

Accessible Tourism through Digital Accessibility for 2030 Agenda for Sustainable Development. Are We Ready for WCAG 3.0?

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ABSTRACT

Tourism for all, and especially accessible tourism, is a generalized social demand that must be made possible by public authorities and companies in some way linked to the provision of tourist services. International regulations on digital accessibility are advancing so quickly that in just 5 years they have been updated 3 times, and the Web Content Accessibility Guidelines (WCAG) 3.0 draft is currently in place to face the technological challenges of the future. It applies flexibly to all kinds of content, apps, tools, publications and emerging technologies. The importance of this research is determined to learn more about compliance with digital accessibility in the tourism industry. A Systematic Quantitative Literature Review (SQLR) is applied with searches in WoS and Scopus, with a total of 28 articles analyzed from 1999 to 2021 period, using the search strings: “web accessibility” or “accessible tourism”. Results show that digital accessibility is a pending issue in this sector with significant accessibility problems or ignorance about its importance by the public involved in the tourism industry. It provides a vision on the future of digital accessibility in the tourism sector and designs a research agenda with the WCAG, the stakeholders and channels that influence in their environment.

KEYWORDS

Digital Accessibility, Systematic Literature Review, Scopus and WOS Databases, Tourism Agenda 2030, WCAG 3.0.

ARTICLE HISTORY

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1. Introduction

The number of people with disabilities already represents 15% of the worldwide population and this data will increase in the future because there is more and more aging population (World Health Organization, 2011). According to Darcy (1998), one of the main barriers for people with disabilities during their trip is access to information. Therefore, People with Disabilities (PwD) suffer many problems planning their trip because tourism supply agents do not offer them accessible information in most cases (Buhalis & Michopoulou, 2011). For a couple of decades now, this segment has gained importance, through companies specializing in offering products for this segment, which represents a market in full growth, are beginning to be created (Takeda & Card, 2002; Bowtell, 2015) as well as the importance of this segment for the economy in the tourism industry (Dwyer & Darcy, 2011; Michopoulou et al., 2015; Özogul & Baran, 2016). According to the World Health Organization (2024), more than 2.5 billion people require one or more support and reinforcement products, and most of those who use technology use more than one product, further increasing the need for integrated services in enterprises.

The concept of “accessible tourism” or “tourism for all” began to have a greater impact from the report by Baker (1989), since it began to be taken into account in future legislation on tourism and accessibility later on. The internet though websites are considered the most important channel of communication for the commercialization of a tourist product or service as a fundamental tool for customer acquisition. Therefore, errors should be avoided during its construction that pose a barrier and therefore exclude certain users (Macedo & Sousa, 2019).

The World Wide Web Consortium (W3C) (2024) states: “web accessibility means that websites, tools, and technologies that are designed and developed so that people with disabilities can use them”. In this way, this international organization has established a series of regulations that adapt to the needs of technological evolution and the different access channels, be they mobile devices, tablets/ ipad or computers. For this reason, the W3C establishes a series of guidelines and standards for compliance with accessibility that have evolved from the Web Content Accessibility Guidelines WCAG 1.0 to the present, establishing WCAG 2.2 as an international recommendation. Likewise, since July 2023, the W3C is also working on a draft for WCAG 2.2 to evolve to WCAG 3.0 in the future. In this context, this international consortium focuses on digital accessibility from a deeper perspective since there is not only a change in nomenclature, in the case of WCAG 3.0 is “W3C accessibility guidelines”, instead of Web Content Accessibility Guidelines, to adapt more easily to technological evolution and to be more adaptable to changes: websites, apps, tools as well as encourage more accessible user experiences. This series of changes in international guidelines regarding digital accessibility and its constant evolution leads us to carry out a systematic investigation of the literature that indicates whether, from the point of view of the studies, these guidelines are also being taken into account, especially all those carried out up to the year 2021, when the change from WCAG 2.0 (2008 year) to 2.1 (2018 year) took place, and which are the ones that have evolved to WCAG 2.2 (2023 year) and thus to be able to verify if the studies and compliance with accessibility digital in the tourism field is in accordance with its international standards.

This study is based on a comprehensive review called Systematic Literature Review (SLR), contemplating all articles indexed in both WoS and Scopus databases without delimiting a specific time period with search terms related to digital accessibility in tourism sector, taking into account peer review articles, including articles in English, Portuguese and Spanish, refined by Web of Science Core Collection in the case of WoS database. As an exclusion method we have based ourselves on those articles that did not expressly show concepts of digital accessibility in the title, summary or keywords, that in some way alluded to digital accessibility, but the content of the article did not explicitly analyze it, or articles that were not related to digital accessibility in the tourism context. Therefore, a total of 28 articles were selected about digital accessibility in the tourism industry in both databases, also excluding duplicates. This method allows us to analyse more in depth on digital accessibility in the tourism industry, and what new trends can be detected in this sector. Few studies analyse the use of Internet in the accessible tourism market. The main contribution of this study is to complete studies in this field analysing the digital accessibility in the industry tourism, through websites, applications, social networks or any other digital tool that serves as a communication channel in this sector and that affects PwD.

This paper is organized as follows: after this introduction, section two presents a review to understand digital accessibility issues, concept and main guidelines. Section three presents details about the methodology based on a Systematic Quantitative Literature Review (SQLR). In section four, the results of the literature review and discussion with the future 2030 agenda research are presented. Finally, section five highlights the main conclusions and practical implications of the study.

2. Literature Review

The use of the internet worldwide is increasing year after year, since January 2021, 4.95 billion people in the world use Internet, which represents an increase of 192 million over the previous year (Datareportal, 2022). The internet has become one of the most important means in recent years for people who have some type of disability since it allows them to have access to a lot of information, along with the support of family, friends and associations (Dominguez, 2008). This change on the way people with disability accesses information, originated what is commonly termed as accessible tourism.

For Darcy and Dickson (2009) state that: "Accessible tourism enables people with access requirements, including mobility, vision, hearing and cognitive dimensions of access, to function independently and with equity and dignity through the delivery of universally designed tourism products, services and environments" (p. 34). However, various authors (e.g., Saraiva, 2017) argue that "Tourism for all", "Inclusive tourism" or "Accessible tourism" represent the same reality.

The 2030 Agenda and the Sustainable Development Goals (SDGs) promote the balance of social, economic and environmental sustainability. Objective 10 is based on the reduction of inequalities in groups at risk of exclusion, such as the elderly or people with disabilities (United Nations Development Programme, 2021).

The web is essential, not only to provide information, to promote the sale of tourist products, but also, as a way for improving people's planning of their leisure trip and evaluation of their experience (Lopez de Ávila Muñoz & García Sánchez, 2015). Moreover, according to the authors, web increases the attractiveness of the destinations using mobile tourist applications in which key information for tourists are presented. However, some authors claim that it is very important to take into account the design of the website and its adaptation to other mobile devices (Schieder et al., 2014). Several industry players have already shown that the use of different devices (e.g., desktop, mobile) is a reality which academics and industry managers must face (Statcounter Globalstats, 2023), to adopt the web information and accessibility to people with disability. According to Statcounter Globalstats (2023), the market share of Desktop vs. Mobile vs. Tablet on a global level based on July 2023 data are 42.37%, 55.7% and 1.94%, respectively. Therefore, the fact that the web must also be adapted to mobile devices is justified.

Moreover, the concept of web accessibility states that web sites must be designed with the idea that they can be accessible to as many people as possible (Witt & McDermott, 2005). In this regard, in 1994, an international community funded the World Wide Web Consortium (W3C) with the aim of making the content and information of the webs available to all types of users. Its Director, Tim Berners-Lee and inventor of the World Wide Web, stated that "The power of the Web is in its universality. Access by everyone regardless of disability is an essential aspect" (World Wide Web Consortium, 1997).

The W3C (1999) establishes the guidelines that must be met based on verification points and establishing certain levels of compliance with Web accessibility: Web Content Accessibility Guidelines (WCAG). These guidelines are based on levels of conformity according to the level of compliance of each of the verification points: Level of compliance A (the least demanding), double A; and triple A (the most demanding).

The different variants that have occurred in recent years regarding the WCAG of the W3C are: WCAG 1.0 (in May 1999); WCAG 2.0 (in December 2008) and WCAG 2.1 (in June 2018). The latter includes 13 guidelines, maintaining the four principles of WCAG 2.0 (perceptible, operable, understandable and robust). The first public working draft of WCAG 2.2 were announced in February 2020 and since July 2023 it is the recommendation established by the W3C. Global laws pertaining to digital accessibility are developing at such a rapid pace that, in the last five years, they have undergone three updates. The WCAG 3.0 draft is presently in effect in order to meet future technical problems. It applies more flexibly to all kinds of content, apps, tools, publications, and emerging technologies.

In the same sense, there are different methodologies that can be applied in the evaluation of digital accessibility, among them the possibility of using automatic tools. For this, the experts carrying out the research have to start by analyzing the tools available on the market and which is the most suitable for their evaluation. The W3C identify a list of 164 tools or identify studies that tried to solve the same problem with automatic tools (e.g., Shi, 2006; Serrano, 2009; Akgül & Vatansever, 2016; Domínguez Vila et al., 2018). Thus, due to the importance of digital accessibility in the tourism industry, studies carried out are increasingly necessary, about all related with PwD: difficulties in planning their trip and the information sources used (Daniels et al., 2005; Buhalis & Darcy, 2010; Michopoulou & Buhalis, 2013; Porto et al., 2019). For this reason, based on the evolution of international regulations on digital accessibility in the face of new technological challenges, more in-depth research is required in the tourism field about the studies that have been carried out up to the year 2021, at which time there is an important step between WCAG 2.1 and WCAG 2.2.

3. Methodology

This study is based on a Systematic Quantitative Literature Review (SQLR) and according to DeMatos et al. (2021) and Moher et al. (2015) this method requires several steps: Research question(s) to identify the objectives of the SQLR method; A review protocol should be developed; A literature search; Extract literature, summarizing and listing the full-text articles data and Synthesizing findings, developing a content analysis.

3.1 Systematic Quantitative Literature Review (SQLR)- Steps

3.1.1 Research Questions

This study seeks to answer the following research questions:

- RQ1.** How often have studies on digital accessibility in tourism been published over time?
- RQ2.** Which journals publish papers on digital accessibility in tourism?
- RQ3.** Which authors do the most research on digital accessibility in the tourism sector?
- RQ4.** Which is the affiliation of the first authors analyzed?
- RQ5.** What are the main contexts evaluated?
- RQ6.** What types of studies have been carried out in the articles analyzed?
- RQ7.** What type of online tools or services, real users and experts have helped to evaluate digital accessibility in tourism?
- RQ8.** Which WCAGs and levels of conformity have been used to evaluate digital accessibility in tourism?
- RQ9.** What are the main keywords used? The main motivation of these questions is to get future research for 2030 agenda about digital accessibility in the tourism sector.

3.1.2 A Review Protocol

The protocol used in this study is defined in Appendix A. The main selection criteria of the articles analyzed in this study were based on having been peer-reviewed, written in the English, Spanish or Portuguese language and taking account the following subject areas: social sciences, business, management and accounting, psychology and computer science. Table 1 presents the search strings and Boolean operators used in this analysis. The terms web accessibility, accessible tourism, tourism accessibility and tourism marketing accessibility were chosen.

Table 1. Search Terms and Boolean Operators on SCOPUS and Web of Science

Boolean operators without any selection criteria		
Database	Search Strategy	Results
Scopus	(TITLE-ABS-KEY ("web accessibility") OR TITLE-ABS-KEY ("accessible tourism") OR TITLE-ABS-KEY ("tourism accessibility") OR TITLE-ABS-KEY ("tourism marketing accessibility"))	1990
Web of Science (All databases)	TI=web accessibility AND AB=web accessibility AND AK=web accessibility OR TI=accessible tourism AND AB=accessible tourism AND AK=accessible tourism OR TI=tourism accessibility AND AB=tourism accessibility AND AK=tourism accessibility OR TI=tourism marketing accessibility AND AB=tourism marketing accessibility AND AK=tourism marketing accessibility	563
Boolean operators with filters applied in the selection of the articles		
Scopus	(TITLE-ABS-KEY ("web accessibility") OR TITLE-ABS-KEY ("accessible tourism") OR TITLE-ABS-KEY ("tourism accessibility") OR TITLE-ABS-KEY ("tourism marketing accessibility")) AND (LIMIT-TO (SRCTYPE, "j")) AND (LIMIT-TO (DOCTYPE, "ar")) AND (LIMIT-TO (SUBJAREA, "COMP") OR LIMIT-TO (SUBJAREA, "SOCI") OR LIMIT-TO (SUBJAREA, "BUSI") OR LIMIT-TO (SUBJAREA, "PSYC")) AND (LIMIT-TO (LANGUAGE, "English") OR LIMIT-TO (LANGUAGE, "Spanish") OR LIMIT-TO (LANGUAGE, "Portuguese"))	560
Web of Science	Refined by: Web of Science Core Collection; Languages: English or Spanish or Portuguese; Document Types: articles	231

Source: Own Elaboration (2022)

3.1.3 A Literature Search

The Systematic Literature Review (SLR) methodology included all articles indexed in both WoS and Scopus databases without delimiting a specific time period with search terms related to digital accessibility in tourism sector. The search was developed in August 2021, taking into account peer review articles and language in English, Spanish or Portuguese. In the case of WoS database, it was refined by Web of Science Core Collection. As an exclusion method we have based ourselves on those articles that did not expressly show concepts of digital accessibility in the title, summary or keywords, that in some way alluded to digital accessibility but the content of the article did not explicitly analyze it, or articles that did not they were related to digital accessibility in the tourism context.

Finally, after the search from Scopus and Web of Science databases, 791 articles were downloaded and imported to Mendeley.com (a reference manager software) including the title, abstract and keywords of each article. In this process, the duplicate publications (n=90) were eliminated, resulting in 701 articles for screening taking into account inclusion criteria. In the last step of screening, as shown in Table 2, a total of 673 articles were identified to be excluded due to inadequate topic, or nor being relevant to the study's aim. Finally, 28 publications were selected and the full-text was evaluated for content analysis.

Table 2. Article Selection and Screening Steps

Step 1. Source and Keyword selection	Step 2. Recording preliminary results
Sources • Scopus • Wos Timeframe (without date limitation): From March 1999 to August 2021. Keyword set: web accessibility, accessible tourism, tourism accessibility, tourism marketing accessibility.	Showing results first round from keyword search in the two databases • Scopus= 560 • Wos= 231 Total= 791 articles
Step 3. Screening related articles	Step 4. Final articles screening
The three authors read the title, abstract and keywords of each manuscript for screening the articles. Articles are categorized into three groups: 1) Digital accessibility in tourism context explicitly stated in the article's title, abstract, or keywords 2) Digital accessibility in tourism context could be inferred, but the contents are not explicit 3) The articles are not related to the digital accessibility in tourism context Records after duplicated removed between both databases analysed=90	All authors selected articles in category 1. The results were: Sources • Scopus • Wos Total articles for synthesis= 28

Source: Own Elaboration based on De Matos et al. (2021)

3.1.4 Extract Literature and Synthesizing Findings

In this stage, all articles (n=28) are analyzed in a listing, using an Excel spreadsheet taking into account information such as: the author's names, publication title, publication year, methodology, main findings, type of WCAG used, journal's name, context, online tools for the analysis, affiliations and keywords.

The full paper is revised by the authors to verify its suitability, also sharing the Excel document of analysis among all the authors of the article for its joint validation. In this last step, the content analysis of each full paper is carried out, to analyze them from a conceptual point of view, highlighting the main theories that are used in each of their investigations. In this way, and based on the methodology used by DeMatos et al. (2021), the results were further divided into two additional main sections: a) the descriptive analysis, and b) main theories and future research for 2030 agenda.

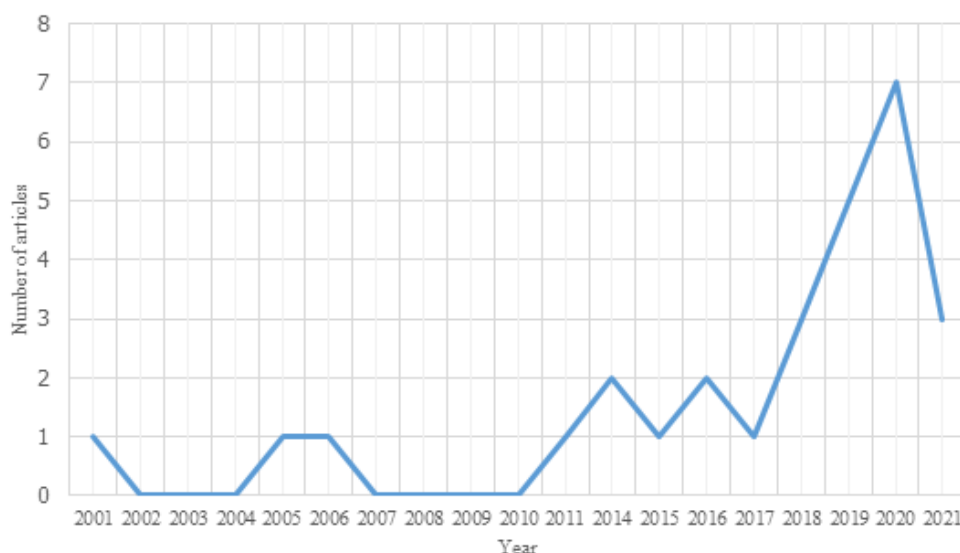
4. Results

4.1 Descriptive Analysis

As a result of the first research question about the frequency of publication, the articles selected and analyzed taking into account the criteria defined have covered the digital accessibility in tourism industry topic from 2001 to 2021 (Figure 1).

Figure 1 shows that, since 2019, there has been a significant increase in publications on the subject evaluated compared to 2018, from 3 to 5. During 2020, a slight growth continues with respect to 2019, with 7 articles published. It follows, therefore, that there is a growing interest within this subject. In the year 2021, it follows that the growth figure could be maintained, since from January to August there are 3 articles published. However, there are time intervals where nothing is published, as can be seen in the following years: 2002-2004; 2007-2010; even though WCAG 1.0 was officially declared in May 1999.

Figure 1. Number of Articles Retrieved Per Year



Source: Own Elaboration (2022)

Regarding the second research question, related to articles published / year by journals (Table 3), it is highlighted that the 28 studies analyzed were published in 26 different journals. Among the magazines in which they have been published, two of them stand out in which 2 publications are produced in each of them: RISTI- Revista Ibérica de Sistemas e Tecnologias de Informação and UAIS- Universal Access in the Information Society.

Table 3. Published Articles/Year by Journals

Journals Year	AJHTL	CHB	CIT	DR	GTRIT	ID	ITT	IJCHM	IJERPH	IJEFM	IJALS	JADA	JHTI	JHTT	JTAER	JUCS	LHT	PRTPC	QG	RISTI	SJHT	S	THR	TM	UAIS	V	Total
2001																									1	1	
2005								1																			1
2006																								1			1
2011																		1									1
2014			1														1										2
2015		1																									1
2016											1														1		2
2017				1																							1
2018						1	1														1						3
2019	1			1				1											1	1							5
2020									1			1	1	1						1		1			1		7
2021															1		1					1					3
Total	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1	1	2	1	28

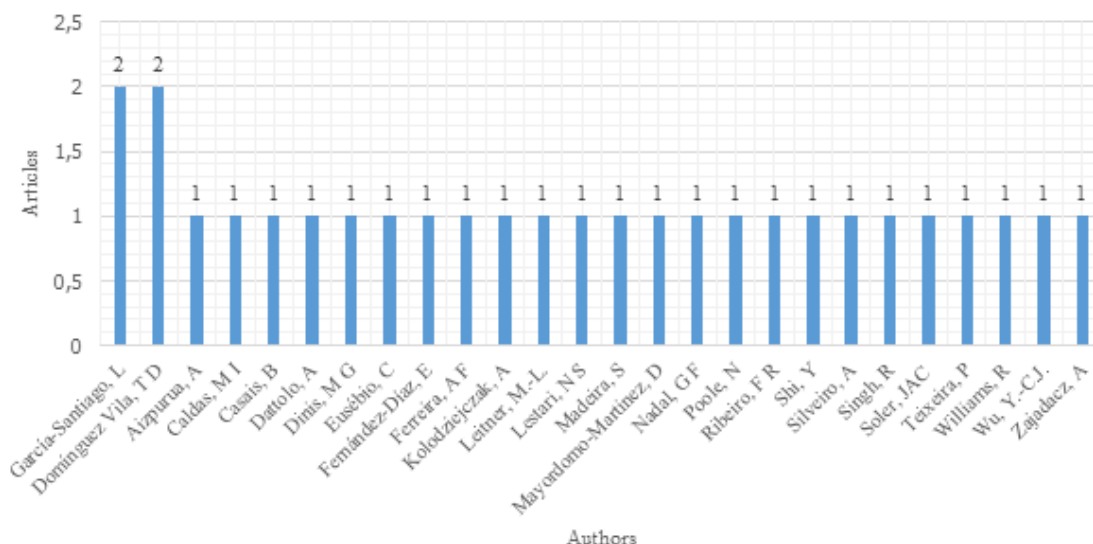
Notes: AJHTL-African Journal of Hospitality, Tourism and Leisure, CHB-Computers in Human Behavior, CIT-Current Issues in Tourism, DR-Disability and Rehabilitation, GTRIT-Gran Tour: Revista de Investigaciones Turísticas, ID-Information Development, ITT-Information Technology and Tourism, IJCHM-International Journal of Contemporary Hospitality Management, IJERPH-International Journal of Environmental Research and Public Health, IJEFM-International Journal of Event and Festival Management, IJALS-International Journal on Advances in Life Sciences, JADA-Journal of Accessibility and Design for All, JHTI-Journal of Hospitality and Tourism Insights, JHTT-Journal of Hospitality and Tourism Technology, JTAER- Journal of Theoretical and Applied Electronic Commerce Research, JUCS- Journal of Universal, Computer Science, LHT-Library Hi Tech, PRTPC- Pasos- Revista de Turismo y Patrimonio Cultural, QG-Quaestiones Geographicae, RISTI- Revista Iberica de Sistemas e Tecnologias de Informacao, SJHT-Scandinavian Journal of Hospitality and Tourism, S- Sustainability, THR- Tourism and Hospitality Research, TM-Tourism Management, UAIS- Universal Access in the Information Society, V- Vine.

Source: Own Elaboration (2021).

The results obtained on the third research question about the number of publications by author, it is interesting to note that 4 of the 28 articles analyzed are signed by only one author (14.3%), followed by 6 of them that are signed by two authors (21.4%) and 12 of the 28 articles evaluated are signed by 3 authors (42.8%). Finally, the articles that have more than three authors are 6 (21.4%).

In Figure 2, it is shown that the most productive authors in the area are Garcia-Santiago and Domínguez Vila (Spanish affiliation).

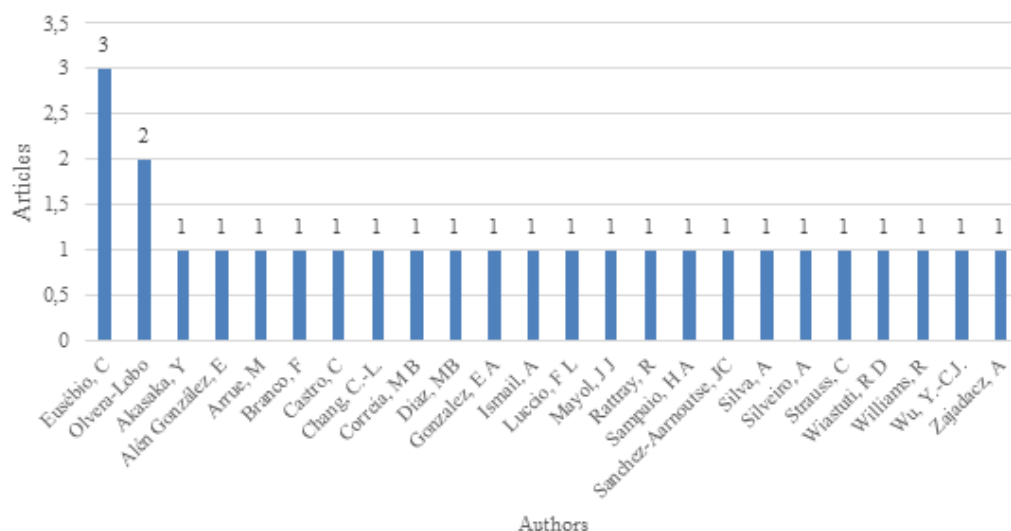
Figure 2. Number of Publications by Author (First Author)



Source: Own Elaboration (2022)

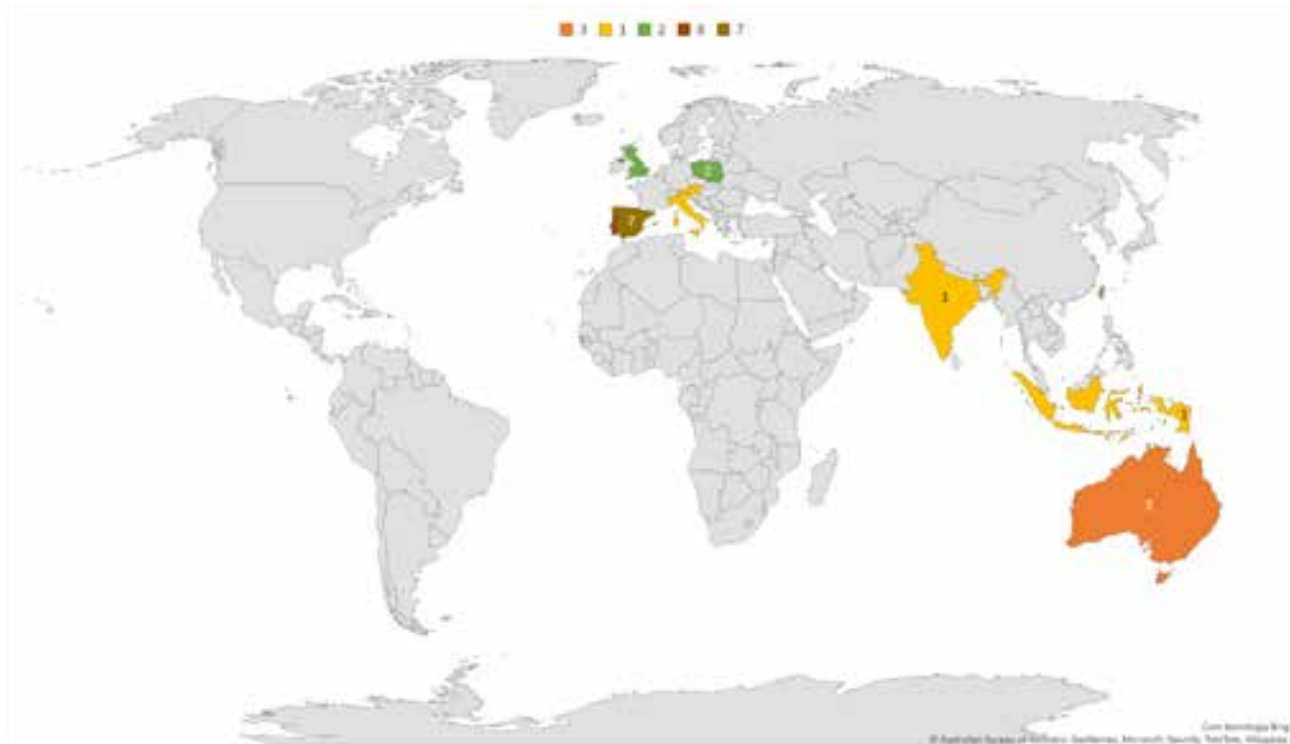
Regarding the data of the second author, Eusébio (Portuguese affiliation) and Olvera-Lobo (Spanish affiliation) are the following most productive in the area (Figure 3).

Figure 3. Number of Publications by Author (Second Author)



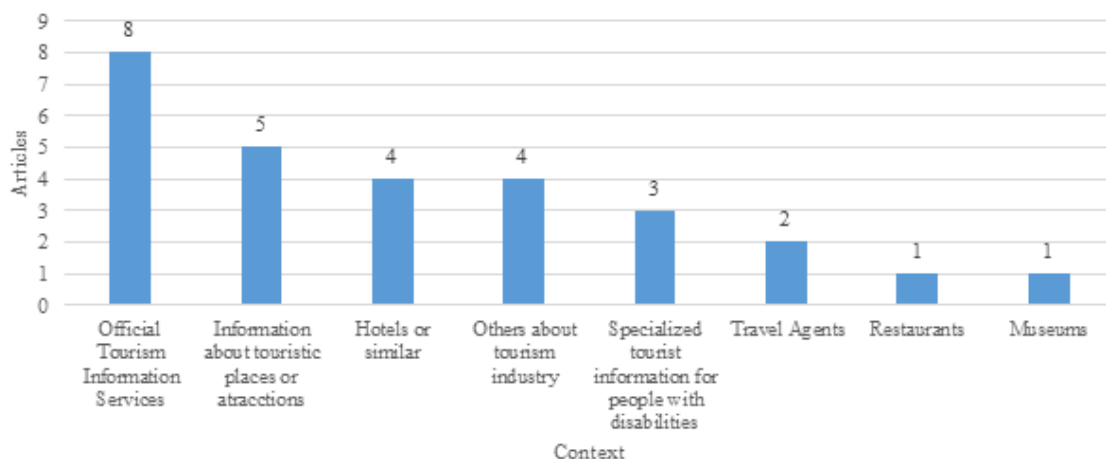
Source: Own Elaboration (2022)

In relation to the fourth research question, the affiliation of the first author included 10 countries (Figure 4). The top three countries with the most published articles were Portugal (eight articles, 28.6%), Spain (seven articles, 25%) and Australia (three articles, 10.7%).

Figure 4. Authors' Country of Affiliation

Source: Own Elaboration (2022)

Answering the fifth research question, the main contexts in which studies applying the digital accessibility concept in the tourism industry (Figure 5), were in the Official Tourism Information Services (eight articles, 28.6%), Information about touristic places or attractions (five articles, 17.8%), Hotels or similar (4 articles, 14.3%). In the case of others, areas such as music festival, urban rail systems and other services are contemplated.

Figure 5. The Context in which Articles Studies were Conducted

Source: Own Elaboration (2022)

Table 4 shows the results that answer the sixth research question. For this purpose, the type of studies that have been carried out in the articles evaluated are categorized based on the categories used by Kabassi (2017):

- 1) Inspection methods: the evaluation and analysis are carried out exclusively by experts in the digital field. According to Cuncliffe et al. (2001), there are different method inspection guidelines;

- 2) Empirical methods: these methods are based on groups of final users. For example, user test to end customers or performing different tasks on the web and checking their results more empirically;
- 3) Combination of methods: the evaluation is carried out by combining the two previous methods: experts and users;
- 4) Automatic tools: when using digital analysis either tools, in this case on accessibility, independently or combined with previous methods.

Table 4 also includes information on the number of websites and apps analyzed in each case as well as the type of evaluation (qualitative or quantitative). Of the total of articles evaluated, 21 carried out analyzes exclusively of websites (75%) and 2 have carried out analyzes of websites and apps (7.14%). However, only 3 of the selected articles have exclusively researched apps (10.71%). Therefore, it is stated that the majority of studies have focused on the analysis of websites (82%) (either combined with an app or independently). Regarding the type of evaluation (qualitative or quantitative), 8 of the articles analyzed combine both types of evaluation (28.6%). The 42.8% (12 articles) considered only quantitative evaluation and 28.6% (8 articles) used only qualitative evaluation. Therefore, most of the articles (20 of them) used a quantitative analysis (71.4%). With regard to the type of data and the method used, it should be noted that the majority of studies were based on analysis exclusively with “automatic tools” ten articles, 35.7%). The second most used method exclusively, without combining it with other methods, is “inspection methods” (eight articles, 28.6%). However, only one article was evaluated exclusively through “empirical method” and the exclusively combination of method were used by three articles (10.7%). If we take into account other combinations, the following data are highlighted: “Inspection methods with Automatic tools” (four articles, 14.28%), “Empirical methods with automatic tools” and “Combination of methods with Automatic tools” (one article each one). It can therefore be seen that the majority of studies mainly used “automatic tools” and “the inspection method”, either exclusively or in combination with each other.

Table 4. Research Methodology

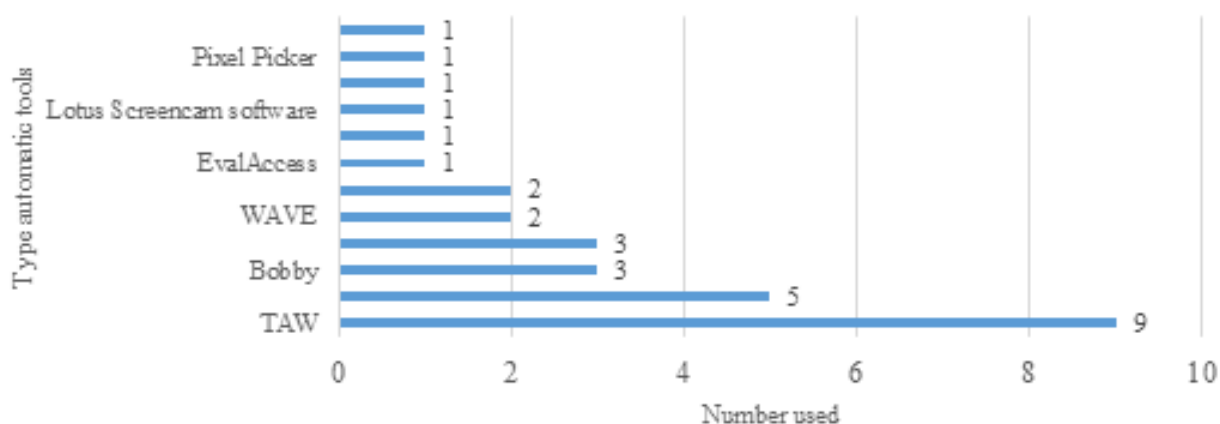
	No of web	No of apps	Type of evaluation		Type of method
Aizpurua et al., 2015	4	0	Qualitative. Exploratory study. Test with blind users.	Quantitative. Automated Web accessibility evaluation tools.	Combination of methods / Automatic tools
Dattolo et al., 2016	2	0	Qualitative. Case study. Literature survey and Interviews a group of specialized therapists and professionals. Preliminary test on a single user and finally test on a group of users.	Quantitative. Assessment questionnaire to the family of user.	Combination of methods
Eusébio et al., 2020	182	0		Quantitative. Automated Web accessibility evaluation tools.	Automatic tools
Fernández-Díaz et al., 2021	39	33		Quantitative. Exploratory study.	Automatic tools
García-Santiago & Olvera-Lobo, 2018	42	0	Qualitative. Analysis by experts.		Inspection methods
García-Santiago & Olvera-Lobo, 2021	78	0		Quantitative. Exploratory study. Automatic method using web tools and a manual method for more in-depth examination	Combination of methods
Poole, 2001	2	0	Qualitative. User test	Quantitative. Assessment questionnaire to the family of user.	Empirical methods / Automatic tools
Shi, 2006	66	0		Quantitative. Exploratory study. Automatic method using web tools. ANOVA analysis.	Automatic tools
Teixeira et al., 2021	344	0		Quantitative. Descriptive analysis. Automatic method using web tools. ANOVA and KruskalWallis analysis.	Automatic tools
Williams & Rattray, 2005	173	0	Qualitative. Web accessibility manual checks by experts	Quantitative. Automatic method using web tools.	Inspection methods / Automatic tools
Silveiro et al., 2019	182	0		Quantitative. Automatic method using web tools. Descriptive analysis and clusters using the Ward method. ANOVA	Automatic tools

	No of web	No of apps	Type of evaluation	Type of method
Leitner et al., 2016	89	0	Qualitative. Manual tests by experts and interviews	Quantitative. Automatic method using web tools. Inspection methods / Automatic tools
Madeira et al., 2020	0	14	Qualitative. Manual checks by experts	Quantitative. Automatic method using app tools. Inspection methods / Automatic tools
Nadal & Mayol, 2011	102	0		Quantitative. Automatic method using web tools. Automatic tools
Singh et al., 2020	57	0		Quantitative. Automatic method using web tools. Cluster analysis. NbClust technique (Charrad et al., 2014) Automatic tools
Domínguez Vila et al., 2017	210			Quantitative. Automatic method using web tools. Automatic tools
Caldas et al., 2020	15	0		Quantitative. Automatic method using web tools. Automatic tools
Casais & Castro, 2020	15	0	Qualitative. Structured observation and content analysis.	Quantitative. Automatic method using web tools. Inspection methods / Automatic tools
Dinis et al., 2020	0	0	Qualitative. Exploratory study. Observation by experts (Facebook, Instagram, Twitter and YouTube).	Inspection methods
Domínguez Vila et al., 2018	14	0		Quantitative. Automatic method using web tools. Cluster analysis. the Calinski-Harbasz index (CH) was applied (Dolnicar & Leisch, 2010). Automatic tools
Ferreira et al., 2020	212		Qualitative. Content Quality analysis	Inspection methods
Lestari et al., 2019	1	1	Qualitative. Content Quality analysis	Inspection methods
Ribeiro et al., 2018	0	14	Qualitative. Content Quality analysis	Inspection methods
Wu et al., 2014	1	0	Qualitative. Interviewed experts. Clusters analysis.	Inspection methods
Zajadacz, 2014	0	0		Quantitative. Questionnaire-based interview (292 Deaf individuals and 1780 hearing people). Statistical analysis using Pearson's Chi-square Empirical methods
Soler et al., 2019	318	0	Qualitative. Focus group, extensive literature review, formulation of semi-structured interviews. Target: Managers of properties	Quantitative. Questionnaire through telephone calls. Target: Managers of properties Combination of methods
Kolodziejczak, 2019	1	0	Qualitative. Case study analysis and literature review	Inspection methods
Mayordomo-Martínez et al, 2019	0	1	Qualitative. Case study analysis and development of a new mobile app is described. Heuristic evaluation from experts to perform the usability audit of the application.	Inspection methods

Notes: *Articles that do not analyze a website or app, but rather evaluate other digital media, either on social media or because they are more theoretical studies. In that case the number has not been specified and appears as zero.

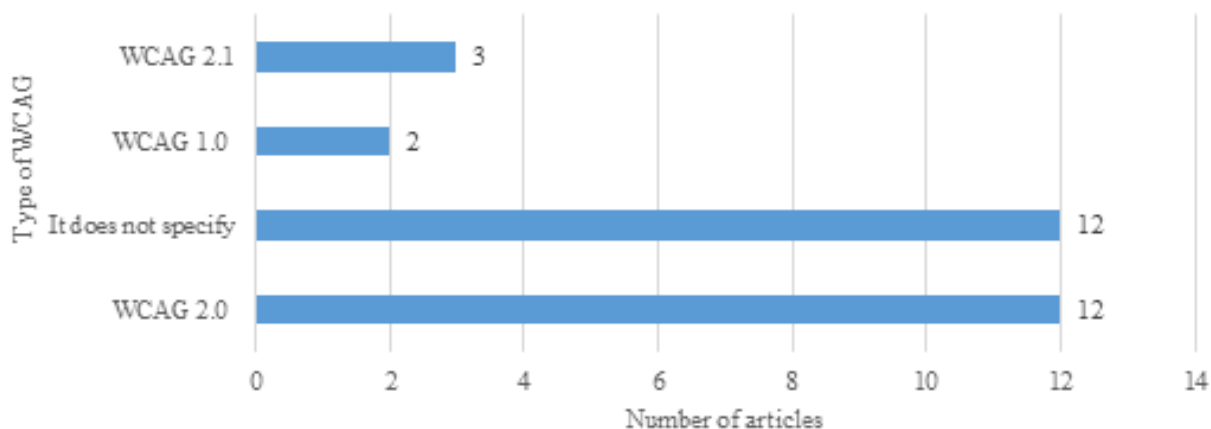
Source: Own Elaboration (2022) based on Kabassi (2017).

Figure 6 shows the data that answers the seventh research question on the type of automatic tools. The main tools were Taw (32%) and Access Monitor (17.8%), following by Bobby and Achecker (both 10.7%) and WAVE (7%), especially related to the analysis of websites. The next most used is Accessibility Scanner, more related to the evaluation of Android apps (7%).

Figure 6. Type of Automatic Tools Analysed

Source: Own Elaboration (2022)

In relation to the WCAG evaluated and answering to the eighth research question (Figure 7), the most evaluated so far are the WCAG 2.0, in 12 of the 28 articles analyzed (42.8%). It is especially relevant that almost half of the articles researched do not specify the type of WCAG used, or are based on other variables. Despite the fact that WCAG 2.1 are the international regulations in force since 2018, few studies consider it. In addition, there are 12 studies that do specify the level of the WCAGs that they have evaluated, of which 9 analyze the three levels A, AA and AAA. The rest study A or double A.

Figure 7. Type of WCAG Analyzed

Source: Own Elaboration (2022)

The ninth research question in relation to the keywords of the evaluated articles determines that the words that are most used in combination with others are “accessibility” associated with the concept “web accessibility” and “tourism” combined with the word “accessible” (Figure 8).

Figure 8. Main Keywords used for the 28 Articles Analysed



Source: Own Elaboration (2021)

5. Discussion and Future Research for 2030 Agenda

The main conclusion of this study is that all the articles analyzed comply with accessibility, whether it's a website, an app or another support. Moreover, it was found that, 100% present results that explain the non-compliance with the principles of accessibility in high percentages or in a large part of the variables analyzed. In addition, this study notes that the studies even coincide in the type of errors, both in the levels and in the principles of the WCAGs. For example, level A errors and problems in the perceivable and robust principals (Eusébio et al., 2020; Silveiro et al., 2019; Teixeira et al, 2021). All agree in their conclusions that accessibility is a pending issue in the digital field within the tourism sector. This study's results also contrast with other studies in other sectors where non-compliance with digital accessibility can be seen in 70%-100% of the websites analyzed (e.g., Alexander, 2003; Becker, 2004). From the public's point of view, it is especially notable that most studies focus on analyzing accessible compliance with digital media, but only a few complement such research with the opinion of other users who are directly involved, for example, hotel managers, public institutions, employees. Soler et al. (2019) is among the few exceptions, since they studied the level of knowledge hotel managers had about web accessibility.

Below is an example of the main conclusions and theories (Table 5).

Table 5. Main Theories and Conclusions as an Example of the Articles Analysed

Example of articles analyzed	Main theories and conclusions
(Aizpurua et al., 2015, p. 159)	"Non-accessible sites create more uncertain situations than the accessible ones, which suggests there is a relationship between the the lack of accessibility and uncertainty"
(Eusébio et al., 2020, p.180)	"[...] the websites of TA reveal several problems in relation to accessibility, particularly in the basic accessibility requirements (level A of the WCAG) "
(Fernández-Díaz et al., 2021, p. 888)	"[...] the percentage of non compliance with accessibility criteria is very high in DMOs in Portugal and, especially, Spain."
(García-Santiago & Olvera-Lobo, 2021, p. 1)	"[...] there is still much to do before complete web accessibility and usability at AA and AAA level can be achieved."
(Williams & Rattray, 2005, p. 78)	"The hotel web sites revealed very poor levels of accessibility in both absolute and relative terms."
(Silveiro et al., 2019, p. 18)	"[...] the Travel Agency websites reviewed have some accessibility issues, mainly in the WCAG basic requirements (level A)"
(Domínguez Vila et al., 2017, p. 9)	"[...] there are numerous issues and problems in accessing the information contained in the official tourism websites of countries around the world."
(Soler et al., 2019, p. 110)	"[...] only 1 out of three managers are familiar with the concept, most of them (67%) does not provide the customers with an accessible website [...]"

Source: Own Elaboration (2022)

Proposition 1: WCAG 2.1 should continue to develop the theoretical foundations to incorporate the evolution of the digital world.

Taking into account the previous literature on the current regulations of the WCAG and that the studies analyzed still based on the WCAG 2.0 (Eusébio et al., 2020; García-Santiago & Olvera-Lobo, 2021; Teixeira et al., 2021; Silveiro et al., 2019). Hence, it is recommended continue analysing the evolution of digital accessibility in terms of compliance WCAG 2.1 (in June 2018) (W3C, 2020), especially considering that the draft of the WCAG 2.2 were already available (since February 2020).

Proposition 2: Digital accessibility should not focus mostly on websites; they must also consider other media and / or digital supports.

Websites and the Internet are regarded as the most important sources of information on a particular destination (Choi et al., 2007; Doolin et al., 2002; Li and Wang, 2011). According to data from the market share in July 2023, they exceed 57.64% considering the sum of mobile and tablet vs desktop (Statcounter Globalstats, 2023). Therefore, the use of mobile phones and tablets in front of the computer is increasing more and more. There are studies that confirm the advantages offered by mobile applications accessible to people with disabilities during the trip (Hersh & Johnson 2008; González, 2013; Rios et al., 2012; Graham, 2013; Ribeiro et al., 2018; Strumillo 2010).

There are only two studies analyzed that look at websites and apps together (Fernández-Díaz et al., 2021, Lestari et al., 2019). In the case of the studies researched based on applications exclusively (without taking into account the web), it should be noted that there are only 3 representing 10.7% of the total publications evaluated in this study (Madeira et al., 2020; Mayordomo-Martinez et al, 2019; Ribeiro et al., 2018). In addition, social networks are another important medium as an online communication channel and there is only one study that contemplates it (Dinis et al., 2020).

In addition, work is already underway on a draft of the WCAG 3.0, which is more flexible in the face of new technological challenges, which indicates that the studies carried out are not aligned with the evolution of international regulations on accessibility at the time of analysis.

Proposition 3: The research methodology has to be adapted to the new tools and more complete forms of analysis.

On the methodology used in the results that were evaluated, it is observed that most of the studies are based on a methodology with automatic tools (Caldas et al., 2020; Domínguez Vila et al., 2018; Eusébio et al., 2020; Fernández-Díaz et al., 2021; Nadal & Mayol, 2011; Shi, 2006; Silveiro et al., 2019; Singh et al., 2020; Teixeira et al., 2021; Domínguez Vila et al., 2017); or inspection method (Dinis et al., 2020; Ferreira et al., 2020; García-Santiago & Olvera-Lobo, 2018; Kolodziejczak, 2019; Lestari et al., 2019; Mayordomo-Martinez et al, 2019; Ribeiro et al., 2018; Wu et al., 2014).

This type of analysis is important above all as a preliminary study of accessibility, in the case of automatic tools, or from the point of view of the expert, in the case of the inspection method. However, to more comprehensively complete compliance with digital accessibility on a website or app, for example, other types of studies are required that allow it to be evaluated taking into account the users themselves or their closest environment. Hence, it is recommended to combine inspection method with empirical methodologies (combination of methods), using only automated tools for preliminary analysis (Aizpurua et al., 2015).

In this way, the studies will have a more reliable result of accessibility compliance, since they involve the expert, the final public and rely on tools while checking it manually.

Proposition 4: Involve other stakeholders

For many years, PwD was one of the neglected market segments (Buhalis & Michopoulou, 2011; Figueiredo et al., 2012). However, it is a significant market segment for the tourism industry and very important for the economy (Dickson et al., 2016; Pagan, 2015; Pinho, 2015). Therefore, the concept of digital accessibility involves many different audiences within this tourism industry, not just people with disabilities.

According to Soler et al. (2019), only 1 out of three hotel managers know this concept and its importance. In addition, from the point of view of digital accessibility, 67% do not offer an accessible website to

their customers. From the point of view of institutions, García-Santiago and Olvera-Lobo (2018) suggest, “promoting an information campaign, aimed at any kind of entity responsible for disseminating World Heritage, about the need to adapt accessibility standards” (p. 33).

From the point of view of family and friends within the PwD environment, they are one of the main sources of information, apart from the internet (Domínguez, 2008). Hence, they are very important in projects on digital accessibility since they give their opinion from their own experience with PwD (Dattolo et al., 2016).

From the point of view of the 2030 agenda and Sustainable Development Goal 10, it is determined that there are still lack of studies on digital accessibility in the tourism sector focused on this area, since accessibility must not only be considered in the physical sphere, but also in the digital sphere, allowing access to digital content universally. According to Fernández-Díaz et al. (2023), in an analysis of the digital accessibility of European smart cities, it is determined that the analysis of the digital plane could provide important future practical implications that could complement the physical accessibility part of the cities in the tourism sector in compliance with the 2030 Agenda SDG 10.

Therefore, it is recommended to involve other stakeholders that are of interest, not only to obtain their opinion on the matter, but also so that they become aware of and can participate more actively in the area of digital accessibility.

6. Conclusion

This study aimed to understanding the digital accessibility in the tourism industry. Digital accessibility continues to be a challenge also within the tourism sector. There is a slight growth trend in the publication of studies in this area but the studies published in this industry related to digital accessibility are few.

Therefore, a SQLR process has been carried out through 28 articles that analyze the past and the present in this area, allowing us to develop the future research for 2030 agenda. For this we have based on a first descriptive analysis, authors, journals, affiliation, type of study, keywords and years of publication. This study found an increase in publications on this topic from 2019 and revealed the interdisciplinary nature of the digital accessibility concept, reflected on the diverse journals from different subject areas. This study also revealed that the theoretical framework relies mostly by researchers from Portugal and Spain countries. The results showed a balance between qualitative and quantitative studies, with a slight increase in quantitative ones, about all the inspection method type and through automatic tools (mainly with TAW and Access Monitor). Although the W3C updates the accessibility standards, the investigations continue using previous regulations WCAG 2.0, instead of WCAG 2.1. Among the main conclusions, it is highlighted that the studies show accessibility problems that must be solved, as well as important errors in the robust and perceptible principles. It is necessary to involve other audiences more to raise awareness about the importance of serving this segment in the tourism industry in the digital field. It is also shown that despite the passing of the years, studies on digital accessibility are mainly focused on the web part, and not so much on apps or other media. We are therefore faced with a digital challenge, since it is concluded that it continues to be ignored by many audiences, and despite the fact that it has been studied, the results reveal that its non-compliance is notorious.

Digital accessibility provides benefits not only to users who have a disability, but also to all users, for example, in the case in which they do not have a fast Internet connection, or they are elderly, and who have limited physical abilities. Therefore, these types of studies provide a deeper insight into the possibilities offered by this segment to the sector, thus raising awareness of its importance not only from an economic point of view, but also from a social inclusion point of view, complying with the Sustainable Development Goals (SDGs). Although the 2030 Agenda, SDG 11 and SDG 10 have raised awareness about the social importance of inclusion and sustainability within cities, it is determined that we still face a challenge in the field of digital accessibility. Similar conclusions were found by Rubio-Escuderos et al. (2021), Nitti (2018), Rucci et al. (2021) who could not show to what extent they are intelligent and accessible, but the results allow us to highlight the importance of convergence working along this line.

This study has not been exempting from some limitations, since within the initial search carried out in both databases, some of the articles selected by the abstract were not available in terms of the full paper, so they were eliminated from the analysis.

As a future line of research, the possibility of carrying out a bibliometric analysis that contemplates the evolution of the accessible tourism concept is proposed to determine its beginnings, and to be able to evaluate other aspects that do not focus only on digital accessibility, in a more detailed way and with a larger volume of data.

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Appendix A. Review protocol of inclusion/exclusion criteria or articles and their justification

Inclusion criteria	Exclusion criteria	Main justification
Studies that analyse digital accessibility in tourism context	Studies not analysing digital accessibility in tourism context (e.g., physical spaces)	Identify what type of analysis methodologies are applied within digital accessibility, type of media analyzed and determine the main trends and digital gaps in the tourism area.
Studies based on:	Opinion articles	To obtain conclusions on real practical cases applied to analyzes carried out within the tourism sector.
Theoretical research		
Methods Empirical (quantitative and qualitative research)		
Peer-reviewed journal articles	Books, book chapters, dissertations, research reports, conference proceedings, discussion paper, website documents, media articles and other non-research or peer-reviewed documents	To obtain studies with greater reliability and validity by peer review. Other documents were excluded due to the enormous volume of studies as well as articles from the media and other non-research documents.
Studies published at any time	None	The research seeks to identify research avenues, without any constraints regarding the date of publication.
Studies located in national and international databases	None	The location has not been excluded to have a more complete volume of studies.
Studies written in English, Spanish and Portuguese	Studies not written in English, Spanish and Portuguese	English is the most used language in academia, and Spanish and Portuguese are the native languages of the researchers in this article. In this way, a more exhaustive analysis can be carried out.
Studies focused on Social Sciences, Business, Management and Accounting, Psychology and Computer Science	Studies focused on other scientific areas	Other areas of analysis have been excluded since such a volume of articles makes the review process difficult. Furthermore, taking into account the subject matter analyzed, the main areas of study within digital accessibility and tourism have been taken into account.

Source: Own Elaboration based on Da Silva de Matos et al. (2021)