WEBSITE ACCESSIBILITY OF TRAVEL AGENTS: AN EVALUATION USING WEB DIAGNOSTIC TOOLS

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Abstract: Travel agents (TA) play an important role in the tourism system, providing information and intermediating the purchase of tourism products. The relevance of these players is higher to the accessible tourism market, due to the various environmental, attitudinal and informational constraints that people with disabilities (PwD) face in carrying out a tourism trip. To overcome some of the information constraints, communication channels, such as websites, used by TA, should be accessible for all people, regardless of their psychological and physical abilities. To accomplish this aim, in this study the website accessibility of (TA) located in the Central Region of Portugal was examined. Based on the Web Content Accessibility Guidelines (WCAG) 2.0, a sample of 182 websites was analyzed, considering the three-conformance level of WCAG (A, AA and AAA) and using two automatic evaluation tools (AccessMonitor and "Test de Accesibilidade Web"—TAW). Results show that the websites of TA reveal several problems in relation to accessibility, particularly in the basic accessibility requirements (level A of the WCAG). Moreover, several problems were identified, mainly in the perceivable and robust principals. The paper ends with some guidelines to increase the level of web accessibility of TA.

Introduction

Although several international, European and national laws and regulations highlight the right of people with disabilities (PwD) to have access to tourism activities, unfortunately, "tourism for all" is still not a reality. There are a high number of PwD that face several travel constraints which prevent them from participating in tourism activities (Allan, 2015; Daniels, Rodgers, & Wiggins, 2005; Devile & Kastenholz, 2018; Evcil, 2018; Figueiredo, Eusébio, & Kastenholz, 2012; Mckercher & Darcy, 2018; Poria, Reichel, & Brandt, 2009; Portales, 2015; Smith, 1987; Tao, Goh, Huang, & Moyle 2019; Kong & Loi, 2017). To increase the participation of PwD in tourism activities, it is of utmost relevance that all tourism supply agents offer accessible services. Although various improvements in terms of accessibility have been included in the tourism products offered by supply agents in recent decades, there are still many barriers, mainly attitudinal and informational, that need to be removed to increase the participation of PwD in tourism activities (Figueiredo et al., 2012). Travel agents (TA) play a vital role in the tourism industry, through the commercialization of tourism products, as well as for their role in representing a relevant information source to plan a tourism trip. In the case of PwD, the importance of TA is higher when compared with people without disabilities, given that their risks related to tourism trips are higher, and they face higher travel constraints. Therefore, all TA must be committed to the accessibility of their products (McKercher, Packer, Yau, & Lam, 2003; Özogul & Baran, 2016; Ozturk, Yayli, & Yesiltas, 2008; Teixeira, Eusébio, & Silveiro, 2019). However, the limited literature published concerning the accessibility of products offered by TA (e.g. McKercher et al., 2003; Özogul & Baran, 2016; Ozturk et al., 2008; Teixeira et al., 2019) show that various improvements should be

introduced to make the services of these tourism supply agents accessible for all.

The accessibility of TA depends on the physical accessibility of their facilities and products, as well as of the accessibility of information that they disseminate. Nowadays, the Internet is one of the most often used channels to disseminate information and to communicate with potential consumers in all tourism activities (Dinis, Eusébio, & Breda, 2020), including TA. Therefore, studies that analyze the accessibility level of information that TA disseminated through the Internet should be developed to identify improvements that are required to make this information accessible for all, independently of the personal and functional characteristics of the users. However, the studies in this field are very scarce (Teixeira et al.,2019; Dinis et al., 2020; Silveiro, Eusébio, & Teixeira, 2019). To overcome the research gap in this area, this study aims to examine the website accessibility of Portuguese TA located in the Central Region of Portugal and, based on Web Content Accessibility Guidelines (WCAG), propose revisions that should be introduced by web designers and developers to increase the web accessibility level of TA. Therefore, this paper intends to contribute to expanding knowledge on web accessibility of one important tourism supply agents with a crucial role in the travel planning process. The identification of problems in terms of accessibility level provides relevant insights related to communication and interaction with people with disabilities. Based on the issues identified, it is possible to define strategies to overcome these problems, contributing to facilitate the travel planning process of people with disabilities, and consequently encourage tourism for all.

To achieve the objectives mentioned above, the present paper is structured into five sections. After this introduction, a literature review concerning the role of TA in the promotion of tourism for all and about the web accessibility level of TA is presented. In the third section, the methodology used to select the websites analyzed and to examine the accessibility level of these websites is described. Chapter four presents the results obtained in the empirical study

carried out and some suggestions for improving the web accessibility level of the TA analyzed. Finally, the paper ends with the most important conclusions obtained, theoretical and practical contributions, limitations and further research.

Literature Review

The role of travel agents in the development of tourism for all

Although tourism is currently one of the most important economic growth activities worldwide, contributing 10% of the total employment and 10.2% of the total gross domestic product (GDP) (World Travel &Tourism Council, 2018), there are a significant number of people who do not have access to tourism activities (Darcy, 2010; Devile & Kastenholz, 2018; Lee, Agarwal, & Kim,2012). However, when people have access to tourism experiences, their quality of life and well-being tends to increase (Eusébio & Carneiro, 2014). Therefore, all barriers that prevent people from participating in tourism activities should be removed, not only due to legal obligations and social responsibility, but also because it represents a significant business opportunity. Despite all people facing travel constraints when carrying out tourism trips, some groups, specifically people with disabilities (PwD), face a higher number of travel constraints that prevent them from enjoying tourism experiences. However, this is an important growth market, representing about 15% of the world population (WHO, 2011). According to a study carried out by the European Commission (EC, 2014), in 2011, the number of people with access needs in the European Union was 136.8 million. In Portugal, the latest census (2011) showed that about 17.8% of the population have some difficulties in carrying out their daily activities (INE, 2011). The current size of the group of PwD, as well as its growth forecast due to population ageing, show that this marked increase should not be ignored. Moreover, it is an essential market for decreasing the seasonality level of tourism destinations and increasing the

economic benefits of the tourism industry, given that it is a loyal market that frequently travels in groups in low season and for long stays (Daniels et al., 2005; Dickson, Darcy, Johns, & Pentifallo, 2016; Kastenholz, Eusébio, & Figueiredo, 2015; Ozturk et al., 2008).

Accessible tourism, also frequently labelled "tourism for all", was developed to increase the participation of PwD and other people with special needs in tourism activities. Therefore, "accessible tourism enables peoples 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" (Darcy & Dickson, 2009, p. 14). To promote accessible tourism, all tourism supply agents (e.g. accommodation, transport, restaurants, museums, monuments, theme parks, tour operators and travel agents) should be involved in the development of adapted environments, products and services. However, the literature has revealed that a significant number of tourism destinations and tourism products offered are not accessible (Darcy, 2010, 2012; McKercher et al., 2003; Ozturk et al., 2008). As Buhalis and Michopoulou (2011, 164) state PwD are "one of the market segments that have been neglected by the tourism industry is the accessibility market". Moreover, the promotion of accessible tourism also requires that the person responsible for the development and management of tourism destinations and the tourism supply agents of these destinations should provide detailed, accurate and comprehensive information concerning the level of accessibility of their environments and services (Buhalis & Michopoulou, 2011).

In the tourism industry, TA have an essential role in the development of tourism for all. As McKercher et al., (2003, p.445) mention, this tourism supply agent remains "the primary source for people with disabilities to purchase travel products". The high relevance of this intermediary in the purchase of tourism products to PwD is related to the fact PwD face higher risks than people without disabilities. Therefore, all TA should provide physical accessibility in their environments and products, as well as information about

their accessibility level. However, as Michopoulou and Buhalis (2013) emphasize, although there is legislation in many countries that establishes the minimum requirements for ensuring the accessibility of buildings, information concerning these issues is often lacking or neglected.

Despite the relevance of TA in the development of accessible tourism, the literature in this field is very scarce. The few studies published (e.g. McKercher et al., 2003; Kim & Lehto, 2012; Ozturk et al., 2008; Özogul et al., 2016) clearly reveal that PwD are largely dissatisfied with the performance of TA in terms of accessibility. Mckercher et al. (2003) investigate if TA in Hong Kong are prepared to meet the needs of PwD and show that the TA are not prepared to cater for the needs of these people. On the same line, the Ozturk et al. (2008) study examines the perspective of TA about the ability of the Turkish tourism industry to meet the needs of people with physical disability. It was observed that, despite Turkish TA being willing to play a part in accessible tourism, these tourism supply agents have several weaknesses in terms of accessibility (e.g. staff work have insufficient knowledge to serve people with physical disabilities, lack of detailed information on travel opportunities and about arrangements for people with disabilities on their web pages) that should be overcome. Finally, Özogul and Baran (2016) analyze the relevance of specialized TA in meeting the needs of PwD. No studies are known concerning the accessibility of the information that is disseminated by TA. With the development of information and communication technologies (ICT), specifically the Internet, tourism supply agents, including TA, started to use various online communication channels such as websites and social networks. Therefore, it is of utmost importance that these online communication channels may be used for all people, independently of their personal situation or conditions of access. Consequently, TA and their websites should be completely accessible to facilitate the purchase of tourism products by PwD. Thus, if TA use accessible online communication channels, this may contribute to increased participation of PwD in tourism activities. In contrast, a non-

accessible online communication channel of TA may create obstacles to this participation.

Web accessibility of travel agents

The growth of ICTs and their role in the world of business has justified their widespread adoption by different types of people. In the tourism industry, ICTs can represent an important driving force in the current information society, since they enable new distribution channels and consequently promote new business environments.

The Internet represents the universal technology used by the majority of the population in the most varied contexts, with the web being one of the most often used services as a source of information. Specifically, in the tourism industry, the Internet has a crucial role in the dissemination of information, providing their clients with details about destinations, accommodation, transport, activities and other kinds of attractions of interest to the tourists (Domínguez Vila, Alén González, & Darcy, 2017). Also, the easy access to online content through the web contributes to the growing use of this kind of ICTs by tourists to plan holidays, trips and/or activities in a more independent way. Thus, the web represents an opportunity for TA to promote their role as global intermediaries and consultants offering integrated, high-quality travel solutions (Manente, Minghetti, & Mangilli, 1998, in Lang, 2014), and to create an online presence, boosting the promotion of their products for a geographically broader market and at a relatively lower cost (Needham, 1996; Travelweek 1997; Glab, 1995; Sheldon, 1997, in Lang,2014).

According to the inventor of the World Wide Web—Tim Berners-Lee—the power of this high technology is in its universality and in the principle that all people, regardless of their condition and disability, must have access to the information made available therein (Shawn & McGe, 2020). However, the information on the web does not reach all users in the same way, with this difference being furthered not only by the technology used to visualize the

web content, but also by the physical and mental conditions of the web users. There are a significant number of people that have some kind of disability, including motor (e.g. limited use of hands), sensory impairments (e.g. hearing and vision), or cognitive (e.g. learning disabilities) (Lazar, Dudley-Sponaugle, & Greenidge, 2004), which makes access to some kind of web functionalities and information more difficult.

Web accessibility is defined as the degree to which a site allows access to the largest possible range of users, including PwD or people that experience some kind of environmental constraints (Akgul & Vatansever, 2016; Mankoff, Fait, & Tran, 2005). However, to correctly access information on the web, some groups of PwD need to use assistive or add-on technologies, such as voice recognition, alternative pointing devices, screen readers, refreshable braille displays, and alternate keyboards (Paciello, 2000 in Buhalis &, Michopoulou, 2011). When the content on the web (e.g. websites) are designed and developed appropriately, the accessibility level improves and PwD can access the information more easily, eliminating certain kinds of difficulties and barriers.

To help in this matter, the World Wide Web Consortium (W3C) (W3C, 2018) created the Web Content Accessibility Guidelines (WCAG), one of the most important standards to support developers in making their websites more accessible; these guidelines are available in several versions—WCAG 1.0 (published in May 1999), WCAG 2.0 (published in December 2008), and WCAG 2.1 (published in June 2018) (W3C, 2018). The first public working draft of WCAG 2.2 has already been announced in February 2020 (W3C, 2020). Following these guidelines, it is possible to make web content more accessible to more people, regardless of their skills or knowledge, including people that may have some kind of disability or technical limitations (Akgul & Vatansever, 2016).

Especially in the case of WCAG 2.0, it was approved as an ISO/IEC 40500 international accessibility standard in October 2012 and is composed of 12

guidelines that are grouped into four general principles, i.e., perceivable, operable, understandable and robust (Akgul & Vatansever, 2016; W3C, 2018; Domínguez Vila et al., 2017; Mankoff et al., 2005; Domínguez Vila, González, & Darcy, 2018).

- Principle 1 (perceivable): the information and the components of the user interfaces must be present in a perceivable format to users, in ways they can perceive, regardless of their condition.
- Principle 2 (operable): the navigation process and the user interface components must be operable.
- Principle 3 (understandable): the operation of user interface and the information must be comprehensible.
- Principle 4 (robust): the content on the web must be robust enough in order to facilitate the integration of a wide variety of user agents, including assistive technologies.

Each of these principles has several guidelines, and each guideline can be evaluated using one or more success criteria, according to one of the three levels of conformity: (i) A—the minimum level with basic accessibility; (ii) AA—intermediate accessibility, which includes level A and adds the AA success criteria; and (iii) AAA—high accessibility, when it satisfies all of levels A and AA and adds a set of requirements related to AAA success criteria (W3C, 2018).

In order to assess good practices in web design and programming, there are a significant number of automatic tools, that represent software programs that can be used to check the website's accessibility level, considering the WCAG (Akgul & Vatansever, 2016). In fact, it is possible to find a vast number of automatic tools, commercial or open access, for analyzing websites, such as AccessMonitor, A-Prompt 1.0, AChecker, Amp, Bobby, EvalAccess 2.0, eXaminato, HERA, MAGENTA 2.0, TAW, WAVE, among others (Domínguez Vila et al., 2017). A list with 140 accessibility evaluation tools can be found in W3C (W3C, 2019).

Despite the vast number of automatic assessment tools, few studies have been carried out on this subject, specifically in the tourism field (Shi, 2006; Mills, Han, & Clay, 2008; Kuzma, Yen, & Oestreicher, 2009). However, more recently, some relevant studies have emerged which analyze website accessibility (Akgul & Vatansever, 2016; Domínguez Vila et al., 2017, 2018) For example, the study by Domínguez et al. (2017) analyzes the accessibility of official tourism websites from 210 countries based on WCAG 2.0. The results revealed that, despite the effort to provide accessible websites, there are still countries that should rethink their strategy regarding online accessibility, particularly in terms of compatibility with assistive technologies, navigability, adaptability and textual alternatives. Also, the study of Domínguez et al. (2018), which analyzed the accessibility of official tourism websites in a group of European countries, based on WCAG 2.0, to examine whether the policies and regulations related to accessibility online information are applied correctly, concluded that the countries with the worst results in terms of online accessibility, in a decrease order, were: Norway, Germany, United Kingdom and Finland. Very few studies have been found on TA related to the accessibility of websites (Teixeira et al., 2019; Silveiro et al., 2019), which increases the need for studies on this area, such as that described in this paper.

Methodology

Data collection methods

To analyze the accessibility of TA websites, the methodology used followed a multistage procedure. First, to identify Portuguese TA, the National Register of Travel Agents and Tourism (RNAVT) database from the National Registry of Tourism of Portugal[1] was accessed. Based on this database, 2,557 TA located in Portugal were identified. From these, 289 (11.3% of the total) are located in the Central Region. Secondly, to collect the websites' URL of the 289 TA, a search was performed on Google through the name (and brand), the address and contacts (telephone/mobile and email). Only 192 out of 289, which represent 66.44%, have a website, while 41 TA (14.19%) have no websites but have a Facebook page. The remaining 56 TA, which represent 19.38%, have neither a website nor Facebook and are therefore not considered in this study. Finally, 12 websites were merged into two because they belong to a network of agencies that use the same platform (website). Therefore, a total of 182 websites were analyzed in the present study, in February of 2019.

Data analysis methods

To analyze the data for this study that aimed to analyze the website accessibility of the TA located in the Central Region of Portugal, a literature review of published scientific papers on website accessibility (Kuzma, Yen, & Oestreicher, 2009; Akgul & Vatansever, 2016; Domínguez Vila et al., 2017; 2018) was performed. Based on this result, the most referenced tools to evaluate website accessibility were obtained. To complement this approach, a search on Google to identify tools that have been used to examine the

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[1] - https://rnt.turismodeportugal.pt

accessibility of Portuguese websites also was conducted. From these two steps, a set of tools with potential interest to be used in this research was examined. Thus, considering the features of the tools analysed, namely their representativeness in terms of use in this kind of studies (Mankoff et al., 2005; Domínguez Vila et al. 2018), their performance, and their free-access characteristics, AccessMonitor and the 'Test de Accesibilidad Web' (TAW) were selected to perform this study.

AccessMonitor[2] is an automatic tool provided by the Foundation for Science and Technology in Portugal that works according to WCAG 2.0, and the results are presented based on an accessibility report and a quantitative scale (AccessMonitor index). The values of the global index range from 1 (very poor web accessibility practices) to 10 (excellent web accessibility practices).

The TAW[3] is also an automatic online tool that checks the level of accessibility from a website based on WCAG 2.0 and presents the results in three categories: problems, warnings and not reviewed. In this study only problems and warnings were examined. To classify problems and warnings, the TAW tool uses the three conformance levels (A, AA, AAA), which were applied to assess web accessibility.

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[2] - www.acessibilidade.gov.pt/accessmonitor/

[3] - www.tawdis.net/

Findings and discussion

Characterization of the websites analyzed

A sample of 182 websites of TA located in the Central Region of Portugal were analyzed in this study, using two automatic evaluation tools (AccessMonitor and TAW). The results presented in Table 1 show that the majority of TA are located on the coast (71%), while only 7% of TA are located inland (Beiras e Serra da Estrela and Beira Baixa). Concerning the year of registration on the RNAVT platform, after the year the platform was created (2011), it was in years 2013 and 2018 that more TA were registered. This increase may be related to the growth of tourism activity that occurred in Portugal in these two years.

Table 1: Location of the TA analyzed.

Location			Registration in the RNAVT		
NUTS III	Number of websites	% of total	Year of registration	Number of websites	% of total
Beira Baixa	4	2.20%	**2011**	83	45.60%
Beiras e Serra da Estrela	10	5.49%	**2012**	7	3.85%
Médio Tejo	25	13.74%	**2013**	20	10.99%
Oeste	36	19.78%	**2014**	9	4.95%
Região de Aveiro	22	12.09%	**2015**	11	6.04%
Região de Coimbra	37	20.33%	2016	13	7.14%

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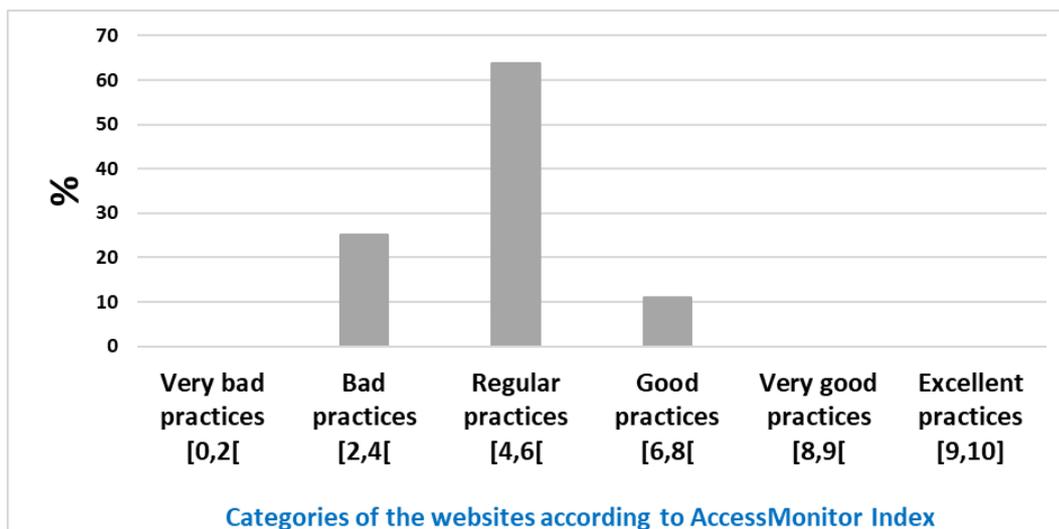| **Location**			**Registration in the RNAVT**		
Região de Leiria	34	18.68%	**2017**	16	8.79%
Região Viseu – Dão Lafões	14	7.69%	**2018**	23	12.64%
Total	**182**	**100%**	*Total*	**182**	**100%**

Level of web accessibility of TA using AccessMonitor

The results of AccessMonitor (Table 2) reveal a low level of web accessibility of TA. The majority of websites analyzed do not meet the levels of web accessibility required to be used by PwD. The global AccessMonitor Index varies between 1 (very bad practices) and 10 (excellent practices) and in this study, 2.8 was the minimum value obtained and 7.3 was the maximum, with a mean of 4.77. As can be observed in Figure 2, a significant number of websites examined (64%) are classified as regular practice (index between 4 and 5), only a limited number of websites (11%) are classified as good practice (index between 6 and 7) and 25% of the websites analyzed are classified as a bad practice (index between 2 and 4). There are no websites classified as very good practice (index between 8 and 9) or with excellent practice (index 10).

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Figure 1: AccessMonitor Global Index of Travel Agents' Websites

The number of errors identified on websites analyzed clearly reveal that PwD have great difficulty in obtaining information on the websites of TA. On average, 9.74 errors were detected on each website, with a maximum of 18 errors and a minimum of zero (Table 2). Regarding the degree of conformity (A, AA and AAA), the websites examined do not meet the minimum required in terms of accessibility (degree of conformity A), with an average of 7.14 errors for each website. Concerning the degrees of conformity AA and AAA, there is a maximum of 3 errors in both (and a minimum of zero). However, the degree of conformity AAA presents a higher average of errors for each website analyzed (1.57 errors).

Table 2: Results of AccessMonitor: Global Index and Errors

Stat.	AccessMonitor Index	Errors Level A	Errors Level AA	Errors Level AAA	Total (A + AA + AAA)
Mean	4.77	7.14	1.03	1.57	9.74
SD	0.982	3 090	0.783	0.849	3 696
Min	2.8	0	0	0	0
Max	7.3	14	3	3	18

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From the 182 websites analyzed, results also reveal that 99.45% have type A errors,74.73% have type AA errors, and 86.26% have type AAA errors. Therefore, in terms of compliance with WCAG 2.0, only 0.55% of the websites analyzed (equivalent to only one website) are in accordance with the lowest level of accessibility (level A) of WCAG 2.0, revealing that all the remaining 181 websites present problems in terms of accessibility which make it difficult for PwD to access information when planning their tourism trips. These results are in line with other studies that have used the AccessMonitor to evaluate the level of web accessibility (e.g. CEFA, 2012; Unidade ACESSO, 2013; IPL, 2018), revealing that the designers and programmers of the websites of TA should comply with WCAG to reduce travel constraints that PwD face in terms of information to participate in tourism activities. The information divulged by TA through their websites should be accessible to all people, independently of their needs, preferences, skills, and personal situations or conditions of access. Moreover, these results are also in line with those found in the study by Akgul and Vatansever (2016). They concluded that the vast majority of the websites analyzed—from the Turkish government—did not meet the minimum levels of web accessibility requirements.

Level of web accessibility of TA using TAW

The results presented in Table 3 were obtained with the TAW, concerning the three conformance levels (A, AA and AAA) of WCAG 2.0. On average, in each website analyzed, 124.52 problems were identified, with a standard deviation (SD) of 183.47, and 256.35 warnings (a possible problem that requires a human review), with a SD of 306.87. All websites have problems and warnings that should be removed to make these websites accessible to PwD.

Concerning the four principles of the WCAG 2.0 (perceivable, operable, understandable and robust), the perceivable and robust principles reveal the highest average of errors identified, both in terms of problems and warnings. In contrast, the understandable principle presents the lowest mean in terms of problems detected (21.21) as well as in terms of warnings (20.60). These

results reveal clearly that various interventions should be carried out on the websites of TA to increase their accessibility level.

Table 3. Problems and warnings identified with TAW

TAW	Principles	Min	Max	Mean	SD
Problems	Perceivable	**0**	260	41.70	64.71
	Operable	0	164	22.19	28.23
	Understandable	0	218	21.21	53.12
	Robust	0	254	36.84	56.83
	Total	2	722	124.52	183.47
Warnings	Perceivable	0	1391	105.62	158.00
	Operable	1	256	38.76	43.64
	Understandable	0	96	20.60	18.48
	Robust	1	1287	77.08	169.77
	Total	1	2716	256.35	306.87

A more detailed analysis of the problems identified in the websites of TA analyzed (Tables 3 and 4) show that the perceivable principle is the most critical issue with an average of 41.70 errors for each website analyzed. The "text alternatives" and "adaptable" guidelines have several problems, with an average of 22.43 and 19.27 errors for each website, respectively. A high number of the websites do not accomplish the following success criteria: (i) non-text content of the pictures, (ii) no caption; (iii) no audio description or media alternative; (iv) no colour contrast; and (v) no sign language. Therefore, the programmers and web designers of these websites should urgently introduce changes in the websites regarding the information and user interface components to facilitate the access by PwD.

The robust principle was the second principle where more problems were identified (mean = 36.84), revealing, for example, that people that use

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assistive technologies to access the content of websites have many difficulties accessing the information that travel agencies disseminate through their websites (Tables 3 and 4).

Table 4. Problems identified with TAW categorized in principles and guidelines

Principles	Guidelines	Min	Max	Mean
Perceivable	1.1. Text alternative	0	174	22.43
	1.2. Time-based media	0	0	0
	1.3. Adaptable	0	133	19.27
	1.4. Distinguishable	0	0	0
Operable	2.1.Keyboard accessible navigable	0	140	2.65
	2.2. Enough time	0	1	0.10
	2.3. Seizures	0	0	0
	2.4. Navigable	0	150	19.52
Understandable	3.1. Readable	0	1	0.51
	3.2. Predictable	0	14	0.59
	3.3. Input assistance	0	215	20.10
Robust	4.1 Compatible	0	254	36.84

Table 5: Warnings identified with TAW categorized in principles and guidelines

Principles	Guidelines	Min	Max	Mean
Perceivable	1.1. Text alternative	0	92	16.82
	1.2. Time-based media	0	9	0.50
	1.3. Adaptable	0	775	52.02
	1.4. Distinguishable	0	1172	36.74
Operable	2.1. Keyboard accessible navigable	0	140	53.75
	2.2. Enough time	0	0	0
	2.3. Seizures	0	0	0
	2.4. Navigable	1	256	36.15
Understandable	3.1. Readable	0	0	0
	3.2. Predictable	0	91	7.31
	3.3. Input assistance	0	82	13.29
Robust	4.1 Compatible	0	1289	77.08

The operable principle occupies the third position in terms of problems, with an average of 22.19 for each website. The user interface components and navigation of all websites must be operable to make information available to all people. However, the results obtained in this study reveal that the websites of TA present several problems concerning navigable guideline (mean = 19.52) and the "keyboard accessible navigable" guideline (mean = 2.65) (Table 4). Consequently, the users have several difficulties finding content and navigating the website. The "focus order", "link purpose" and "section headings" are the success criteria under the "navigable" guidelines with the most errors. Therefore, in terms of "focus order", when the users navigate sequentially through the content of the websites, they face constraints to finding information in a way that makes sense and has meaning for the user. Problems concerning the "link purpose" success criterion contributes to users

having difficulty understanding the purpose of each link to decide which link to use. Moreover, problems in this success criterion also hinder the use of assistive technology to provide users with the list of links that are on the website. Problems in terms of the "section headings" success criterion contribute to users having more difficulty understanding what information is available on the website and how this information is organized. Therefore, the headings on websites must be clear and descriptive to facilitate access to the information provided for PwD in TA websites.

Finally, although the understandable principle shows the lowest number of problems (mean = 21.21), the websites analyzed have several problems concerning the "input assistance" guidelines (mean = 20.10), specifically problems related to the success criterion "labels or instructions" (Tables 4 and 5). This success criterion intends to provide information or instruction to help users to explore the information provided on the websites without confusion.

The results obtained in terms of warnings are in line with those obtained in terms of problems (Tables 3 and 5). However, some differences may be identified again, the perceivable principle represents the highest average of incidents (mean = 105.62), followed by the robust principle (mean = 77.08), with the understandable principle emerging as that with the lowest number of incidents (Table 3). However, differences in the guidelines that are of the greatest concern were observed. For example, in the case of the perceivable principle (Table 4), no problems were detected concerning the distinguishable guideline; however, a significant number of warnings were detected (mean = 36.74) (Table 5). This result reveals that those responsible for the development of websites must introduce changes in TA websites to make it easier for PwD to see and hear the content of the websites, separating the foreground information from the background. When the websites permit users to separate foreground and background information, web-based information accessibility increases; for example, in the case of audio presentations, the foreground sounds should be louder than the backgrounds sounds, while in the case of visual presentations the information presented on the top of a

foreground must contrast with the information presented on the background. Compliance with this guideline is of utmost importance to facilitate access to TA websites, principally for people with visual disabilities as well as people with hearing disabilities.

Despite no study being identified that uses TAW to analyze the web accessibility of TA websites to compare the results obtained in this study, studies carried out in other types of organizations, such as the study undertaken by Domínguez et al. (2017) on official national tourism organizations and Adepoju, Shehu, and Bake 's (2016) study on government websites in Nigeria, also observed that the perceivable and robust principals were the most critical in terms of incidents registered. Moreover, the present results are also in line with those of the studies by Shi (2006) and Mills et al., (2008) who concluded that the websites analyzed failed in at least one WCAG criterion, making it difficult for users with some type of disability or special need to access and correctly navigate on the websites.

Although many countries have recently introduced specific legislation to implement web-based information accessibility (Roig-Vila, Ferrández, & Ferri-Miralles, 2014), their practical applications are still very unsatisfactory. Nowadays, a high number of web designers and programmers have been neglecting the principles of "design for all". This position has affected a large number of PwD who do not carry out a tourism trip because they face several constraints to obtaining the information they need from travel agencies' websites to plan their trips. In this context, as Roig-Vila et al. (2014) highlight, web-based information accessibility is "not only a necessity but also an ethical, social, political and legal commitment to be assumed by society".

Conclusions

This paper presented the results of an evaluation of the accessibility of 182 websites of TA located in the Central Region of Portugal using two automatic

evaluation tools. The findings show that a significant part of these websites does not address the issue of web accessibility, considering the conformance levels of WCAG, which include: (i) the basic requirements (A); the requirements that, although they do not represent a problem, can make access to information difficult (AA), and the requirements that may be addressed to web developers to improve access to website documents (AAA).

In general, the results revealed a low level of web accessibility of TA with the majority of websites analyzed without the accessibility which is required to be used by PwD. The results of AccessMonitor allow the websites to be classified as following regular practice, but there are a significant number of websites classified with bad practice, and no websites were classified as having very good practice or excellent practice. The results of TAW show a higher level of incidents in the principles: perceptible and robust, with understandable principle having the lowest average of errors identified, corroborating other studies in this field.

Given the conformance level, both tools used in this study detected a higher number of errors at level A (lowest level of compliance), followed by level AAA (highest level of compliance) and finally level AA. In fact, this reveals that many of the websites do not meet the basic requirements of web accessibility, which increases the difficulties and barriers for PwD using these websites.

In order to make the websites more accessible, complying with the requirements endorsed by the WCAG, and with some techniques considered as good practices (W3C, 2018), it is crucial to consider some recommendations, including: (i) providing text alternatives for any non-textual content to make the switch to other formats possible according to the needs of PwD (such as large print, braille, speech, symbols or simpler language); (ii) maximizing compatibility with current and future devices, including assistive technologies, and (iii) providing a mechanism to request a content update instead of automatically updating.

Despite the recognised relevance of increasing the level of web accessibility in the tourism industry to promote tourism for all, the number of studies in this area is still very limited. Therefore, this study is considered to make significant theoretical contributions, increasing knowledge in this field, as well as considerable practical contributions. Therefore, the contributions are essentially related to understanding the state of accessibility of the websites of TA located in the Central Region of Portugal and consequently to identify some actions that can be implemented to increase the level of accessibility of TA websites. This study also provides important insights to designers and developers of TA websites to facilitate the access of contents for all people, independently of their needs, skills and conditions of access.

Although the study contributes to the diagnosis and global analysis of the accessibility level of TA websites, some limitations have been found. The first is related to the type of method used to analyze the websites, which were exclusively automatic. So, although this kind of tools makes analysis easy, they usually establish the presence of valid elements or attributes, ignoring the perspective of the people that experience those situations. Another limitation is related to the dynamic nature of the content and information of the websites, which can influence the problems detected according to the period in which the analysis is performed.

Based on these limitations, in future work, we intend to complement this evaluation with the perceptions of the people that experience these conditions (i.e. domain experts), understanding the interactions that occur between the users and the web applications in a real context.

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