, Internet, WWW, IoT, smartphones, wearables, social web, Web 2.0, social networks, or blogs —all of them both in Spanish and English— in the internal search engines of the websites of the respective journals, a protocol identical to that followed by Borah (2017). Thus, all the results were carefully reviewed and those that actually alluded to any of these elements were archived for later examination. What was included in each of the labels? ICTs bring together the Internet —IoT and its most popular function, the WWW—, as well as the other technological devices mentioned above —smartphones, tablets, smartwatches, wearables, etc. The 2.0 tools include, succinctly, "social networking applications such as Facebook™ and Google+™, microblogging services such as Twitter™, blogs, wikis, and media sharing sites such as YouTube™ and Flickr™" (Magro, 2012, p. 149). After this sampling strategy, the total number of analysis units amounted to *N*=425 manuscripts, a figure that represents 27.45% of the total works published by these journals between 2013 and 2017: *N*=1548 (Piñeiro-Naval & Morais , 2019).

ANALYSIS CATEGORIES AND PROCEDURE

To undertake the purpose of the study and answer the research questions and hypotheses raised, we design an analysis procedure inspired by similar previous studies (Bakan & Han, 2019; Borah, 2017; Costa-Sánchez, 2017; Escribà & Cortiñas, 2013 ; Fernández-Quijada & Masip, 2013; Kim & Weaver, 2002; Kim et al., 2017; Martínez-Nicolás et al., 2019; Piñeiro-Naval & Mangana, 2018, 2019; Walter, Cody, & Ball-Rokeach, 2018), through which we examined the variables shown in table 2 applying them to each article.

There are a total of 15 variables: four basic identification variables[2], five bibliometric variables, and six instrumental variables that, if not explicit, required inference by the coders. Note also that the values of items 1.3 and 1.4 were extracted —as independent variables— from the *Scimago Journal & Country Rank* repository, which facilitated their subsequent triangulation (Denzin, 2015) with the data obtained here.

1. See https://www.scimagojr.com/journalrank.php?category=3315&year=2017&type=j

2. In the variable Journal where it was published, note that Comunicar is also indexed in the categories of Education and Cultural Studies, while El Profesional de la Información and Cuadernos.info appear in Information Sciences, understood, in some way, as areas related to the communication.

Typo	Variable	Operationalization
1. Identification variables	1.1. Year of publication of the article	2013, 2014, 2015, 2016, 2017.
	1.2. Journal where it was published	1=*Comunicar*; 2=*El Profesional de la Información*; 3=*Communication & Society*; 4=*Revista Latina de Comunicación Social*; 5=*Cuadernos.info*; 6=*Comunicación y Sociedad* (Mexico); 7=*Palabra Clave*
	1.3. SJR–Scopus quartile where the journal was indexed	0=no quartile, 1=1st quartile, 2=2nd quartile 3=3rd quartile, 4=4th quartile
	1.4. Journal impact factor	Average impact factor of the journal in the year in which the article was published.
2. Bibliometric variables	2.1. Number of authors	Exact number of authors of the work.
	2.2. Affiliation university	Institution to which they belong (if there are several, the first author's one).
	2.3. Discipline	Authors belonging to the departments of: 1=Communication, 2=Journalism, 3=Advertising and public relations, 4=Sociology, 5=Psychology, 6=Political Science, 7=Marketing, 8=Education, 9=Library Science, 10=Computer Science, 11=Art and Design, 12=Interdisciplinary (each author belongs to a different department)
	2.4. Funding	0/1=without/with extra funding
	2.5. Article language	1=Spanish, 2=Spanish/English, 3=English, 4=Portuguese.
3. Instrumental variables	3.1. Protagonist subject (αk=0,86)	1=ICTs, 2= social web.
	3.2. Type of work (αk=1)	1=empirical, 2=theoretical-essay, 3=methodological.
	3.3. Object of study (αk=0,89)	1=source, 2=message, 3=audience, 4=policies and structure.
	3.4. Theory/Concept (αk=0,72)	See the categories in table 4.
	3.5. Method (αk=0,84)	See the categories in table 4.
	3.6. Paradigm (αk=0,95)	1=Positivist (studies based on testable hypotheses, employing quantitative or mixed methods, and relying on empirical assumptions), 2= 2=Cultural (qualitative studies about the everyday practices that create and sustain culture), 3=Critical (studies focused on issues of power, political economy, status quo, and social structure), 4=Rhetoric (studies that see communication as the practical art of discourse). (Based on Walter et al., 2018).

Table 2. Analysis items

Source: Own elaboration.

Finally, it should be noted that the coding took place during the months of November and December 2018, involving a team of two coders. After this process and to check the reliability of their work, we selected a random subsample of ~10% of the cases (N=43), which both coders analyzed. The statistical parameter used to calculate reliability was Krippendorff's Alpha (Krippendorff, 2004, 2011, 2017), found by using the Kalpha macro (Hayes & Krippendorff, 2007) for SPSS, version 24. The mean reliability of the six instrumental variables —those that required inference by the coders— was very satisfactory, rising to αk=0.88, with values ranging from 0.72 to 1.

RESULTS

General and bibliometric profile

Figure 1 shows the annual progression of the number of articles, both aggregate and considering the distinction between ICTs and social web. The increase in aggregate production has followed an almost constant line, increasing considerably in 2017 (H1). If ICTs (which feature in 49.2% of the articles) and the social web (50.8%) are compared, it can be seen that the former have been relegated to the background in recent years (2016 and 2017). The distribution of the manuscripts according to the journals where they have been published is as follows: *Comunicar* (23.3%), *El Profesional de la Información* (32.2%), *Communication & Society* (9.9%), *Revista Latina de Comunicación Social* (16.5%), *Cuadernos.info* (6.8%), *Comunicación y Sociedad —Mexico—* (3.8%) and *Palabra Clave* (7.5%). The aggregate production of the Spanish journals reaches 81.9%, compared to 18.1% of the Latin American ones.

Regarding the quartiles, 34.6% of the works were —in the specific year of their publication— in the first quartile, 52.2% in the second, 8.2% in the third, 2.6 % in the fourth, and only 2.4% of the articles were not, in that year, indexed in the SJR database. Therefore, it is a high-impact production, since 86.8% exceeds the median of the classification. Along these same lines, the SJR impact factor reaches an average for the sample as a whole of M *(SJR-IF) = 0.559* (SD=0.296), and is distributed, according to the years analyzed, as shown in figure 2.

After an analysis of variance, it is possible to determine the existence of statistically significant differences between the years according to the average impact factor [$F_{SJR\text{-}IF\ x\ Years}$ (4.420)=31.87; p<0.001; η2=0.233]. After Dunnett's T3 post-hoc test, it is verified that the greatest difference is that established between 2016 and 2013 [t(154)=9.44; p<0.001; d=1.54]. On the other hand, there is a correlation between the total number of articles and the *SJR-IF:* r (423)=0.396; p<0.001, which means that the more published they are, the more impact the papers have. This trend is more pronounced when it comes to studies on Web 2.0 [r (214)=0.463; p<0.001] than ICTs [r (207)=0.374; p<0.001].

As for the bibliometric variables considered in this study (RQ1), the first has to do with authorship. Thus, the average number of authors in the sample amounts to *M (Authors)*=2.4 (*SD*=1.05), while the modal value is 3 (37.2%). On the other hand, the association established between the number of authors of the papers and their impact factor is statistically significant: r (423)=0.18; p<0.001.

The most prolific authors' affiliation institutions are included in table 3. A total of 142 universities were identified; the 14 Spanish ones included in table 3 stand out, accounting for 40.94% of the production. As far as Latin American institutions are concerned, the main list is also made up of another 14 universities, which represent 9.88% of the sample. At the disciplinary level, the most recurrent areas of work are communication (46.8%), journalism (16.5%), education (9.2%), and library science (5.4%). If the specific domains of communication are grouped, on the one hand, and the other areas, on the other, the comparison would be established as follows: 66.4% versus 33.6%, data that speak of a remarkable interdisciplinarity.

Funding is also a very relevant parameter to characterize scientific production. In this regard, 57.6% of the works lack extra financing, while the remaining 42.4% have received some type of financial aid. Lastly, the languages in which the articles were written are the following: Spanish (34.8%), Spanish/English (52%), English (12%), and Portuguese (1.2%). It can be seen that the internationalization of production is an aspect that worries publishers and authors, since English —a global lingua franca— is used in almost two thirds of the cases (64%).

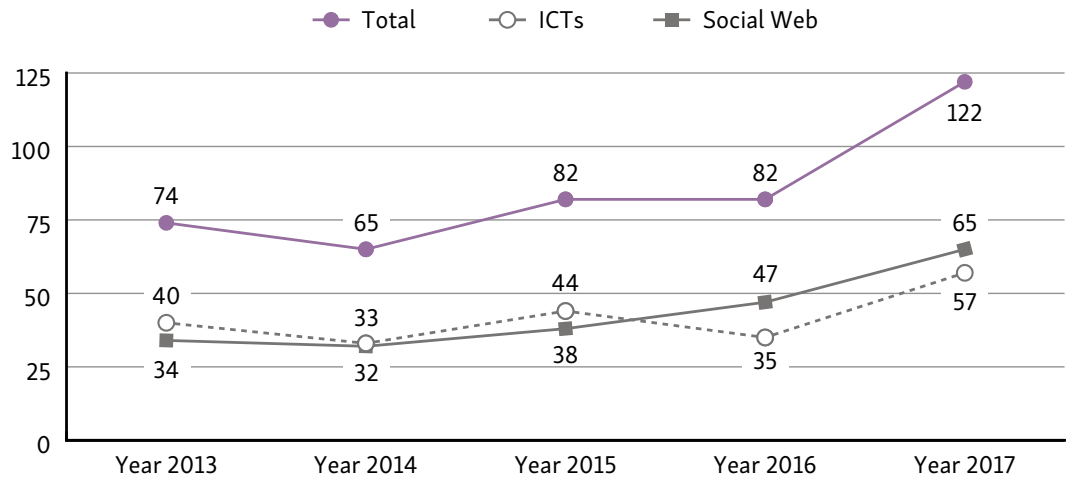

Figure 1. Timeline of articles published on ICTs and Web 2.0 (frequencies)

Source: Own elaboration.

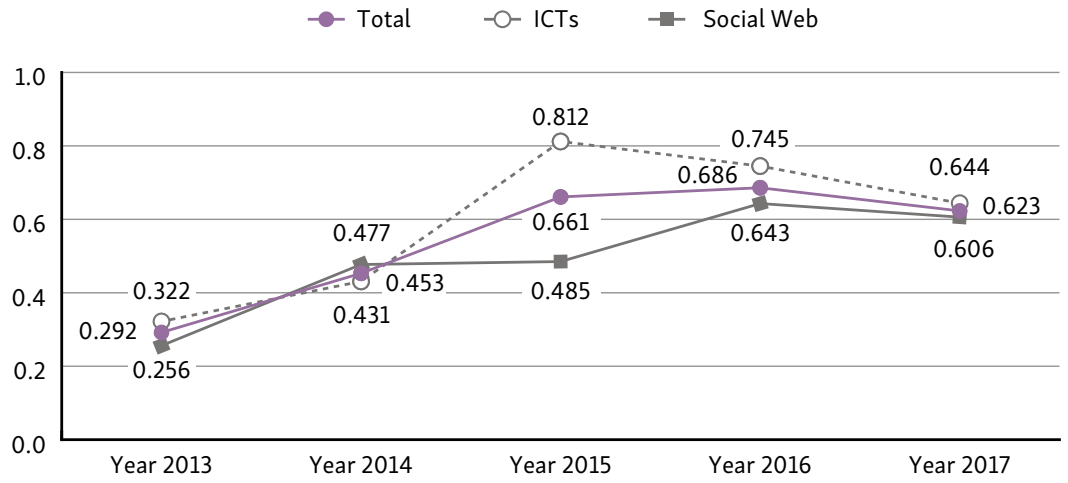

Figure 2. Annual average of the SJR impact factor

Source: Own elaboration.

Instrumental profile

In another order of things, the articles in the sample meet the following general typification: 85.4% are empirical, 7.5% theoretical-essay and, in third place, 7.1% are methodological (H2a). Regarding the objects of study (RQ2), the message (50.1%) is, without discussion, the predominant object since it is the protagonist of half of the works. In second place is the audience (30.1%), followed, at some distance, by the source of information (10.4%). Finally, communication structural policies (9.4%) are the most sporadic research theme. Table 4 reflects the different theories and methodologies used in the cases analyzed.

From a theoretical point of view (H3b), Web 2.0 itself and its different constituent elements represent the most recurrent concepts (12.5%), followed by the trend of media literacy (11.8%) and engagement (8.9%). On the other hand, 36.2% of the manuscripts do not allude to a specific theoretical framework (H3a).

In methodological terms, there are two classic techniques that are almost on a par: content analysis (16.7%) and survey (16.2%), with quantitative methods (59%) being the most used (H2b). Finally, the articles' epistemological paradigms (RQ3) follow this distribution: the positivist represents 66.4% of the production, the cultural, 20.5%, the critical, 9.6% and, finally, 3.5% agglutinate in the rhetoric.

Spanish institutions	Articles	Latin American institutions	Articles
Universidad Pompeu Fabra	19	Pontificia Universidad Católica de Chile	5
Universidad Rey Juan Carlos	17	Universidad de Chile	4
Universidad Complutense de Madrid	16	Universidad de La Sabana	4
Universidad de Santiago de Compostela	16	Universidad Técnica Particular de Loja	4
Universidad del País Vasco	14	Tecnológico de Monterrey	3
Universidad de Valladolid	13	Universidad Autónoma de Nuevo León	3
Universidad Autónoma de Barcelona	12	Universidad de Buenos Aires	3
Universidad da Coruña	11	Universidad de Guadalajara	3
Universidad de Salamanca	11	Universidad de los Andes	3
Universidad de Alicante	10	Universidad Católica Argentina	2
Universidad de Málaga	9	Universidad de Monterrey	2
Universidad de Sevilla	9	Universidad de Sonora	2
Universitat Oberta de Catalunya	9	Universidad Nacional de Quilmes	2
Universidad de Navarra	8	Universidad Panamericana	2
Aggregate production	**174**	**Aggregate production**	**42**

Table 3. Most productive universities

Source: Own elaboration.

Comparative perspective

At a comparative level, the following pages show a series of multivariate tests where the journals grouped according to their geographical origin[3] (RQ4) are compared with aspects such as the main investigation subject—i.e., ICTs versus Web 2.0 —, the disciplines[4] [5], the types of articles, the paradigm to which they adhere, and the method used[6].

3. To recode the variable Journals we proceed to group under the label 1=Spanish journals Comunicar, El Profesional de la Información, Communication & Society and Revista Latina de Comunicación Social; label 2=Latin American journals grouped Cuadernos.info, Comunicación y Sociedad (Mexico) and Palabra Clave.

4. The recoding of the Disciplines variable was very similar, since the value

5. 1=Disciplines of Communication Sciences was given to Communication, Journalism and Advertising and PR, while the rest were grouped in 2=Other disciplines.

6. Finally, the recoding of the Methods variable pattern was: non-empirical studies were designated as missing; the label 1=Quantitative corresponded to content analysis, automated content analysis, survey, experiment, network analysis, test with Eye Tracking users, bibliometric/cybermetric analysis, and economic analysis; the value 2=Qualitative was for discourse analysis, focus groups, interviews, ethnographic study, case study, heuristic analysis, participant observation, Delphi method, and others; and 3=Mixed corresponded to studies with methodological triangulation.

Theories/Concepts	%	Methodologies	%
Web 2.0 parameters	12.5	Content analysis	16.7
Media literacy	11.8	Survey	16.2
Engagement	8.9	Methodological triangulation	9.4
Web design precepts	6.4	Case study	8.7
Theory of Uses and Gratifications	5.4	Bibliometric/cybermetric analysis	6.6
Other theoretical paradigms (DoI and TAM)	4.9	Heuristic analysis	6.4
Framing theory	2.6	Interviews	3.8
Agenda setting theory	2.1	Automated content analysis	3.3
CSR/Branding	1.9	Network analysis	3.3
Social identity theory	1.6	Discourse analysis	3.1
Health communication	1.6	Experiment	2.6
Transmedia	1.4	Focus groups	1.9
Media ecology	0.9	Economic analysis	1.2
Infotainment/Politainment	0.7	Ethnographic study	0.9
Film theories	0.5	*Test with users - Eye Tracking*	0.5
Other theories and concepts	0.6	Other methodologies	0.9
No theoretical framework	*36.2*	*Not an empirical work*	*14.5*
Total	**100**	**Total**	**100**

Table 4. Theories and methodologies detected in the articles

Source: Own elaboration.

As can be seen in table 5, Spanish journals are the ones that publish more works related to ICTs, while Latin American journals focus on Web 2.0. As for disciplines, there is a very remarkable contribution from other areas in Spanish journals, something that hardly occurs in Latin American journals. In terms of funding, Spanish journals tend to have, in a greater proportion, works with extra financial support. Regarding the types of articles, the differences tend to occur in those with a methodological profile, with a greater presence in Spanish publications. The paradigms, on the other hand, have more notorious contrasts, so that in the Spanish journals the positivist prevails, and the critic in the Hispano-American ones. Finally, there is a greater use of quantitative methods in articles published in Spain, while qualitative ones take center stage in those published in Latin America.

If we take the SJR impact factor as the key element, table 6 shows gathers different comparisons according to the mean criterion (RQ5).

Considering the results included in table 6, statistically significant differences are observed in five of the seven grouping variables. On the one hand, the works focused on ICTs reach a greater impact than those focused on Web 2.0, while the articles signed by authors from other disciplines obtain a higher citation quota than those from communication sciences. As for the journals' geographical origin, those published in Spain outnumber the Latin American ones in a very significant way. From the paradigms point of view, the most remarkable differences are those established between the positivist and the rhetorician, labeled as high according to the effect size (Cohen, 1988; Johnson, ScottSheldon, Snyder, Noar, & Huedo-Medina, 2008). At the methodological level, the differences that occur between the studies with quantitative and qualitative approaches are also statistically significant, although small if we look at the effect size.

Finally, table 7 summarizes the resolution of the hypotheses raised, as well as the answer to the research questions.

Analysis parameters	Total %	Journals' origin		Pearson's χ^2
		Spain	Latin American	
• Protagonist subjects:				
ICTs	49.2	51.7+	37.7—	χ^2 (1. N=425)=4.98; p=0.026; v=0.108
Web 2.0	50.8	48.3—	62.3+	
• Academic disciplines:				
Communication	66.4	60.1—	94.8+	χ^2 (1. N=425)=34.09; p<0.001; v=0.283
Other disciplines	75.9	39.9+	5.2—	
• Research funding:				
With funding	42.4	44.8+	31.2—	χ^2 (1. N=425)=4.81; p=0.028; v=0.106
Without funding	57.6	55.2—	68.8+	
• Types of work:				
Empirical	85.4	84.8	88.3	χ^2 (2. N=425)=5.53; p=0.63; v=0.114
Theoretical	7.5	6.9	10.4	
Methodological	7.1	8.3+	1.3—	
• Epistemological paradigms:				
Positivist	66.4	69.5+	51.9—	χ^2 (3. N=425)=10.11; p=0.018; v=0.154
Cultural	20.5	19.3	26	
Critic	9.6	8.3—	15.6+	
Rhetoric	3.5	2.9	6.5	
N	***425***	***348***	***77***	

Table 5 continues on next page >

• **Research methods:**				
Quantitative	59	62+	45.6—	χ^2 (2. *N*=363)=7.015; *p*=0.03; *v*=0.139
Qualitative	30	27.1—	42.6+	
Mixed	11	10.8	11.8	
N	***363***	***295***	***68***	

Note: – Statistically lower value (analysis of adjusted standardized residuals).
+ Statistically higher value (analysis of adjusted standardized residuals).

Table 5. Origin of the journals and their relationship with different parameters (% column)

Source: Own elaboration.

Grouping variables	$M_{(SJR\text{-}IF)}$	***SD***	***n***	***Student's t***
• **Protagonist subjects:**				
ICTs	0.600	0.330	209	*t* (423)=2.89; *p*=0.004; *d*=0.27
Web 2.0	0.518	0.253	216	
• **Academic disciplines:**				
Communication	0.486	0.249	282	*t* (423)=-7.58; *p*<0.001; *d*=-0.74
Other disciplines	0.702	0.329	143	
• **Research funding:**				
With funding	0.577	0.284	180	*t* (423)=1.11; *p*=0.267; *d*=0.11
Without funding	0.545	0.304	245	
• **Journal origin:**				
Spain	0.633	0.270	348	*t* (423)=12.94; *p*<0.001; *d*=1.92
Latin American	0.223	0.134	77	
Total	***0.559***	***0.296***	***425***	
Grouping variables	$M_{(SJR\text{-}IF)}$	***SD***	***n***	**ANOVA**
• **Types of work:**				
Empirical	0.561	0.298	363	*F* (2. 422)=1.072; *p*=0.343; η^2=0.005
Theoretical	0.493	0.269	32	
Methodological	0.598	0.295	30	

Table 6 continues on next page >

• Epistemological paradigms:				
Positivist	0.587	0.286	282	F (3. 421)=4.58; p=0.004; η^2=0.032
Cultural	0.549	0.339	87	
Critic	0.443	0.260	41	
Rhetoric	0.396	0.166	15	
Total	***0.559***	***0.296***	***425***	
• Research methods:				
Quantitative	0.590	0.290	214	F (2. 360)=4.22; p=0.015; η^2=0.023
Qualitative	0.492	0.282	109	
Mixed	0.594	0.298	40	
Total	***0.561***	***0.298***	***363***	

Table 6. Comparisons of means according to the articles' impact factor of the articles

Source: Own elaboration.

H	Statement	Outcome
H1	Constant increase in academic production	Accepted
H2a	The most abundant types of work will be of an empirical nature	Accepted
H2b	Quantitative methodologies will be more frequent than the qualitative ones, and content analysis and the survey will prevail over the others	Accepted
H3a	The works will not tend to use theoretical frameworks, nor specific conceptual notion	Rejected
H3b	Those that do, will use the TUG or specific paradigms such as the DoI and the TAM.	Partially accepted
RQ	**Statement**	**Answer**
RQ1	How will this academic production behave in terms of impact, authorship, affiliation, discipline, funding, and internationalization?	• Increasing impact • $M_{authors}$=2.4 (SD=1.05) • UPF. URJC. UCM and USC • Communication = 66.4% • With funding = 42.4% • English=⅔ production
RQ2	What object of study will be the most common?	Message=½ production
RQ3	What epistemological paradigm will dominate research in ICTs and the social web?	Positivist=⅔ production
RQ4	Will there be differences between Spanish and Latin American journals in terms of their publication trends?	Yes (see table 5)
RQ5	Will there be differences between the different types of articles according to their impact factor?	Sí las hay (see table 6)

Table 7. Summary of hypotheses and research questions

Source: Own elaboration.

DISCUSSION AND CONCLUSIONS

A summary of the results obtained enables us to outline the research trends of the academic articles on ICTs and the social web published in the main communication journals —indexed, therefore, in the first quartiles of the SJR ranking—, published both in Spain and in Latin America, during the 2013-2017 period. Thus, we can affirm that production has experienced a decided and permanent increase throughout the analyzed time series, a circumstance that endorses the growing concern expressed by the Hispanic scientific community for the digitalization of society and the media (Martínez -Nicolás et al., 2019; Pertegal-Vega, Oliva-Delgado, & Rodríguez-Meirinhos, 2019; Ramos et al., 2014). This increase is more pronounced and generates a more progressive impact when it comes to literature on Web 2.0 and, especially, in social networks, which have clearly surpassed, as of 2016, ICTs.

In bibliometric terms, the authors of the works conform to a modal pattern that amounts to three authors, and whose average clearly exceeds two, figures that denote the collaborative aspect of this research and, in the same way, a statistically significant and positive correlation with the impact factor; i.e., as authorship increases, the impact of the articles also grows. These researchers are usually affiliated with the departments of Communication Sciences —namely, Audiovisual Communication, Journalism and Advertising and Public Relations— of the large universities located in the most densely populated areas and with the most academic and research staff, such as the Universidad Pompeu Fabra, the Universidad Rey Juan Carlos or the Universidad Complutense de Madrid. Only some peripheral institutions, such as the Universidad de Santiago de Compostela or the Universidad del País Vasco, come close. Regarding the Latin American sphere, there is a predominance of the two main Chilean institutions: the Pontificia Universidad Católica de Chile and the Universidad de Chile. Likewise, we must also mention that the contribution of other areas of knowledge, such as education, pedagogy, documentation, and library science, is crucial to understand the transversality of ICTs and the social web, vehicular agents of the network society (Castells, 2006). On the other hand, the scarce funding of research is not a pretext for not trying to internationalize, through the use of the scientific lingua franca —English— the works published in the Hispanic sphere.

In another order of ideas, the recent publication on ICTs and the social web is marked by an eminently empirical aspect, in which quantitative methods —especially content analysis and the survey— monopolize research in detriment of the qualitative ones, also favoring the preponderance of the positivist paradigm. Therefore, the profile of published articles is generally applied and is focused, in turn, on the intermediate link in the classic communication process: the message.

At a theoretical level, most studies draw on some specific conceptual corpus, highlighting among them media literacy and engagement. The growing prominence of a notion intimately linked to social networks, such as engagement, had already been pointed out by Ballesteros (2019), placing it at the same level as another much more deeply rooted notion such as marketing and far surpassing framing or agenda setting. Likewise, previous international meta-research (Kim & Weaver, 2002; Peng et al., 2012; Borah, 2017; Kim et al., 2017) pointed to the relevance of the TUG and other specific paradigms, such as the DoI and the TAM, a scenario partially replicated in the production limited to the Spanish and Latin American sphere.

From a comparative point of view, Spanish journals, whose volume of published articles and impact is greater than that of Latin American titles, tend to contain financed works on ICTs and often by authors from disciplines other than communication — *Comunicar* is also indexed in Education and Cultural Studies, while *El Profesional de la Información* is also indexed in Information Sciences. It is also an applied literature, dominated by the positivist paradigm and, consequently, with a remarkable role of quantitative methodologies. On the contrary, the manuscripts located in the Latin American field deal more frequently with the social web. They are, likewise, works lacking extra financing and signed by authors belonging to related areas, which are included in the critical paradigm and use, when it comes to empirical works, qualitative methods such as the case study or discourse analysis.

Considering the general profile of the research published in the Hispanic field on ICTs and Web 2.0 —not far from international standards (Kim & Weaver, 2002; Peng et al., 2012; Borah, 2017; Kim et al., 2017)—, it would be convenient to highlight a series of theoretical and methodological factors: present weaknesses and future opportunities. In the first place, it is surprising that one out of every three works does not rely on any specific conceptual paradigm. Of those that do, media literacy, engagement and transmedia will surely continue to grow in importance, while TUG, TAM, DoI, framing, agenda setting, and media ecology will continue to be at the forefront with permanent and necessary readaptations to new contexts.

At the methodological level, there are well-established classic tools, such as content analysis, surveys, and case studies, but other techniques such as automated content analysis, network analysis, and experiments will have to be implemented more frequently to face the challenges of Big Data and the measurement of the effects of the media on its users; in general, the different experts (Borah, 2017; De-la-Peza, 2013; Peng et al., 2012; Salaverría, 2015) have been claiming certain improvements for the area, the most necessary related to the strengthening of theories through a consistent use of conceptual terminology, and greater innovation in data collection methods; all this to continue deepening the understanding, on

the one hand, of the inexhaustible torrents of information that flow from digital media, and, on the other, of the processes and effects of current communication on individuals or users.

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