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The Role of the Marrakesh Treaty in Supporting Access to Printed Material for People Who Are Blind or Visually Impaired: A Critical Discussion of the Results of an Empirical Study Conducted in Six European Countries

Delia Ferri ^{1,2,*} and Giulia Rossello ^{3,4}

¹ School of Law and Criminology, Maynooth University, W23 X022 Maynooth, Ireland

² Assisting Living and Learning Institute, Maynooth University, W23 X022 Maynooth, Ireland

³ Institute of Economics, Sant'Anna School of Advanced Studies, 56127 Pisa, Italy

⁴ United Nations University—Maastricht Economic and Social Research Institute on Innovation and Technology, Maastricht University, 6211 AX Maastricht, The Netherlands

* Correspondence: delia.ferri@mu.ie

Abstract: Less than 7% of published works are accessible. To overcome this book famine, the Marrakesh Treaty was enacted with the view of enhancing access to published works for people with visual impairments, blind people, and people that are otherwise print-disabled. Leveraging survey data from six European countries (Italy, Ireland, Sweden, Germany, Hungary, and the Netherlands), we investigate the respondents' knowledge of the Marrakesh Treaty and whether they experienced improved access to printed material after its implementation. The results of the survey show that people who are blind and use braille printers are more likely to report an improvement in accessing printed material, suggesting that the exceptions provided for in the Marrakesh Treaty best support the reproduction and availability of copyrighted works in braille rather than other formats.

Keywords: Marrakesh Treaty; accessibility; assistive technology; people who are blind; people with visual impairments; copyright law



Citation: Ferri, D.; Rossello, G. The Role of the Marrakesh Treaty in Supporting Access to Printed Material for People Who Are Blind or Visually Impaired: A Critical Discussion of the Results of an Empirical Study Conducted in Six European Countries. *Disabilities* **2023**, *3*, 147–164. <https://doi.org/10.3390/disabilities3020011>

Academic Editor: Reinie Cordier

Received: 4 February 2023

Revised: 7 March 2023

Accepted: 21 March 2023

Published: 24 March 2023



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1. Introduction

In his seminal book *Discrimination, Copyright and Equality: Opening the E-Book for the Print-Disabled*, Harpur argues that only 5–7% of published books are available in formats accessible by those with print disabilities, with this percentage being far lower in the Global South [1]. In South Africa, for example, “print-disabled readers have access to approximately 0.5% of books published” [2]. Although, in recent decades, technological advances have been creating the means to enable people with disabilities to access printed materials, and “the digitisation shift in publishing” may further enhance universal access [3], copyright is considered as a significant barrier to access reading material [4]. Macharia et al. [5] argue that while there are “circumstances in which accessible copies are available from publishers”, due to fears of misuse of the copies by information service providers, publishers are reluctant to release them. Ncube et al. [6] contend that technologies play an important role in ensuring that individuals with disabilities participate effectively in education, entertainment, and other relevant activities in society. However, they note that “the economics surrounding efforts to make copyrighted works accessible are complex” and argue that converting “copyrighted works into accessible formats is often labor- and cost-intensive” [6]. Most notably, these authors also posit that “[b]eyond the question of cost and labor intensiveness, the accessibility technologies require, first and foremost, an enabling legal framework, especially as deploying them to transform content for easy access for persons with disabilities may implicate copyright and related rights” [6] (p. 153). Other scholars highlight that one of the main challenges to make printed material accessible

is copyright protection, which prevents digitisation or supports technological protection measures (TPM) that make a digital book inaccessible [7].

The Marrakesh Treaty to Facilitate Access to Published Works for Persons Who Are Blind, Visually Impaired, or Otherwise Print Disabled (Marrakesh Treaty), administered by the World Intellectual Property Organization (WIPO) and adopted on 27 June 2013 in Marrakesh, tries to constrain copyright with a view of supporting the right of persons with disabilities to access printed material. Since its adoption, the Marrakesh Treaty has been welcomed as an important milestone to address the “book famine” [8–10] and has been considered a crucial step forward in ensuring the realisation of the human rights of persons with disabilities and their full participation in society. It is often considered complementary to the UN Convention on the Rights of Persons with Disabilities (CRPD), in that it facilitates the implementation of Article 30(3) CRPD. The latter provision requires States Parties to the Convention “to take all appropriate steps, in accordance with international law, to ensure that laws protecting intellectual property rights do not constitute an unreasonable or discriminatory barrier to access by persons with disabilities to cultural materials”.

Since the negotiation phase, the debate surrounding the Marrakesh Treaty has been quite lively [11–15], and its links with human rights and with the Sustainable Development Goals have been discussed extensively [16]. In 2017, the World Blind Union (WBU) supported the publication, by the Oxford University Press, of a *Guide to the Marrakesh Treaty: Facilitating Access to Books for Print-Disabled Individuals* aimed at providing guidance to contracting parties in deciding how to incorporate the treaty into their domestic systems [6]. A compilation of globally implemented legislation was also published in 2020 by the Association of Research Libraries (ARL) [17]. The legal implementation of the Marrakesh Treaty is attracting growing attention, mostly with reference to specific jurisdictions across the globe [18–24], which also looks at its broader impact on accessibility for persons with disabilities [25,26] or at the role played by libraries in implementing it [27,28]. Building on such burgeoning literature, this article reflects on the impact of the Marrakesh Treaty and its “practical” effects, by analysing the results of an empirical (quantitative) study conducted across six European states (Germany, Hungary, Italy, Ireland, the Netherlands, and Sweden). While, as noted above, the legal debate on the Marrakesh Treaty is quite wide [29], and there are several policy-oriented papers, toolkits, and guidelines [30,31], the empirical research is limited. Recent articles were based on small samples and interviews with gatekeepers or focused on information-rich cases [32]. By contrast, our work aims at providing quantitative evidence about the effects of the implementation of the Marrakesh Treaty. In fact, Dinwoodie suggests that beside the implementation, “the real test” for the Marrakesh Treaty would be to ascertain “how it is used in practice”. Our work tries to shed a light on such practice. It does so by correlating the role of individual characteristics (such as gender, education, and impairment type) with that of assistive technologies that provide access to copyrighted works in the last two years, taking into account the timeframe of the ratification of the Marrakesh Treaty. We believe that the quantitative investigation proffered by our study of a relatively large sample of people who are blind and visually impaired offers an important contribution to the scholarship and highlights the need for further research in this field. Given that connection, our article shines a light on the role of assistive technologies (and braille) in supporting the achievements of the objectives of the Marrakesh Treaty. In particular, this article focuses on the extent that access to published material has improved for people with visual impairments and people who are blind, who are the most notable cohort of persons with disabilities falling within the scope of the Marrakesh Treaty, correlating such access with knowledge of copyright law and the Marrakesh Treaty. The quantitative study, as it is discussed below, focuses on people with visual impairments and people who are blind as related to the purpose of the Marrakesh Treaty. However, it is underpinned by the wide-ranging social-contextual conceptualisation of disability [33] informed by the human rights model, as envisaged in the CRPD. According to such a conceptualisation, disability stems from the interaction between the individual impairment and external barriers. In line with this understanding

of disability and with the human rights model, this article uses people-first language (e.g., persons with visual impairments, people who are blind) and social model terminology (e.g., disabled people, blind people) interchangeably.

On the whole, our empirical investigation finds that people with visual impairments and people who are blind have limited knowledge of copyright law, in general, and of the Marrakesh Treaty, in particular. Moreover, by using multivariate regression, this study suggests that the benefits of the Marrakesh Treaty are linked to the type of impairment and to the assistive technology used. Even when considering the limitations of the study and the limited sample, we believe that such an analysis can offer new insights into the role of the Marrakesh Treaty in fostering accessibility, which unveils the need for further research into the topic. In addition to these introductory remarks, the article proceeds as follows. The next section provides a brief overview of the Marrakesh Treaty and its implementation in the European Union (EU) and in the countries being considered. Then, the methodology is outlined. The fourth section lays out the results of the research, which is followed by a critical discussion of these results. The final section provides some concluding remarks.

2. Legal Context: The Marrakesh Treaty and Its Implementation in the Countries Being Considered

2.1. Marrakesh Treaty

The Marrakesh Treaty is the first copyright treaty that embeds human rights principles, including explicit references to the Universal Declaration of Human Rights and the CRPD. In this regard, Ncube et al. [6] affirm that the Marrakesh Treaty seeks to align IP rights and human rights norms in a way that allows both to achieve the common goals of protection of creative outputs and inventions, while simultaneously securing access.

According to Conway [34], the Marrakesh Treaty represents “a change of culture at WIPO”. In that regard, Zemer and Gaon [35] posit that while WIPO and WTO usually aim to strengthen private rights of authors and artists, “the Marrakesh Treaty embraces the global aims underlying WIPO’s development agenda”. Harpur and Suzor [3] highlight that this treaty “aims to increase the amount of accessible material available worldwide by creating a standardized framework to ensure that countries around the world introduce exceptions into their copyright regimes to enable both people with print disabilities and the institutions that assist them to create accessible copies of publicly available written materials”. In another work, the authors [36] posit that both the CRPD and the Marrakesh Treaty represent “an important change in how lawmakers balance the demands of copyright owners against the interests of people with disabilities”. Further, Ayoubi [37] notes that the Marrakesh Treaty “reaffirms the importance of public interest in the balance of protection and access” by recognising the need to maintain a balance between the effective protection of the rights of authors and the larger public interest, particularly education, research and access to information, and that such a balance must facilitate effective and timely access to works for the benefit of persons with visual impairments or with other print disabilities.

More specifically, the Marrakesh Treaty obliges contracting parties to set out exceptions to copyright rules in order to permit the reproduction, distribution, and availability of published works in accessible formats. While it is primarily targeted at facilitating access to printed materials for blind persons or persons with visual impairments [38], it adopts a broader personal scope. Article 3 includes, among the beneficiaries of the copyright exception, blind people and visually impaired people as well as people with a perceptual or reading disability and those who are “otherwise unable, through physical disability, to hold or manipulate a book or to focus or move the eyes to the extent that would be normally acceptable for reading; that cannot access effectively printed material”. As noted in previous research, individuals who experience temporary blindness, visual impairment, or print disability are entitled to benefit from the exception laid out in the Marrakesh Treaty for the duration of that condition [8].

The Marrakesh Treaty covers all literary and artistic works in the form of text, notation, and/or related illustrations, whether published or otherwise made publicly available in any media. Audiovisual works, such as films, do not fall within the scope of the treaty. However, the

EIFL Guide for Libraries suggests that “textual works embedded in audiovisual works, for example educational multimedia DVDs” should be covered [39]. Notably, Article 2 of the Marrakesh Treaty also defines an accessible format copy as “a copy of a work in an alternative manner or form which gives a beneficiary person access to the work, including to permit the person to have access as feasibly and comfortably as a person without visual impairment or other print disability”.

The Marrakesh Treaty requires contracting parties to “provide in their national copyright laws for a limitation or exception to the right of reproduction, the right of distribution, and the right of making available to the public as provided by the WIPO Copyright Treaty (WCT), to facilitate the availability of works in accessible format copies for beneficiary persons” (Article 4(1)(a)). This limitation or exception “should permit changes needed to make the work accessible in the alternative format”. In line with Article 4 of the Marrakesh Treaty, the “beneficiary person”, a “primary caretaker or caregiver” of such a person, anyone acting on behalf of a beneficiary person, as well as authorised entities (i.e., entities authorised or recognised by the government to provide education, instructional training, adaptive reading, or information access to beneficiary persons on a nonprofit basis, including “government institution or nonprofit organisation that provides the same services to beneficiary persons as one of its primary activities or institutional obligations”—Article 2(c) of the Marrakesh Treaty) must be permitted, without the authorisation of the copyright holder, “to make an accessible format copy of a work”. They must also be permitted to obtain accessible format copies from another authorised entity and supply these copies to beneficiary persons on a nonprofit basis.

Simply put, the Marrakesh Treaty requires contracting parties to allow, without the prior authorisation of the copyright holder, the conversion of existing printed material into accessible formats, such as the creation of an audiobook from a printed volume, and the reproduction of accessible format copies, such as making additional copies of a book in braille. It also requires contracting parties to allow the availability of accessible copies, which might, for example, entail the posting of an audiobook on a website. Notably, however, such a website may only be reachable by persons with disabilities covered by the scope of the Marrakesh Treaty. Further, the Marrakesh Treaty obliges contracting parties to allow for the transmission of those created accessible copies, for example, through a donation to a beneficiary person. Contracting parties “may also provide a limitation or exception to the right of public performance to facilitate access to works for persons with disabilities” (Article 4(1)(b)). In this regard, some authors suggest that this exception would “permit public recital of literary works for the benefit of the print disabled” [8] (p. 43).

Additionally, the Marrakesh Treaty obliges contracting parties to allow the import and export of accessible format copies under certain conditions (Article 5). In doing so, it lays out an effective regime for sharing accessible copies of books across the world, so that blind people living in small or under-resourced countries can have access to the accessible books that are already available in larger countries. As noted by Ncube et al. [6], “one of the most important aspects of scaling the supply of accessible formats of works is the ability to share them across borders” because “sharing ensures that efficient distribution can occur”.

The Marrakesh Treaty leaves some room for manoeuvre to contracting parties. In fact, it incorporates the so called “three-step test” (Article 11), which requires that national provisions that implement Article 4(1) are limited to “special cases”, do not conflict with a normal exploitation of the work, and “do not unreasonably prejudice the legitimate interests of the rights holder”. In that regard, Vezzoso [14] contends that, during the negotiations of the Treaty, despite legitimate concerns, the three-step test was considered to have sufficient flexibility and intelligibility to support the aim of the Treaty. It is also important to note that contracting parties may also “confine limitations or exceptions [. . .] to works which, in the particular accessible format, cannot be obtained commercially under reasonable terms for beneficiary persons in that market” (Article 4(4)).

The Marrakesh Treaty has been said to present some challenges. For example, Brown and Waelde [38] argue that, taking the perspective of people with disabilities, barriers still remain, notably in terms of the focus on visual impairment. Another possible point is that it is only the authorised entity which will have the right to send an accessible copy

to another jurisdiction; however, the copy can be sent directly to a beneficiary rather than via an authorized entity. But how many beneficiaries are likely to want to send accessible works across borders? A point for further monitoring.

Stamm and Hsu contend that “the Marrakesh Treaty falls short because it does not require publishers to dedicate resources to ensure the accessibility of their publications”. Despite these drawbacks, most scholarship considers this treaty a watershed [25]. Zemer and Gaon [35] report that Mihály Fiscor refers to the treaty as a “miracle”. On the whole, as stated by Ayoubi [37], the Marrakesh Treaty, while being compatible with previously adopted instruments of international copyright law, enhances access to copyrighted works for people who are visually impaired. While endeavouring to strike a balance between accessibility needs and copyright, Giannoumis et al. posit that “[t]he Marrakesh Treaty [. . .] is unique among regulatory efforts at the intersection of human rights and IP because it explicitly creates legal, policy, and institutional bridges between these regimes” [7].

2.2. Marrakesh Treaty in the Countries under Study

At the time of finalising this article (January 2023), the Marrakesh Treaty has reached 92 ratifications globally. In Europe, it was signed by the EU (on behalf of itself and its member states) on 30 April 2014 and then ratified on 1 October 2018 [40]. It was then implemented by means of Directive 2017/1564/EU (Marrakesh Directive) [41] and Regulation 2017/1563/EU (Marrakesh Regulation) [42]. This directive had to be transposed into national law by 11 October 2018. The regulation, which entered into force on 12 October 2018, is directly applicable in EU member states and provides for a copyright exception allowing for the cross-border exchange of accessible format copies of works that are ordinarily protected by copyright between EU member states and third countries that are party to the Marrakesh Treaty. Without discussing the technicalities of those legislative acts, it is sufficient to highlight that, in line with the Marrakesh Treaty, the directive introduces a mandatory exception to the harmonised rights of creators and authors, empowering beneficiaries and authorised entities to undertake the necessary steps to transform a work into an accessible format for their own benefit (Article 3). The copyright exception relates to the reproduction right, the right of communication to the public, and the right of availability to the public (as required by the Marrakesh Treaty). Significantly, as noted by Sganga [43], the Marrakesh Directive harmonised and expanded the already existing “disability exception” provided in Article 5(3)(b) of the InfoSoc Directive [44].

Essentially, as discussed elsewhere [45], the Marrakesh Treaty took effect in the countries considered in the study (i.e., Germany, Hungary, Italy, Ireland, the Netherlands, and Sweden) via EU law. In this respect, all these countries had already introduced some disability copyright exceptions, long before the Marrakesh Treaty, in order to implement the InfoSoc Directive. Though, by virtue of the Marrakesh Directive, these countries consolidated (and in some cases expanded) existing disability exceptions in their national copyright legislation to align with the Marrakesh Directive (and the Marrakesh Treaty). In some countries (such as Ireland), however, the beneficiaries of the copyright exceptions even go beyond what is provided by the Marrakesh Treaty and include all persons with disabilities.

3. Materials and Methods

This study was based on an online survey, which was part of the EU-funded project “Recreating Europe”. The survey aimed to provide empirical evidence on the knowledge and perceptions that people who are blind and people with visual impairments have of copyright law and their preferred channels to access printed material. In doing so, the survey questions also allowed respondents to identify whether they experienced improved access in the last few years. Given that the Marrakesh Directive had to be transposed into national law by 11 October 2018, and the Marrakesh Regulation entered into force on 12 October 2018, these questions allowed us to reflect on whether the Marrakesh Treaty and its implementing legislation in the EU and the countries being considered have displayed a positive effect on accessibility of printed material.

The countries in the study were selected at the stage of the project proposal and represented a balance in terms of geographical locations, legal systems, and population sizes. In particular, we selected Germany and the Netherlands to represent the Central European system, Italy as a proxy for the Southern European system, and Hungary for the Eastern European system. Sweden represents Nordic countries, and Ireland represents the Anglo-Saxon system. Appropriate ethical approval was obtained before the commencement of the study.

While, as noted above, the Marrakesh Treaty adopts a broader personal scope and also includes among beneficiaries of the copyright exception those people who are “otherwise unable, through physical disability, to hold or manipulate a book or to focus or move the eyes to the extent that would be normally acceptable for reading; that cannot access effectively printed material”, the survey focused on people who are blind and people with visual impairments, as the traditional and main cohort benefitting from copyright exceptions. In fact, as noted above, Brown and Waelde [38] suggest that the Marrakesh Treaty’s main focus remains on blind and visually impaired people. In our survey, those groups were considered to include those experiencing all levels of sight loss, including moderate sight loss, severe sight loss, and blindness.

3.1. Survey Design

The target population of the study consisted of adults with visual impairments or persons who are blind. For ethical reasons, children were excluded from the study. In the survey, we included initial demographic questions, namely, we asked respondents their gender, age, and level of education. Further, we asked questions related to their geographic location, such as country of residence, and location characteristics (rural or urban area). We then investigated their digital access possibilities, asking whether they have (or share) an Internet connection, whether they possess their own digital device(s) (e.g., PC, laptop, tablet, or smartphone), and which kind of assistive technology they use (e.g., screen reader, text-to-speech synthesis (TTS) technology, screen magnifier, or braille printer). We then collected data to examine the channels of consumption of accessible-format material, and we asked which kind of accessible printed material they use the most (e.g., novel, short stories, essays, academic books, journals, or magazines) and which is their preferred format (e.g., audiobooks, ebooks, or braille). When investigating their general experience in accessing material in accessible format, we asked about the providers of reading materials (e.g., whether the accessible format was self-provided, provided by their caregiver, provided by another service provider, or provided by a public library) and the barriers experienced to acquire and use accessible formats (e.g., intellectual property/copyright/creators’ rights, lack of knowledge about copyright exceptions, or lack of technologies). In the final part of the survey, we collected data around knowledge and perception of copyright law, where we included specific questions on the Marrakesh Treaty and its content. A range of questions asked about improvements experienced in accessing printed material in the last few years, in particular in the last two years. In this regard, the survey also asked whether the improvements, if any, were to be linked to the implementation of the Marrakesh Treaty. We asked respondents to consider improvements in the last few years, considering that the ratification by the EU occurred in 2018, and that the Marrakesh Directive and Regulation were published in the *Official Journal of the European Union* in 2017. Our timeframe also considered that the Marrakesh Treaty was, hence, to be implemented via the transposition of the directive by October 2018. However, we also considered that, regardless of the timing of the implementation of the directive, legal norms take time to be translated into practice. We also considered that individuals have difficulties to recall generic past experiences, so it is common in questionnaires to try to overcome this well-known cognitive bias by clearly stating an event in more recent time [46]. Full details about the sampling design, questionnaire, and additional results can be found in the final report of the project [47].

The survey comprised forced-choice questions, leading respondents to choose from a range of selected response options. The forced-choice questions used are of different types:

multiple-choice, dichotomous questions, and Likert scales. We allowed respondents to raise issues that are of importance to them through specific open-answer options, to capture different dimensions of accessibility and the role of copyright law. However, in this survey, we did not use open-ended questions as the main source for two reasons. First, there is anecdotal evidence that respondents tend to skip such questions, raising a problem of response bias and missing data. Secondly, open-ended questions require a wider timeframe for coding and analysis, which was not appropriate for the project [48]. The survey was made available in the six selected countries' official languages. Namely, the information sheet, consent form preceding the survey, and the survey were translated using one service provider and checked by the project team. The survey was then administered online through Jisc Online Survey. This meant that the target population of the study had the option to complete the questionnaire in their mother tongue or in English. Given that the survey was targeted to persons with visual impairments, accessibility was our highest priority. Before launching the online survey, we made sure to comply with most recent Internet accessibility standards and best practices on accessibility, and we piloted the survey with different volunteers who have visual impairments using different screen readers. We also consulted with different accessibility experts and university access offices. In addition to these consultations, we also created additional versions of the survey in accessible Word formats to ensure that everyone had the opportunity to participate on an equal basis.

After having obtained ethical approval by the relevant university ethics committee, the survey was launched on 8 September 2021. Our recruitment strategy revolved around the support of "gate-keepers", such as universities' access offices, organisations representing people that are blind or visually impaired, and umbrella organisations of persons with disabilities. We distributed and spread the survey invitations as widely as possible across the six selected countries. Research adverts placed on social media, using a targeted social media strategy, supported the survey distribution.

3.2. Limitations

As with most research, this study is subject to certain limitations. We remark upon the limited scope of the sampling, which may be due to several reasons, including "survey fatigue". Limitations also result from the restricted time of the availability of the survey (a month) and purposive sampling. The latter entails a process in which the researchers selected particular segments of the population to recruit for a study, which is prone to researcher bias and can result in a lack of generalisability. Alongside those inherent limitations, volunteer bias may have also played a role in our research, as it does in most survey-based studies. Even though, the questionnaire was available in the official languages of the sample countries and was fully accessible, we estimate that technological barriers may still have prevented certain parts of the target population from undertaking the survey. In fact, research based on online surveys also typically reaches individuals of higher socioeconomic status, which may not be representative of the target population. Although younger people tend to use technology more than older people, age distribution is quite balanced in our sampling. Still, only 20% of survey respondents were over 60 years old.

3.3. Data Analysis

Alongside some descriptive statistics, a range of multivariate analyses was performed using ordered logistic regression models in STATA 17 (StataCorp, Lakeway Drive, TX, USA). We used ordinal regression models because our dependent variables are ordinal categorical variables with a natural ordering, such as "poor", "fair", and "good". Therefore, the ordered logit model provides an appropriate fit for this kind of data, because it preserves the ordering of response options without making assumptions about the interval distances between options [49–51]. The latter is the main reason for using ordinal models, such as the ordered logistic regression, when the dependent variables are survey responses such as Likert scales or qualitative assessments [49]. Our work examined the impact of the Marrakesh Treaty by means of three different models with corresponding dependent

variables to explain the determinants of the level of respondents' perception of (1) their knowledge of copyright law, (2) their knowledge of the Marrakesh Treaty, and (3) improved access to printed material experienced in the last few years thanks to the Marrakesh Treaty's implementation. For each model (1–3), we ran two specifications (a and b). The first specification (a) is the baseline model, while, in the second specification (b), in addition to the explanatory variables of model (a), we added the set of variables representing the types of technologies used by our respondents to access printed material to examine the role of different assistive technologies.

To gauge the impact of the Marrakesh Treaty, we first aimed to understand what the predictors of a high/low knowledge of the national copyright law are, given that individuals' level of awareness about copyright law might relate to exceptions covered by the Marrakesh Treaty. In this regard, we modelled respondents' perception of their level of knowledge of copyright law. Models 1a and 1b used, as dependent variable, KNOWLEDGE_COPYRIGHT, ranging from 1 "not knowledgeable at all" to 5 "extremely knowledgeable", which corresponds to the question "How knowledgeable are you of European Union laws and national laws on copyright?". In the first specification, Model 1a examined the association between individuals' perception of their level of knowledge of copyright law and their gender, their age, their level of education, their type of visual impairment, and whether they received a facilitation for accessing reading material from third parties (such as organisation, service provider, or community library). Model 1b included the use of different assistive technologies (such as screen reader, screen magnifier, text-to-speech (TTS), or braille printer).

Our second concern was to understand which characteristics predict a high/low knowledge perception specific to the Marrakesh Treaty. This is particularly relevant to understand the impact of the Marrakesh Treaty for people who are blind or have a visual impairment. Indeed, a high/low perceived knowledge of the Marrakesh Treaty correlates to individual sensitivity about awareness of their rights and might inform future policy to target specific groups or help the development of awareness-raising campaigns. Thus, we modelled respondents' perception of their level of knowledge of the Marrakesh Treaty. In Models 2a and 2b, the dependent variable KNOWLEDGE_MARRAKESH_TREATY corresponded to the survey question "Do you know what the Marrakesh Treaty provides for?" and had three ordered responses: 1 "No", 2 "Don't Know", and 3 "Yes". Similarly, we asked whether individual knowledge perception of the Marrakesh Treaty depends on their gender, their age, their level of education, their type of visual impairment, whether a third party facilitates access of reading materials, and their use of different assistive technologies for access printed material. In addition, we asked the extent to which their knowledge of the Marrakesh Treaty is associated with their perceived knowledge of copyright law including as a regressor of the previous dependent variable (KNOWLEDGE_COPYRIGHT).

Finally, we tested the potential impact of the implementation of the Marrakesh Treaty on people who are blind or visually impaired. Since we wanted to gauge whether the implementation of the Marrakesh Treaty brought benefits to our respondents (irrespective of their awareness of the treaty), we asked which individual characteristics relate to respondents' likelihood of experiencing an access improvement in the last few years. This method reduces the potential bias of a more direct investigation. Asking participants to indicate whether they experienced an access improvement because of the Marrakesh Treaty might induce a positive answer from those aware of/in favour of the treaty and a negative one from those unaware of/critical about it. In this regard, in Models 3a and 3b, we estimated which characteristics are associated with the perceived benefits allegedly deriving from the implementation of the Marrakesh Treaty. The dependent variable is ACCESS_IMPROVEMENTS_LAST_YEARS, which asked "Have you experienced an improvement in your access to accessible printed materials in the last few years?", and the respondent could select one of three ordered categories: 1 "No", 2 "Don't Know", and 3 "Yes". We tested whether the likelihood of a perceived improvement is associated with their level of education, their gender, their age, their type of visual impairment, whether a third party

facilitates their access of reading materials, and the type of assistive technologies used to access printed material. Since awareness of the law might influence individual perception upon their experienced improvement, we added as regressors the variables representing their level of knowledge perception of copyright law (KNOWLEDGE_COPYRIGHT) and of the Marrakesh Treaty (KNOWLEDGE_MARRAKESH_TREATY). The results of these multivariate analyses are presented in the following section.

4. Results

While, as noted above, the survey included several questions, this article aims principally to reflect on the impact of the Marrakesh Treaty in the selected jurisdictions. To that end, this section, after laying out some descriptive statistics, focuses on a range of specific questions. Table 1 shows the correlation of all our variables. Tables 2–4 show, respectively, the summary statistics of our three dependent variables used in Models 1–3: the perceived knowledge of copyright law, the perceived knowledge of the Marrakesh Treaty, and the perception of an improvement in access in the last few years. Further, Table 5 shows the results of our regression analysis (Models 1–3), as described in the previous section. In the following subsections, we separately discuss the results of each model examining the determinants of respondent knowledge of copyright law, knowledge of the Marrakesh Treaty, and experience of an access improvement linked to the treaty's implementation.

4.1. Descriptive Statistics

Data were collected between 8 September 2021 and 15 October 2021. We collected 201 responses; 74% ($n = 149$) were from Italy, 14% ($n = 28$) were from Germany, 5% ($n = 10$) were from Sweden, 3% ($n = 7$) were from Hungary, and 1% ($n = 3$) were from Ireland. We collected only one response from the Netherlands. Three respondents did not indicate the country (i.e., they did not answer the question); thus, it was unclear whether they were a resident in any of the considered jurisdictions. To maximise the sample size, we decided to include the response from the Netherlands and those responses provided by people that did not indicate their country. As a robustness check, we re-ran the analysis, dropping those four observations, and the results were unchanged. The high participation in Italy (in line with the general trends of survey participation [52]) was facilitated by the strong engagement of the local branches of organisations of persons with disabilities. The poor participation rates in some of the selected countries and the significant disparity in participation represent a pitfall of the study and did not allow for a cross-country comparison.

Looking closer at the results, there was a gender balance among respondents, with 48% identifying as female and 50% identifying as male. Just 1% identified as non-binary, and 1% were “unspecified”. The response rate varied with age: 17% of our sample were between 18 and 30 years old, and 21% were between 30 and 45 years old, while 20% were more than 60 years old. The highest rate of respondents (40%) was for those between 45 and 60 years old. In terms of impairment type, respondents are almost equally distributed: 55% of the sample were persons who are blind, and the remaining 45% were visually impaired persons. When it comes to the level of education, most of the respondents (41%) had completed high school. In addition, 3% had completed only primary education, while 12% had undertaken vocational training. Furthermore, among the respondents, 17% had a bachelor's degree, 22% had a master's degree, and 2% had a doctorate degree. Looking at respondents' channels for access to printed materials, 70% of survey respondents used a screen reader technology, 30% used a screen magnifier, 46% used a text-to-speech (TTS) technology, and 10% used a braille printer. In this respect, the survey confirms anecdotal evidence that screen readers are the primary means of accessing online text by persons who are blind or visually impaired, given that screen readers are now built-in to most Android and Apple devices. Additionally, more than half of our sample (56%) accesses reading materials thanks to the facilitation of a third party (e.g., an organisation for persons with disabilities, service provider, or community library). In Table 1, we report the correlation between the main variables.

Table 1. Pairwise correlation table of the main variables.

	1	2	3	4	5	6	7	8	9	10	11	12
1 ACCESS_IMPROVEMENTS_LAST_YEAR	1											
2 KNOWLEDGE_MARRAKESH_TREATY	0.0034	1										
3 KNOWLEDGE_COPYRIGHT	−0.1169	0.4544 *	1									
4 EDUCATION	−0.0526	0.2369 *	0.2682 *	1								
5 FEMALE	0.0159	0.096	−0.0624	0.0184	1							
6 AGE	0.1018	−0.0439	0.0041	−0.0344	−0.1013	1						
7 IMPAIRMENT_TYPE	0.1472 *	0.1225	0.0909	−0.0768	−0.0694	0.1141	1					
8 ACCESS_WITH_THIRD_PARTY	0.016	0.0165	−0.0354	−0.0239	−0.0685	0.1771 *	−0.0081	1				
9 SCREEN_READERS	0.0384	0.1490 *	0.1343	−0.0102	−0.1013	0.0649	0.3951 *	0.1706 *	1			
10 SCREEN_MAGNIFIERS	−0.1260	−0.0957	−0.0667	0.0299	−0.0296	−0.0870	−0.6370 *	−0.0160	−0.2235 *	1		
11 TTS	0.1109	0.0301	−0.0860	−0.0257	0.0009	−0.0313	0.1333	0.0949	0.0796	−0.0384	1	
12 BRAILLE_PRINTERS	0.1520 *	0.1976 *	0.0833	0.0801	−0.1723 *	0.0179	0.1554 *	0.1167	0.1996 *	−0.1590 *	0.0582	1

Note: * $p < 0.05$.

4.2. Knowledge of Copyright Law

The first aspect that stands out relates to the knowledge of copyright law and how it is distributed across demographic characteristics (Table 2). Overall, 62% of the total respondents have no knowledge at all or have a slight knowledge of copyright law. People who are blind, males, and those with a higher level of education tend to report higher levels of knowledge of copyright law. We should consider, however, that the question allows for gauging the perceived knowledge of the law rather than the actual knowledge. Such perceived knowledge might be influenced by cognitive biases, such as self-confidence. The results of Model 1a (Table 5) show that the important determinants of perceived knowledge of copyright law are the level of education and the type of visual impairment. Unsurprisingly, the higher the respondent's level of education is, the higher the likelihood is that they indicate a high knowledge of copyright law. For an increase in one level of education, the odds of answering "Extremely knowledgeable" about copyright law are 1.61 times greater ($e^{0.474} = 1.61$; $p < 0.01$), given that the other variables in the model are held constant.

Additionally, people who are blind tend to report a high knowledge of copyright law compared to visually impaired people. A person who is blind have odds 1.65 ($e^{0.500} = 1.65$; $p < 0.1$) times greater of answering "Extremely knowledgeable" about copyright law compared to a visually impaired person with equal characteristics.

Model 1b shows the results of adding the variables representing the different technologies used to access printed material. We asked whether the difference between blind and visually impaired people with regard to their perceived knowledge of copyright law (observed in Model 1a) relates to the type of assistive technology they used. We tested this by adding the variables representing the technology used. If the coefficients estimated are stable except the coefficient representing the type of impairment (i.e., the coefficient $A_PERSON_WHO_IS_BLIND = 1$ is not statistically significant, $p > 0.1$), its significance level is captured by the variables of assistive technologies added in Model 1b. This implies that the main difference in perceived copyright knowledge between blind and visually impaired people is instead driven by the type of assistive technology they used and not by their type of impairment per se. The results confirm this hypothesis. In fact, the impact of the impairment type is demonstrated by whether or not they used any screen reader technology. Those using a screen reader as an assistive technology have 1.85 times ($e^{0.615} = 1.85$; $p < 0.1$) greater odds of perceiving that they are "Extremely knowledgeable" about copyright law, compared with an individual not using a screen reader. It is worth recalling that screen readers are software programs that allow users to read the text that is displayed on the computer screen with a speech synthesiser or braille display. In this respect, a screen reader is most often used by blind persons, and the variables being blind and using a screen reader are positively correlated, though only mildly ($r = 0.3951$, $p < 0.01$).

Table 2. Knowledge of copyright law across demographic characteristics.

	KNOWLEDGE_COPYRIGHT						
	N	% TOTAL	Not at All	Slightly	Moderately	Very	Extremely
			% ROW	% ROW	% ROW	% ROW	% ROW
IMPAIRMENT_TYPE							
Person with a visual impairment	90	45%	23%	44%	26%	3%	3%
A person who is blind	111	55%	16%	41%	32%	7%	2%
GENDER							
Female	95	47%	25%	42%	22%	6%	4%
Non-Female	106	53%	15%	44%	35%	4%	1%
EDUCATION							
Primary education	6	3%	33%	17%	50%	0%	0%
Technical/vocational training	25	12%	12%	56%	24%	4%	0%

Table 2. Cont.

	KNOWLEDGE_COPYRIGHT						
	N	%	Not at All	Slightly	Moderately	Very	Extremely
			% ROW	% ROW	% ROW	% ROW	% ROW
		TOTAL					
High school	84	42%	26%	52%	19%	1%	1%
Bachelor's degree	35	17%	17%	37%	40%	3%	3%
Master's degree	45	22%	11%	29%	38%	16%	7%
Doctorate degree	5	2%	20%	20%	40%	20%	0%
Total	201	100%	19%	43%	29%	5%	2%

4.3. Knowledge of the Marrakesh Treaty

Knowledge about of the Marrakesh Treaty itself is also low, with 66% of the respondents, when asked “Do you know what the Marrakesh Treaty provides for?”, answering either that they have no knowledge or do not know. People who are blind and better educated have a higher amount of knowledge of the Marrakesh Treaty. Looking at gender, females report a higher amount of knowledge than males (Table 3). In contrast to the general question about copyright law, the question about knowledge of the Marrakesh Treaty is more precise and potentially better suited for capturing the actual knowledge. Since we asked a question that is related to a specific aspect of copyright, the responses are less prone to be affected by the cognitive biases linked to the overestimation of an individual's actual knowledge of the law. Indeed, it is interesting that, differently to the general question about copyright law, females report a higher knowledge in this case. However, the reasons behind such a difference may vary. They may, perhaps, be linked to the generally reported higher participation of females in blind unions or human rights associations. The higher participation of females in the not-for-profit sector is historically linked to charity [53], but it is still present today. Overall, only one in three respondents had some knowledge of the Marrakesh Treaty, and, combined with the more general question about copyright law, this showcases very little awareness of the rights that are connected to copyright exceptions. The results of Models 2a and 2b, which are included in Table 5, show that the level of education, gender and the knowledge of copyright law are statistically significant at a 5% significance level and are positively related to the likelihood of knowing about the Marrakesh Treaty. It is not surprising that more educated people and those with a higher amount of copyright law knowledge are more likely to have a higher amount of knowledge of the Marrakesh Treaty. For an increase in the level of education, the odds of answering “Yes” about knowing what the Marrakesh Treaty provides for are 1.30 times greater ($e^{0.266} = 1.30$; $p < 0.1$), when the other variables in the model are held constant. One additional level of perceived knowledge of copyright law is associated with between 3.03 and 3.17 times greater odds ($e^{1.110} = 3.03$; $p < 0.01$; $e^{1.155} = 3.17$; $p < 0.01$) of knowing what the Marrakesh Treaty provides for, all else being equal. Females are more likely to know about the Marrakesh Treaty compared to males. Being a female is associated with between 1.83 and 2.21 times greater odds ($e^{0.603} = 1.83$; $p < 0.1$; $e^{0.795} = 2.21$; $p < 0.05$) of knowing what the Marrakesh Treaty provides for, compared to males or people that identify themselves with a gender other than female. Arguably, this might relate to the traditional higher female participation in not-for-profit activities and associations, as noted above, since the development and application of the Marrakesh Treaty mostly operates within those organisations. Further, authorised entities (which include nonprofit organisations that provide education, instructional training, adaptive reading, and information access) are in fact those empowered to make accessible copies. Indeed, the not-for-profit distribution of printed materials in accessible formats is at the core of the Marrakesh Treaty, and this might relate to the technologies used to convert materials into accessible formats. Related to this, Model 2b shows that people using braille printer technology have 3.80 times ($e^{1.334} = 3.80$; $p < 0.1$) greater odds of knowing about the Marrakesh Treaty, compared to those who do

not, suggesting that the Marrakesh copyright exceptions have favoured the creation of printed material in braille.

Table 3. Knowledge of the Marrakesh Treaty across demographic characteristics.

	KNOWLEDGE_MARRAKESH_TREATY				
	N	% TOTAL	No	Don't Know	Yes
			% ROW	% ROW	% ROW
IMPAIRMENT_TYPE					
Person with a visual impairment	90	45%	59%	16%	23%
A person who is blind	111	55%	53%	5%	40%
GENDER					
Female	95	47%	53%	9%	38%
Non-female	106	53%	61%	10%	27%
EDUCATION					
Primary education	6	3%	67%	0%	33%
Technical/vocational training	25	12%	56%	16%	24%
High school	84	42%	70%	8%	20%
Bachelor's degree	35	17%	51%	11%	37%
Master's degree	45	22%	29%	11%	58%
Doctorate degree	5	2%	80%	0%	20%
Total	201	100%	56%	10%	32%

4.4. Perceived Improvement in Access and the Impact of the Marrakesh Treaty

In order to gauge the impact of the Marrakesh Treaty, we looked at the perceived improvement in access in the last few years.

Table 4 shows that 1 in 4 respondents experienced no access improvements in the last few years ($n = 50$), while more than half experienced such an improvement ($n = 108$). Moreover, females and persons who are blind tended to report an access improvement. Although improvements may be dependent on a range of factors, we used Models 3a and 3b to better understand the characteristics linked to a perceived access improvement for printed materials. The results of Model 3a in Table 5 show that the type of visual impairment appears to be the only relevant variable in explaining the likelihood of having experienced an access improvement to accessible printed materials. We found that a person who is blind has 1.75 times ($e^{0.557} = 1.75$; $p < 0.1$) greater odds of answering "Yes I experienced an improvement in access of printed materials in the last few years", compared to a visually impaired individual with similar characteristics. We investigated this finding further in Model 3b, which additionally controls for the different technologies used for accessing printed materials. The model shows individuals using braille printer technology, compared to those who do not, are more likely to report an improvement in their access of printed materials in the years since the treaty's implementation. A person using a braille printer has 3.11 times higher odds ($e^{1.135} = 3.11$; $p < 0.05$) of reporting the experience of an improvement in their access of printed materials in the last few years, compared to those not using this technology.

Table 4. Perceived access improvements in last few years across demographic characteristics.

	ACCESS_IMPROVEMENTS_LAST_YEARS			
	N	No	Don't Know	Yes
		% ROW	% ROW	% ROW
IMPAIRMENT_TYPE				
Person with a visual impairment	90	33%	17%	49%
A person who is blind	111	18%	22%	58%

Table 4. Cont.

	ACCESS_IMPROVEMENTS_LAST_YEARS			
	N	No	Don't Know	Yes
		% ROW	% ROW	% ROW
GENDER				
Female	95	27%	23%	58%
Non-female	106	23%	16%	50%
EDUCATION				
Primary education	6	33%	17%	50%
Technical/vocational training	25	28%	12%	56%
High school	84	18%	29%	52%
Bachelor's degree	35	23%	11%	63%
Master's degree	45	36%	13%	49%
Doctorate degree	5	40%	0%	60%
ACCESS_WITH_THIRD_PARTY				
Individual access	88	26%	18%	53%
Access facilitated by a third party	113	24%	20%	54%
Total	100%	25%	19%	54%

Table 5. Ordered logistic regressions.

	(1a)	(1b)	(2a)	(2b)	(3a)	(3b)
	KNOWLEDGE_COPYRIGHT		KNOWLEDGE_MARRAKESH_TREATY		ACCESS_IMPROVEMENTS_LAST_YEARS	
EDUCATION	0.474 *** (0.136)	0.476 *** (0.141)	0.266 * (0.15)	0.257 * (0.152)	−0.0361 (0.147)	−0.0625 (0.147)
FEMALE = 1	−0.406 (0.27)	−0.368 (0.269)	0.603 * (0.326)	0.795 ** (0.356)	0.0669 (0.288)	0.14 (0.302)
AGE	0.0604 (0.142)	0.0651 (0.142)	−0.114 (0.159)	−0.0863 (0.172)	0.166 (0.145)	0.2 (0.149)
A_PERSON_WHO_IS_BLIND = 1	0.500 * (0.269)	0.371 (0.391)	0.482 (0.321)	0.264 (0.408)	0.557 * (0.293)	0.408 (0.448)
ACCESS_WITH_THIRD_PARTY = 1	−0.109 (0.263)	−0.166 (0.28)	0.224 (0.326)	0.104 (0.327)	−0.00886 (0.29)	−0.0727 (0.306)
SCREEN_READERS = 1		0.615 * (0.35)		0.195 (0.354)		−0.254 (0.37)
SCREEN_MAGNIFIERS = 1		0.103 (0.387)		0.068 (0.446)		−0.210 (0.457)
TTS = 1		−0.387 (0.275)		0.289 (0.33)		0.36 (0.304)
BRAILLE_PRINTERS = 1		0.165 (0.375)		1.334 ** (0.639)		1.135 ** (0.518)
KNOWLEDGE_COPYRIGHT			1.110 *** (0.179)	1.155 *** (0.196)	−0.290 (0.183)	−0.260 (0.185)
KNOWLEDGE_MARRAKESH_TREATY					0.157 (0.189)	0.0781 (0.197)
Observations	197	197	195	195	192	192

Note: Robust standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, and *** $p < 0.01$.

5. Discussion

So far, research about the impact of the Marrakesh Treaty has been scarce. As noted at the outset of this article, the literature has focused on the legal analysis of treaty provisions and their implementation in domestic legal orders [8]. This study, on the basis of a survey, shines a light on the effects of the Treaty and on the experiences of people who are blind or have a visual impairment in accessing printed material in the context of their everyday lives.

The survey reveals a generally limited knowledge of copyright law and of the Marrakesh Treaty, suggesting people have a lack of awareness about their rights in terms of access to copyrighted material and copyright exceptions, such those introduced by the treaty. Unsurprisingly, the level of knowledge is correlated to the level of education. In this regard, the study points to the need for increasing awareness of the Marrakesh Treaty, in conjunction with raising awareness of the CRPD. More interestingly, the survey uncovers that people who are blind have a better knowledge of the Marrakesh Treaty. This could be related to the fact that people who are blind may have taken advantage of copyright exceptions to acquire a braille printed book or an audiobook, while people with a visual impairment may have relied on external assistive devices (e.g., magnifiers) to read printed materials in their original format. It may also be argued that people who are blind may have acquired knowledge (or at least a better awareness) of copyright through blind unions and involvement with organisations or libraries that deploy accessible formats.

The study showcases that access to printed material in accessible formats has improved in the last few years, which is arguably related (albeit not exclusively) to the implementation of the Marrakesh Treaty. As a general note, the survey also confirms that screen readers are becoming a widespread assistive technology and are often the primary means of accessing online text by persons who are blind or visually impaired [54]. This seems in line with a qualitative study [54], which *inter alia* highlighted how people with blindness or visual impairments access online news media by means of a screen reader.

The survey also points to the fact that improved access is related to the type of impairment. This study highlights that people who are blind and are using braille printers experienced an improvement in their access to printed materials in the last few years, compared to those not using this technology. This suggests that the Marrakesh Treaty facilitated the conversion of printed material into braille format, through the use of braille printer technology (i.e., printers that receive data from computer devices and emboss that information in braille onto paper), rather than accessible formats such as books in audio form, audio-only DAISY (Digital Accessible Information System) books, DAISY books (highlighted text synchronised with text-to-speech or human narration audio), or an e-book format with embedded accessibility features. This raises questions as to whether the treaty has had little impact on access to digital books (in theory, born-accessible books) or audiobooks, considering that they may be prone to be distributed more widely and beyond their intended users. The collected data do not allow for any definite answer to this question and further research is needed. Such research is particularly needed at this moment in time, as, across the EU, access to ebooks will also be supported by the European Accessibility Act, when all its provisions will be fully in effect. It is clear however that the circulation of braille copies is a little economic loss for publishers and copyright owners, given the relatively small pool of consumers users involved and the low risk of unintended diffusion of the copies beyond the beneficiaries of the Marrakesh Treaty. By contrast, making copies in other accessible formats, such as magnified versions, audiobooks, etc., might create higher losses for copyright owners, since those copies might also be potentially accessed by people that are not beneficiaries of the copyright exception and distributed to general consumers.

In this regard, this study seems to confirm that the economic tension between copyright and exceptions still underpins the implementation of the Marrakesh Treaty. It also triggers some questions as to whether those who do not read braille can fully reap the benefits brought by the treaty. Further, it somewhat confirms that an “ad hoc approach to accessibility”, which is insufficient to achieve equality [3], is still the rule and does not benefit all people with disabilities. The study does not offer any insights on the circulation of accessible copies across the countries being considered, which could be an important factor in enhancing access to accessible copies.

6. Conclusions

The Marrakesh Treaty is an international legal instrument that has undoubtedly created an enabling legal environment, in that it makes it easier for blind, visually impaired, and

print-disabled people to access works protected by copyright [28,54,55]. LaBarre posited that “the Marrakesh Treaty has sent the clear signal that access to information is indeed a fundamental human right” and prompted people to “use the spirit of Marrakesh to lead us to implementation of the treaty’s goals”.

In the EU, the effects of the Marrakesh Treaty and of the domestic implementation of the Marrakesh Directive are still difficult to assess. Although more research is needed, this study tries to shed light on the impact of the Treaty in six EU countries. It reveals that the knowledge of the Marrakesh Treaty is limited among the cohort of people that chiefly benefit from it and calls for more awareness-raising activities in order to reap the potential of this treaty. This evidences the need for widespread awareness-raising activities to make people with disabilities better aware of the contour of the disability exception. The results of this study also showcase that, while access to printed material in accessible formats has improved, which might be connected (albeit, arguably, not exclusively) to the implementation of the Marrakesh Treaty, the benefits deriving from it are somewhat conditional to the type of impairment and the technology being used. In this regard, whilst the survey does not give any definite answer, this improvement may correlate to the wider copyright exception provided by the Marrakesh Treaty, as implemented by the EU and in the countries being considered. It is evident that further research is needed to better understand the practical effects of the Marrakesh Treaty and to correlate such effects with fast-paced technological developments. This study also shows that a blind person has 1.75 times greater odds of reporting such an improvement compared to an individual with a visual impairment. This figure is accentuated when we consider the role of assistive technologies. A person using a braille printer has 3.11 times greater odds of reporting an experienced improvement in accessing printed materials in the last few years, compared to those who are not using this technology. This suggests that the synergy between digitisation, technological developments, and the enabling environment still has to display its potential in enhancing access to accessible digitised books.

Author Contributions: Conceptualisation, D.F. and G.R.; methodology, D.F. and G.R.; software, G.R.; validation, G.R.; formal analysis, D.F. and G.R.; investigation, D.F. and G.R.; resources D.F. and G.R.; data curation, G.R.; writing, D.F. and G.R.; visualisation, G.R.; supervision, D.F.; project administration, D.F.; funding acquisition, D.F. All authors have read and agreed to the published version of the manuscript.

Funding: This article has been written within the remit of the *ReCreating Europe—Rethinking digital copyright law for a culturally diverse, accessible, and creative Europe*. ReCreating Europe is funded by the Horizon 2020 Framework of the European Union Research and Innovation Programme, grant agreement number 870626.

Institutional Review Board Statement: The study was conducted in accordance with the Declaration of Helsinki and was approved by the Maynooth University Ethics Committee (Social Research Ethics Subcommittee—SRESC) on 30 June 2021.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: Data have been archived in the Irish Qualitative Data Archive (IQDA).

Acknowledgments: We are very grateful to Katie Donnellan for her research support during the study and data collection and for her research assistance in the initial phase of the data analysis. We are also thankful to the reviewers for their insightful and thought-provoking comments as well as their positive criticism. Our special thanks go also to Consuelo Battistelli for her support in piloting the survey and ensuring its accessibility. Last but not least, we are grateful to all our colleagues in Work Package 2 of the ReCreating Europe Project—in particular, Arianna Martinelli, Noelle Higgins, and Caterina Sganga—for their support.

Conflicts of Interest: The authors declare no conflict of interest.

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