



The Impact of Digitization in Spanish Scholarly Publishers

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Abstract

This paper analyzes the impact of digitization on the Spanish scholarly publishing sector. Scholarly publishers are those publishing mainly books of interest to the scientific, academic and/or university community or that deal with scientific disciplines. In Spain, there are currently 673 publishers whose books are classified in disciplines such as Science, Technology, Medicine, Humanities and Social Sciences. Currently, this figure of scholarly publishers equals approximately 20% of all Spanish publishers. The present study has two main goals: a) to determine the degree to which digitization is affecting the existing business models in Spanish scholarly publishers and b) to identify the emergence of new business models in the Spanish scholarly publishing sector. To carry out this research, an empirical analysis is conducted by means of surveys sent to a sample extracted from the population of scholarly Spanish publishers, following the criterion of stratified random sampling.

Keywords: Digitization; Scholarly publishers; ePublishing; Spain

1. Introduction

The book publishing industry — like other creative industries such as the musical (Hracs, 2012), the cinematographic (Currah, 2006) and the advertising (Bugge, 2011; Evans, 2008) — is facing a process of technological change that confronts it with new challenges (Donoughue, 2010). In fact, the publishing world is undergoing a profound transformation in the wake of the digital transition, both in terms of the product that it offers and in the processes of production and distribution to the market, this extends throughout the entire value chain of publishing businesses (Bockstedt, Kauffman, & Riggins, 2006; Carolan & Evain, 2013; Galuszka, 2015; Lichtenberg, 2011; Tian & Martin, 2010). Specifically, the companies operating in it have had to face the new challenges posed by the innovations and technological changes associated with the Internet, the e-book or print on demand, among others (Benghozi & Salvador, 2016; Ho, Wang, & Cheng, 2011; Tian, Martin, & Deng, 2008).

The Spanish publishing sector contributes 1.1% to GDP, accounting for more than 34% of all cultural activities in Spain, this sector being the one generating the greatest wealth within the Spanish cultural industries, thanks to the volume of business it generates, the number of jobs it offers and the possibilities of growth and development derived from facing the new challenges of innovations and technological changes (Magadán & Rivas, 2018).

In the Spanish publishing industry there are very different businesses in: size, turnover, productive specialization, model of labor relations. At the same time, large multinational groups coexist together with small companies of almost artisanal production.

Regarding market share by size, it can be noted that: a) small publishers only represented 37% of the editorial structure in 1996, while, two decades later, they accounted for 75% of the total, b) medium-sized publishers have only lost one percentage point, going from 11.7% in 1996 to 10.9% in 2016, c) large publishers remain very stable, around 3% and d) only 26.7% of all publishers belongs to some business group.

During 2016, the Spanish publishing production was developed by 3,026 publishers. However, during the last twenty years the discontinuation of publishing activity has been much more frequent than the new additions.

This is due to technological changes that are challenging the existing business models up to now and that encourages companies to reexamine their product portfolios and their basic competencies (Øiestad & Bugge, 2014), which implies that many of the companies decide to leave the market rather than readjust themselves to the new changes.

Scholarly publishers are those publishing mainly books of interest to the scientific, academic and/or university community or that deal with scientific disciplines. In Spain, there are currently 673 publishers whose books are classified in disciplines such as Science, Technology, Medicine, Humanities and Social Sciences (Giménez, 2017). Currently, this figure of scholarly publishers equals approximately 20% of all Spanish publishers.

The volume of Spanish scholarly publishing production represents up to 20% of the whole publishing production (Giménez, 2017). From this figure, at least 81% corresponds to books devoted to Humanities and Social Sciences, and 19% to titles of Science, Technology and Medicine.

The Spanish scholarly publishing sector is a clear example of the publishing diversity existing in Spain: in fact, approximately 68% of publishers declare annual turnovers below one million euros, something that is in relation to the reality of the Spanish publishing sector, where up to 83% of them are small size publishers.

The present study has two main goals: a) to determine the degree to which digitization is affecting the existing business models in Spanish scholarly publishing and b) to identify the emergence of new business models in the Spanish scholarly publishing sector.

To carry out this research, an empirical analysis was conducted by means of surveys sent to a sample extracted from the population of scholarly Spanish publishers, following the criterion of stratified random sampling (by company size).

The structure of this work is as follows: in Section 2, the qualitative changes implemented in the Spanish publishing industry are shown; in Section 3, the methodological foundations for the empirical analysis are specified; in Section 4, the results obtained from the surveys are shown and, finally, in

Section 5, the research will be concluded offering, from the discussion of the results, answers to the initially proposed questions.

2. Qualitative Changes in the Spanish Publishing Industry

Currently, the Spanish publishing sector could not be understood without linking both process and product innovation. On the one hand, new products are developed, such as the e-book, but on the other hand, the production processes of the book are improved -both on paper and electronic-, to which new features are also added, such as augmented reality and print on demand, thus integrating design and manufacturing technologies (Betz, 2003; Krishnan & Ulrich, 2001; Magadán, 2017; O'Leary-Kelly & Flores, 2002; Rogers, 2010).

2.1. E-book

The book, as a means of communication whose traditional support has been paper, is currently at a crossroads caused by the disruption of the new electronic medium, the e-book, which implies the largest transformation of the publishing industry since Gutenberg and the emergence of the printing press (Carreiro, 2010), challenging the existing business models in the publishing industry and encouraging organizations to reexamine both their product portfolios and their core competencies (Magadán & Rivas, 2018).

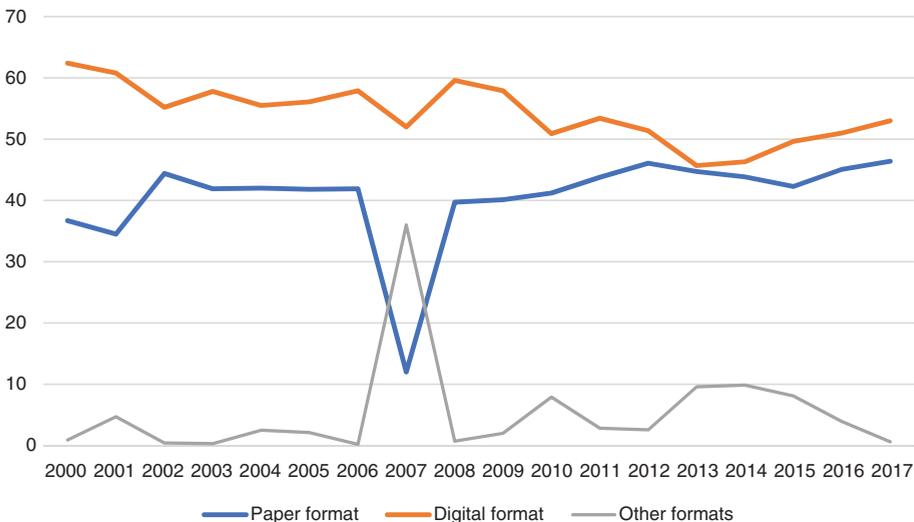
The electronic book opens the possibility to new markets and potential applications (Camisón & Villar-López, 2014; Damanpour, Sanchez-Henriquez, & Chiu, 2018; Rogers, 2010), which forces publishers to rethink (question) the ways of doing until now, to take advantage of new means, which lead, for example, to new technological and/or commercial skills/abilities or to employ new modes or methods of problem solving (Damanpour et al., 2018; De Reuver, Sørensen, & Basole, 2018; Grigoriou & Rothaermel, 2017; Rogers, 2010).

Regardless of its qualities as a product, the e-book has changed the way of reading, the way in which a reader can approach a text. In the case of Spain, electronic publishing experienced a significant increase in recent years, mainly on the Internet archives segment (Cordón, Alonso, & Martín, 2010).

It was with the launch of the Amazon Kindle and the Apple iPad that the distribution and commercialization of the electronic book began to develop (Clark, Goodwin, Samuelson, & Coker, 2008; Wischenbart, 2016), which suggests that one of the factors that had limited the development of the digital publishing industry was the lack of an e-reader sufficiently sophisticated to attract readers to the digital domain (Gaigher, 2012).

The strategy of the Spanish academic publishers before the emergence of the e-book can be deduced from Figure 1: a) between 2000 and 2006 the digitization process of their collection of publications to face the new challenges of a digital market open for them is begun, while paper book production remains stagnant; b) between 2007 and 2008, the strong impact can be noted from the Big Crisis on paper production and the commitment of Spanish scholarly publishers to maintain the production of titles in digital form, with lower production and distribution costs and higher profit margins, and c) between 2008 and 2017, there is a slight recovery in publishers' confidence in paper form but this remains relatively stable throughout the period together with

Fig. 1: Spanish scholarly publishing activity according to support used, in annual percentage (2000–2017).



Source: own elaboration from the Panoramic of the Spanish Edition of Books (Ministry of Culture and Observatory of the Book in Spain).

a digital production closer to the novelties produced in paper form and a cyclic but declining tendency in the use of alternative formats.

It must be underlined that the e-books production exceeds that of paper book production -in percentage terms- due to the fact that Spanish scholarly publishers digitized much of their past paper collections (retro-digitization) and these were included in the ISBN as new titles (unfortunately, it was not possible to make a statistical breakdown and isolate the new e-books from the digitized old paper books).

In 2017 there was an increase of 3.8% in Social Science and Humanities books. The most important increases were recorded in: Education and Teaching (55.2%), Sociology and statistics (35.7%), Political Science and Economic Sciences (22.9%), Business Organization and Management (21.5%) and reference works (17.5%). The decreases were in Linguistics and Philology (32.6%), Law, Public Administration and Social Assistance (28.0%), Geography and travel (24.4%). A calculation of the average number of pages offered the result of 262 and the average price stood at 21.84 euros. The most used digital book form has been the PDF, with 3,592 ISBNs, followed by the ePub, with 3,734 ISBNs and other e-books, with 916 ISBNs (Observatorio de la Lectura y el Libro, 2018).

In terms of scientific and technical books, 2017 showed an increase in supply (5.1%) compared to 2016. Among the subjects that make up the subsector, the increases were in: Communications and Transport (20.0%), Computing (4.8%), Medicine (4.8%), Pure Sciences and Natural Sciences (4.2%), Agriculture and Livestock (13.2%), Applied and Technological Sciences (0, 8%). The average price of books was 30.39 euros per copy. Publishing in other forms represented 36.9% from the whole production and the digital book represented 33.8%. The most used form has been the PDF, with 3,450 ISBNs followed by other kinds of e-books, with 551 ISBNs, and the CD-ROM, with 316 ISBNs (Observatorio de la Lectura y el Libro, 2018).

2.2. Publishing on Demand

The irruption of digital printing has given graphic arts workshops much more agile tools — mainly in time — for supplying the new demands: short print runs, printing on demand — increasingly frequent — and personalization

of copies, modifying the way to produce printed books (Fabling, 2017; McAllister, McAllister, & Vivian, 2002).

The print on demand (hereinafter, POD) is transforming the way publishers offer paper books, it is no longer necessary to print several units of a title and wait for them to be sold (Sánchez & Díaz, 2005).

With this system the title can be offered in a bookstore or platform, it is printed and sent to the client as soon as an order is placed (Gallagher, 2014; Magadán, 2017). Thus, the publisher did not have to make an investment in its production, reducing his business risk. In addition, he does not need to store his books, and he avoids returns from bookstores and distributors (Senftleben, Kerk, Buiten, & Heine, 2017).

Many platforms, such as Amazon, have launched printing on demand, combining printing, distribution and sale from their website anywhere in the world. The POD has reduced barriers to market entry and has provided a solution for small publishers to access a global market by linking to a wholesaler or retailer who has the capacity to perform POD.

Unlike the production of very short runs (from 50 to 100 copies), printing on demand allows the production of a book as a specific response to a customer order without having to be part of any stock. In the same way, by facilitating reprinting "on demand," titles are never exhausted. With a model that supposes to sell the copy first and then produce it (inverse process to the traditional one), any publisher can offer a title both on its website and on other global distribution and sales platforms.

In Spain, the POD only represents 0.5% of the total published on paper in Spain. This is because many publishers only use it as an alternative for the reprinting of discontinued titles. This 1:1 printing model could serve to guarantee replenishment and sale by drip, mainly in medium and small size publishers. Spanish publishing companies are very concerned about the quality of a digitally printed book (Magadán, 2017).

The technological change experienced by the Spanish publishing sector is giving rise to the development of new business models that arise from the adaptation to their productive structures of those innovations that have been emerging from information and communication technologies.

For instance, Logista Books, the largest independent book distributor in Spain, has recently launched a new integrated service of POD and distribution in collaboration with Lantia Publishing, a leader in the application of new technologies in the publishing sector.

In 2016, the Spanish Confederation of Booksellers' Associations and Associations (CEGAL) incorporates POD in its alliance with Podiprint so that bookstores throughout Spain can incorporate more than 5,000 titles, currently inaccessible to bookstores.

2.3. Digital Transformation and New Business Models

According to Magadán and Rivas (2018) business models must be built on a logical plan to bring a product to market and make a profit. In this sense, companies must innovate in their respective business models with new ways of creating and capturing value for their stakeholders (Afuah & Tucci, 2000; Loebbecke & Picot, 2015; Zott & Amit, 2007, 2017).

The business model not only provides the logical architecture behind the production and supply of a product, but also provides an understanding and response by the company to the market and its needs (Cavalcante, Kesting, & Ulhøi, 2011; McGrath, 2010; Morris, 2009; Øiestad & Bugge, 2014).

Digitization in the publishing sector offers new ways of presenting content (Magadán, 2017; Shatzkin, 2008) and allows new business models to be developed (Berman, 2012; Gordon, Kung, & Dyck, 2008; Hoque, 2000; Li, 2018; Peng, 2016; Sabatier & Fizelle, 2011), adopting the innovations arising from information and communication technologies (Amit & Zott, 2001; Chatterjee, Grewal, & Sambamurthy, 2002; Porter, 2001) to expand their product portfolio (Rayna & Striukova, 2016).

Among the business models Spanish scholarly publishing companies are currently testing, the following aspects can be highlighted: the fragmented content, the payment for consumption or content on demand, the subscription model and open access (Magadán, 2017).

The sale of fragmented content on the Internet began with music, through iTunes, which offered loose songs dissociated from the original disc. This

fragmentation is present throughout the cultural industry, including the publishing field. In Spain, the Gestión 2000 trademark, from Grupo Planeta, was a pioneer in selling individual chapters of books.

The payment for consumption or content on demand is based on offering the client the possibility of paying for what he really consumes. It differs from the fragmented content in that it may not be a part of the total, but rather the full content. Slicebooks, emerged from this type of initiatives, was aware of the existing demand (especially in scholarly books for the consultation and acquisition of chapters or parts of it). The Grupo Planeta has launched the Planetahipermedia.com initiative, a web of business training through videos and short textual materials on a specific topic.

The subscription is a model adopted mainly because it entails very interesting advantages from the business point of view, including having a database with information about our customers and a fixed and pre-established income stream, which allows you to adapt the offer to the demand that you have, so it is also good for business planning. The subscription models reached the publishing sector through subscriptions of legal content and technical books. Today, there are different generalist platforms in Spain that offer this service to the reader such as 24Symbols and Nubico. In the Spanish digital market, the pioneering company in the introduction of this model was 24Symbols, and ten years later, in 2011, this company added to its business model the streaming reading from any electronic device with access to a browser, based on cloud computing. As Bookwire Report (2018) states, although sales from digital bookstores like Amazon, Apple, Kobo, among others, continue to be one of the main supply chain for Spanish editors, sales from subscription platforms in 2017, especially in the United States, Germany, Spain and Mexico, are becoming greater year by year for publishers, reaching up to 6% of the whole digital sales, compared to 5% in 2016. Added to that, the sale of licenses of e-books to libraries reached up to 3% of the whole digital sales in 2017, compared to 2% in 2016. This means that the subscription model is becoming established.

The trend to allow readers free access to research results is growing in importance, first in the field of scientific journals and secondly in academic monographs (Fitzpatrick, 2011; Pons, 2013).

A study published by the European Union (Archambault et al., 2013) indicates that open access is reaching a point of no return, with about 50%

of the scientific works published in 2011 in open access. In the field of monographs, open access platforms to academic texts are increasingly abundant. The research showed that open access publishing had no negative effect on sales, and publishers' fear was unfounded. On the other hand, the online use of books in open access increased considerably as did the discovery of these books through different platforms (Shearer, 2010; Taylor, Morrison, Owen, Vézina, & Waller, 2013).

3. Method and Sampling

In order to carry out this research, the stratified sampling method has been chosen to facilitate the identification of possible differences among the scholarly publishers' behaviour facing the phenomenon of digitization according to their size (in terms of annual turnover).

To apply the stratified random sampling method, the empirical work starts with an objective population (see Table 1), formed by 673 active scholarly publishers in the Information Provider for Spanish Book Sale (DILVE).

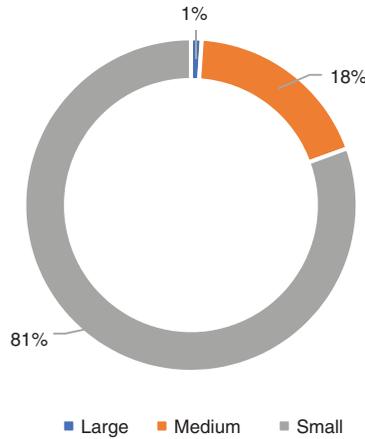
The subgroups or strata in the target population are made according to the size of the scholarly publishing company according to its annual turnover. Thus, three strata are established to characterize respectively large (more than 50 million euros), medium (between 10 and 50 million euros) and small (up to 10 million euros) size scholarly publishers. Regarding to this classification (see Figure 2), the objective population is formed by 7 (1%) large, 124 (18%) medium and 542 (81%) small scholarly publishing companies.

Table 1: Response rate obtained by size.

	Objective population	Simple random sampling	Response rate
Large size	7	6	3
Medium size	124	111	51
Small size	542	483	191
Total	673	600	245

Source: own elaboration.

Fig. 2: Classification of Spanish scholarly publishing companies according to annual turnover (percentage weight).



Source: own elaboration.

The questionnaires were sent by email and the information was received and treated statistically during the second quarter of 2018.

On the stratified population, a simple random sampling is applied, for each stratum, until reaching, for each one of them and, therefore, for the whole sample analyzed, a weight of 89.15% of the population universe (600 scholarly publishers).

The response rate obtained was approximately 40.83% (245 companies answered the questionnaire), which allowed to work with a sampling error of ± 5 per 100 for a confidence level of 95% (see Table 2).

Table 2: Technical data from the conducted survey.

Universe	673 scholarly publishing companies
Sample size	245
Sampling technique	Stratified random sampling
Sampling error	$\pm 5\%$
Degree of statistical confidence	95%
Questionnaire	Semi-structured, with closed questions and some open ones.
Timing of survey	Second quarter of 2018.

Source: own elaboration.

Once the collection of surveys was finished, the recording and data filtering were performed. In this phase, the content of the questionnaires was analyzed to detect possible errors when answered.

4. Results

In addition to the general identifying questions and those about various aspects of scholarly publishing activity by the interviewed companies, nine key questions were selected for the development of this study and are presented in Table 3.

Table 3: Main questions from the conducted survey.

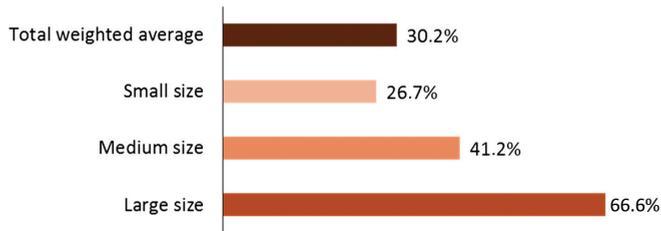
Question	Kind of answer
What percentage does the sales revenue from scholarly books represent in your total turnover?	Open
What percentage of your scholarly publishing activity is in digital form?	Open
What percentage of your scholarly publishing activity in digital form is exclusively in that form, i.e., without paper publishing?	Open
What is the most used digital form? a. PDF b. EPub. c. Others (specify).	Partially closed
Do you offer on-demand publishing? a. Yes. b. No.	Closed
What percentage of your paper book offer is available on demand?	Open
What percentage of your digital book offer is available on demand?	Open
Indicate whether you apply some of the following business models: a. Fragmented content. b. Payment for consumption. c. Subscription. d. Open access.	Closed
If you have marked some business models for the previous question, please indicate the way you make them available: a. Through your own website. b. Through external platforms.	Closed

Source: own elaboration.

The sales revenue from academic books represents up to 30.2% from the total turnover among the surveyed scholarly publishers (see Figure 3). Most of the respondents — 92% — combine the scholarly publishing with other subjects (novels or poetry among many others) due to the continuous decreasing revenue from academic books in the last decade. For this reason, they substitute a part of the scholarly production by other products. Only scholarly publishers belonging to university institutions, whose financial funds come from university budgets, focus exclusively on scholarly university books.

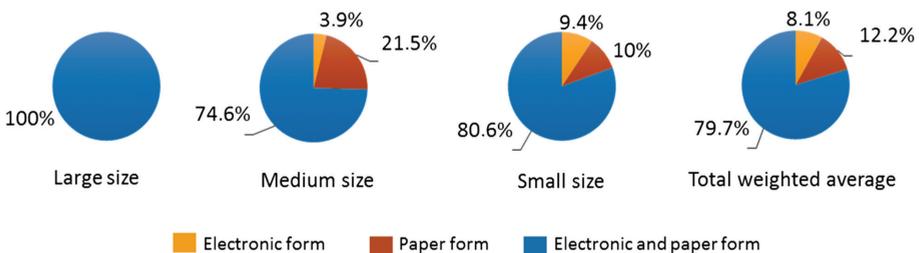
Regarding the second question raised, 79.7% of the scholarly publishers surveyed publish their books in both forms. Only 12.2% of respondents use exclusively paper form and 8.1% solely electronic form (see Figure 4).

Fig. 3: What percentage does the sales revenue from scholarly books represent in your total turnover?



Source: own elaboration.

Fig. 4: What percentage of your scholarly publishing activity is in digital form?



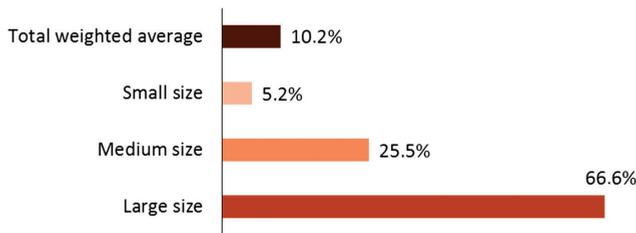
Source: own elaboration.

With respect to the whole scholarly publishing production, only 10.2% is published exclusively in digital form. This usually corresponds to legal texts that need to be updated (see Figure 5).

The most used form by scholarly publishers is PDF, with 84.1%, due to its versatility to show graphs, tables and equations, as well as allowing a better view for the user (see Figure 6).

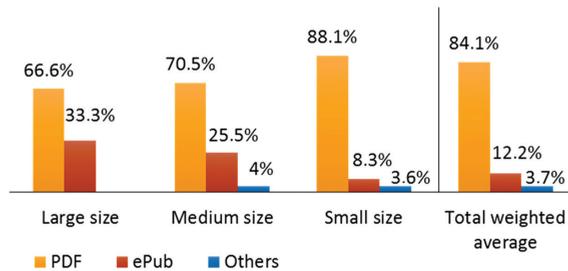
In relation with on-demand publishing, only 55.1% of respondents offer this, mainly: a) in case of out-of-print books or b) due to low demand, as it is not lucrative to produce a print run of less than 500 copies in offset (see Figure 7).

Fig. 5: What percentage of your scholarly publishing activity in digital form is exclusively in that form, i.e., without paper publishing?



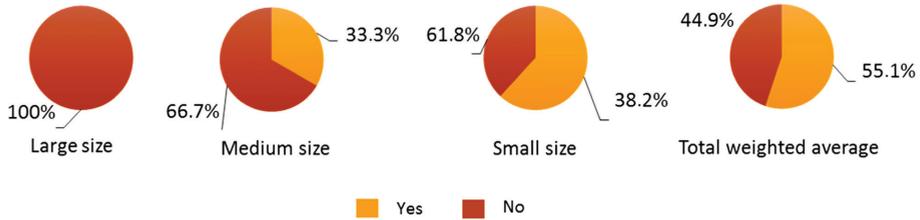
Source: own elaboration.

Fig. 6: What is the most used digital form?



Source: own elaboration.

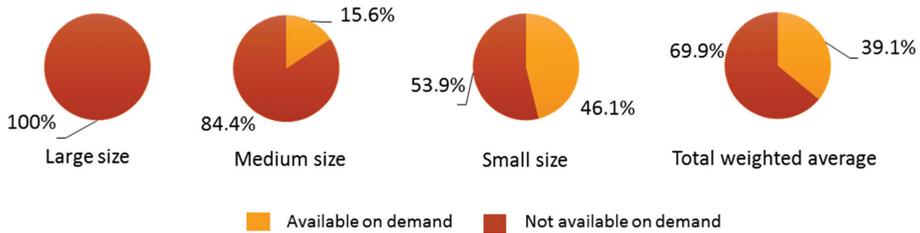
Fig. 7: Do you offer on-demand publishing?



Source: own elaboration.

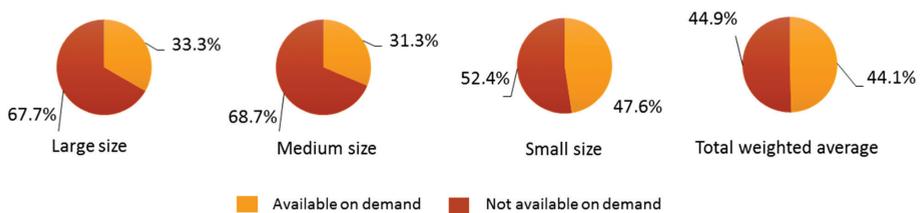
While 39% of scholarly publishers surveyed offer the option of printing a single copy from a digital file displayed on a digital distribution platform or in the publisher’s own website (see Figure 8), 44.1% offer this same option in case of digital books (see Figure 9).

Fig. 8: What percentage of your paper book offer is available on demand?



Source: own elaboration.

Fig. 9: What percentage of your digital book offer is available on demand?



Source: own elaboration.

Table 4: Business models used and availability.

Business models	Large size		Medium size		Small size		Total weighted average	
	Own	External	Own	External	Own	External	Own	External
Subscription	0%	100%	0%	80.4%	0%	74.8%	0%	76.3%
Fragmented	100%	0%	11.7%	25.5%	1%	3.2%	4.5%	7.7%
Pay for consumption	0%	100%	0%	25.5%	0%	4.7%	0%	10.2%
Open Access	33.3%	66.6%	0%	31.3%	0%	10.4%	0.4%	15.5%

Source: own elaboration.

Regarding the new business models emerging from the digitization of the book industry, 76.3% of respondents opt for the subscription model, using international platforms external to their own companies, such as Digitalia or Elibro. Only 12.2% make use of the fragmented content model, which they mainly develop through their own website. The publishers surveyed, who carry this out, are large size ones and they belong to publishing groups with a strong presence in the Spanish and Latin American markets. A 10.2% of scholarly publishers apply the model of payment for consumption and this is carried out through platforms external to the company. In relation to the open access model, medium and small size scholarly publishers (83%) are reluctant to implement it, since they consider that in this way they do not recover their investment and they see no way to tap other channels of income, unless authors pay for allowing open access to their works, or when they can be subsidized by public administrations. Publishers belonging to large groups and those belonging to university institutions are the ones most in favour of open access, as they consider it a way of promotion (See Table 4).

Finally, to carry out the implementation of the new business models, the Spanish scholarly publishers surveyed outsource technological platforms and developments required for their publishing activity.

5. Conclusions

The Spanish scholarly publishing companies analysed have been acquiring digital knowledge and have tried to position themselves to respond more effectively to changes operated both in markets and technology.

The present study had two main goals: a) to determine the impact of digitization on the existing business models in Spanish scholarly publishers and b) to identify the emergence of new business models in the Spanish scholarly publishing sector.

As seen throughout this study, the scholarly publishers best adapted to all these changes have been the large and medium-sized companies. Nevertheless, far from opting for publications located in what could be defined as “knowledge frontiers,” they choose to produce scholarly handbooks, giving a rising priority to digital form: a) with less costs associated, b) providing easier periodic updating of contents, and c) promoting global distribution through digital platforms, usually outsourced by publishers.

In short, there has been a Darwinian natural selection among publishers, which has led to an increasing market-share concentration by the largest publishing groups that, in many cases, have ended up “cannibalizing” the minor ones.

Regarding the responses obtained from the conducted survey, there are significant empirical evidences of the impact from digitization over existing business models: a) most Spanish scholarly publishers opt for the digital form; b) digitization seems of special interest for publishing documents that need regular updating; and c) digital books are the new base for on-demand printing.

Finally, in respect of the new business models adopted by Spanish scholarly publishers, the subscription model must be considered as the most widely spread, followed at a great distance by the open access model and the rest of the remaining models. Nonetheless, it is striking to note that the change of business model among Spanish scholarly publishers has not spread in a more generalized manner and new forms of publishing still coexist with traditional ones.

The lack of joint scholarly digital publishing initiatives is causing the entrance of new actors outside the publishing sector, such as hardware manufacturers and Internet service providers, overcoming the traditional industry players in the creation of new business models for digital content (Magadán & Rivas, 2018).

Several limitations of this research should be noted: firstly, the survey conducted is merely a snapshot of Spanish scholarly publishers’ attitude to

digitization and the way in which all the technical changes are internalized into their existing business models or provoke the adoption of other new ones. A time series analysis about Spanish publishers' behaviour in relation to this matter might be of interest; and secondly, some Spanish scholarly publishing companies excluded by the stratified random sampling method could distort the obtained results. In this end and considering the small number of companies in the universe, a survey launched to all of them would be a good strategy if looking for a higher rate of response, avoiding thereby a random exclusion of relevant publishers in the strata considered.

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