
**AN ASSESSMENT OF APPLYING THE QUALITY STANDARDS OF
TOURISM WEBSITES FOR PEOPLE WITH DISABILITIES
(APPLIED TO THE EGYPTIAN TOURISM AUTHORITY WEBSITE)**

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ABSTRACT

People with Disabilities (PwD) are one of the excellent opportunities for the survival of tourism in the future in many countries. When providing appropriate websites for special needs tourists, countries will be able to continue their itineraries and have a competitive advantage. The purpose of this paper is to contribute to assessing the Egyptian Tourism Authority website by utilization of the quality standards for special needs tourists and suggesting some key factors to improve the website to supply information and offers for them. This paper describes the requirements of special needs tourists in tourism websites for establishing the intention of purchase and making travel decisions and attempts to suggest some of the steps accessibility issues and the usage of website.

TAW WCAG 2.0 as an online analysis tool was used for analyzing the Egyptian Tourism Authority website to verify its level of accessibility of PwD. Furthermore, ten interviews with tourism experts were conducted to determine the most accessibility problems that face them in the website. Results revealed that the Egyptian Tourism Authority Website accessibility is very difficult for PwD as well as many criteria are not applied that enable them to access the site easily. This study suggested that web designers should develop the Egyptian Tourism Authority Website by incorporating the guidelines of web accessibility to access tourism information available to all PwD.

KEYWORDS: People with Disabilities (PwD), The Egyptian Tourism Authority Website, Web accessibility, Web Content Accessibility Guidelines (WCAG).

QUESTIONS OF THE STUDY

1. Who are People with Disabilities?
2. What is the importance of implementing W3C standards ?
3. How well does the Egyptian Tourism Promotion Authority's website apply W3C standards ?
4. What are the strengths and weaknesses of the Egyptian Tourism Promotion Authority's website application of W3C standards?
5. What are the main proposals for developing the Egyptian Tourism Authority's website to become suitable for disabled people?

INTRODUCTION

Some groups in many societies face different constraints to participate in leisure and recreation activities, although all citizens have the right to meet their desire and participate in these activities especially in tourism activities (Teixeira, Eusébio & Silveiro, 2019). Web accessibility, or the act of improving the access and the usage of websites by a wide range of users, some of whom may suffer from physical or visual disabilities, is becoming increasingly important across the globe.

In fact, web accessibility benefits all internet users as it improves the general usability of websites. It contributes to an increase in the usage and takes up of services overall. Added illustrations and captions are user-friendly. Selectable font size and clear organization of content improve accessibility for everyone. The aim of the study is to assess the Egyptian Tourism Authority website as an important government website representing Egypt to develop its performance and address the shortcomings, which contributes in increasing the tourism demand of Egypt. The objectives of this study can be summarized as follows:

- Analyzing the Egyptian Tourism Authority website in terms of applying the criteria to be adhered to reach the optimal web.
- Identifying the standards for removing barriers to accessing content on a website by people with certain physical impairments.
- Developing the Egyptian Tourism Authority website in order to implement World Wide Web Consortium's (W3C) Web Accessibility and ensure web accessibility.
- Spotlight on the importance of pioneering voice technology and Lifelike Text to Speech for Clients with disabilities.

LITERATURE REVIEW

PEOPLE WITH DISABILITIES (PWD)

Kastenholz, Eusébio, and Figueiredo (2015) mentioned that PwDs want to engage in recreational and tourist activities, but they are usually excluded. Accessible tourism is an example of specialized tourism that has been developed to meet and enable the participation of PwD in tourism activities. Furthermore, various international and national regulations on accessibility have been issued in order to ban discrimination against them in access to tourism services (Teixeira et al., 2019).

Bizjak, Knežević, and Cvetrežnik (2011) mentioned that the disabled tourist segments have become an important market and have been joined in an exceptional region just as travel agencies have seemed committed to them. According to the recent data by World Health Organization "WHO" (2021), around 15% of the world's population, or an estimated 1 billion individuals, are disabled who are the world's most numerous minorities. This statistic is rising due to population expansion, medical breakthroughs, and the ageing process. PwD make about 80% of the population in developing nations. Özogul and Baran (2016) clarified that Tourism products and services are offered to PwD, including mobility, hearing, vision, and cognitive elements of access independently with equity and dignity.

Although the emergence of assistive technology systems such as non-visual browsers and screen readers have offered greater support to this special group, they experience difficulty in accessing tourism information on e- websites (Kumar & Maniraja, 2012). Williams, Rattray, and Grimes (2006) clarified that PwD can reduce their dependency on others by accessing online information through assistive technologies. Kumar, Motupalli (2015) assured that the tourism enterprises have to provide accessible information to the disabled tourist segment on their websites when they have the travel desire, enough money, and assistive technology.

There are many studies such as Figueiredo, Eusébio, and Kastenholz (2012), Mesquita and Carneiro (2016), Wiastuti, Adiati and Lestari (2018), and Domínguez Vila, Alén González, and Darcy (2019) that analyse the needs of PwD, their motivations, their constraints, and their benefits obtained during practicing tourism activities or purchasing tourism products. Kumar and Motupalli (2015) indicated that many web designers use the latest web design technologies. As a result, PwD face many barriers. Web designers may be providing an attractive site for some

people, but they are unrealizable of the technology implications to other individuals.

Forward, O'Brien, Winograd, and Norman (2005) stated that when all persons can use all of the website pages effectively, it can be defined as an accessible website. For example, the visually impaired can easily read the website pages by screen-reading software by converting the text to either speech output or to a Braille display. Mills, Han, and Clay (2008) stated some problems that visually impaired tourists faced in the tourism websites such as many graphics, unexplained text links, annoying pop-ups, incompatible reservation forms, and excessive Macromedia flash formats.

WEB ACCESSIBILITY AND PwD

Figueiredo et al. (2012) stated that the special needs market is a very heterogeneous market since there are distinct requirements based on the kind and level of disability. For example, A person with vision impairment has quite different demands than someone with mobility challenges or hearing impairment. Therefore, the tourist sector faces a significant problem in supplying accessible tourism products to this market.

A significant number of online users who have a handicap such as vision, hearing, or mobility face more challenges that make access to certain features and information more difficult. PwD can access webpages using several ways of assistive technology, including hardware and software such as screen readers, speech recognition, alternative pointing devices, alternate keyboards, and refreshable Braille displays (Buhalis and Michopoulou, 2011).

Lazar, Dudley-Sponaugle, and Greenidge (2004) mentioned that Information and Communication Technologies (ICTs) have the main role in quick access to online information. Tourists can use websites to plan their trips or activities in a more independent way. Mankoff, Fait, and Tran (2005) defined the Web accessibility as the degree of accessibility of the largest possible people to a site, including some or all kinds of disabled people. There are several types of assistive technologies or add-on technologies that may be used to improve the level of accessibility on a website (Paciello, 2000).

Darcy (2010) clarified that it can achieve equity and dignity for PwD by the application of accessible tourism that enables them to access tourism. Akgül and Vatansever (2016) indicated that the W3C established the Web Accessibility Initiative (WAI) to provide accessible websites for individuals with disabilities. In this context, there are various studies evaluating websites' accessibility in different fields such as Ip, Law, and

Lee (2011), Conway, Brown, Hollier, and Nicholl (2012), Rafe and Monfaredzadeh (2012), and Sodhar, Bhanbhro, and Amur (2019).

There are many types of assistive technologies that help disabled tourists to access an accessible website (Armadita, 2014):

- Alternative keyboards, sip-and-puff systems, electronic pointing devices, trackballs, wands and sticks, and joysticks are examples of alternative input devices.
- Braille embossers transfer website text.
- Refreshable braille display.
- Keyboard filters.
- Speech recognition or voice recognition programs.

THE WEB CONTENT ACCESSIBILITY GUIDELINES (WCAG)

The first version of the WCAG (1.0) has been widely used as heuristics in website evaluations. It was produced in 1999 by the WAI, which is a component of the W3C, while WCAG 2.0 is the second version that was developed by a working group of the W3C in 2000 and became a formal recommendation in 2008. WCAG 2.0 requirements are regulated around four principles of accessibility that have 12 guidelines and 61 success criteria. Furthermore, A, AA, and AAA are its three levels (Rømen and Svanæs, 2012).

Armadita (2014) declared that WCAG is a guideline for web developers as a basis for accessibility for all people and especially persons with disabilities including blindness, learning deficiencies, deafness and hearing loss, restricted mobility, speech impairments, cognitive limitations, and photosensitivity. Bradbard and Peters (2010) revealed that WCAG 2.0 is developed to be approachable to more people and to be able to be tested more accurately. It includes the entire site by serving a larger scope of web pages.

WCAG 2.0 does not only include guidelines of web accessibility to people with disabilities but also includes issues that block harder access to the web for them (W3C, 2008). Akgül and Vatansever (2016) stated The WCAG 2.0 is one of the most significant standards for assisting developers in making their websites more accessible to PwD that was approved in October 2012 as an ISO/IEC 40500 international accessibility standard. There are four principles of WCAG 2.0 as follows (Gonçalves, Camarinha, Abreu, Teixeira, and da Silva, 2021) :-

- Principle (1) is perceivable: it includes criteria that allow the information and user interface components to be perceivable by persons, regardless of their disabilities.
- Principle (2) is operable: these criteria are linked to the operability of user interface components and navigation.
- Principle (3) is understandable: It involves user interface operation and information that must be intelligible.
- Principle (4) is robust: It indicates the robustness of the content, which can be understood by a wide range of user agents

There are certain guidelines for each of the four principles. Success criteria can use to evaluate these guidelines according to one of the three conformance levels (W3C, 2019):

- Level (A): This level fulfills all satisfaction criteria present in the initial level. It establishes a bare minimum of accessibility and limits broad accessibility for various situations.
- Level (AA): It meets all of the requirements in levels A and AA or provides an alternate version.
- Level (AAA): It satisfies all three levels' criteria or provides an alternate version that meets this level's requirements.

TAW WEBPAGE

Vila, González, and Darcy (2020) mentioned that there are various applications and online programs that can be applied to analyze web accessibility. These applications are evaluation tools based on the WCAG 2.0. TAW is an online tool for analyzing data on the level of web accessibility based on WCAG 2.0. TAW WCAG 2.0 is a web analysis tool that exhibits different strengths and weaknesses. TAW performs across different website and accessibility principles. It was used in many studies such as Verkijika and De Wet (2020), Karaim and Inal (2019), and Akgül and Vatansever (2016).

RESEARCH METHODOLOGY

This study depends on analyzing The Egyptian Tourism Authority Website accessibility using TAW WCAG 2.0 as an online analysis tool for this study. WCAG 2.0 recommendations help persons with disabilities including deafness and hearing loss, blindness and low vision, cognitive limitations, learning deficiencies, restricted mobility, and photosensitivity, speech impairments to access websites easily. Furthermore, ten interviews were conducted with experts to get a more comprehensive analysis of the

results supplied by TAW WCAG 2.0. Several jobs of Interviewees are social media administrator, a chief executive officer "CEO" of Digital Experts Marketing, Destination Marketing Expert, Chairman, professors and associate professors in the tourism field, and Economic advisor to the World Tourism Organization "WTO". The questions of interviews were based on the WCAG 2.0.

RESULTS AND DISCUSSION OF THE STUDY

TAW REPORT ANALYSIS

The TAW reports for The Egyptian Tourism Authority website showed many problems and non-applied essential criteria as follows:

THE FIRST PRINCIPLE: - PERCEIVABLE

Table No1. Perceivable Principle Analysis

Guideline	Level	Result
(1) Text Alternatives		
a) Non-text Content	A	Problems found
(2) Time-based Media		
a) Audio-only and Video-only (Prerecorded)	A	Not applicaple
b) Captions (Prerecorded)	A	Not applicaple
c) Audio Description or Media Alternative (Prerecorded)	A	Not applicaple
d) Captions (Live)	AA	Not applicaple
e) Audio Description (Prerecorded)	AA	Not applicaple
f) Sign Language (Prerecorded)	AAA	Not applicaple
g) Extended Audio Description (Prerecorded)	AAA	Not applicaple
h) Media Alternative (Prerecorded)	AAA	Not applicaple
i) Audio-only (Live)	AAA	Not applicaple
(3) Adaptable		
a) Info and Relationships	A	Problems found
b) Meaningful Sequence	A	Not applicaple
c) Sensory Characteristics	A	Not applicaple
(4) Distinguishable		
a) Use of Color	A	Not applicaple
b) Audio Control	A	Not applicaple
c) Contrast (Minimum)	A	Not applicaple
d) Resize text	AA	Not applicaple

Guideline	Level	Result
e) Images of Text	AA	Not applicable
f) Contrast (Enhanced)	AAA	Not applicable
g) Low or No Background Audio	AAA	Not applicable
h) Visual Presentation	AAA	Not applicable
i) Images of Text (No Exception)	AAA	Not applicable

(1) TEXT ALTERNATIVES

The results related to the perceivable information and user interface components showed that there are some problems. Non-text content is not accepted user input as well as it has no name that describes its purpose. Furthermore, the absence of non-text content and text alternatives. Non-text content faces many obstacles such as:

- It does not create a specific sensory experience.
- There are no various types of sensory perception for non-text content that they are provided to accommodate various types of disabilities.
- The decoration is usually used for visual formatting, so it is possible for assistive technology to disregard it.

(2) TIME-BASED MEDIA

The results revealed that there are no applicable alternatives for prerecorded audio-only or prepared video-only content that provide adequate information. Furthermore, with synchronized media, subtitles (prerecorded or live) are not given for all prerecorded media material. Some features are not applicable such as (see table 1): - audio description, audio description, sign language, and media alternative that are prerecorded for all prerecorded audio or video content in synchronized media. The website does not provide an alternative media that presents sufficient information for live audio-only content.

(3) ADAPTABLE

The process of presentation of information and relationships conveyed and programmatically determined considers one of the problems as well as the offered instructions do not rely on sensory properties of components such as form, size, sound, visual location, or orientation.

(4) DISTINGUISHABLE

The webpage cannot automatically analyze the usage of color by programmatic access to color and other visual presentation codes. The main success criterion is addressing color perception specifically. The results clarified that the control audio volume mechanism is not applicable independently from the overall system volume level. The distinction between text and image's visual presentation is inapplicable. Moreover, logotypes and resize text need more development as shown in table no (1). Special issues need to be checked such as the image of text that may be visually modified to the user's specifications, the contrast ratio of visual presentation of text and pictures is not less than 7:1, and the components of an inactive user interface are not visible to anyone. Some obstacles related to visual presentation such as the user cannot select foreground and background colors, assistive technology is required to resize text up to 200 percent, and Users must scroll horizontally to read a line of text on a full-screen window.

THE SECOND PRINCIPLE: OPERABLE

Table No2. Operable Principle Analysis

Guideline	Level	Result
(1) Keyboard Accessible		
a) Keyboard	A	Not applicable
b) No Keyboard Trap	A	Not applicable
c) Keyboard (No Exception)	AAA	Not applicable
(2) Enough Time		
a) Timing Adjustable	A	Not applicable
b) Pause, Stop, Hide	A	Not applicable
c) No Timing	AAA	Not applicable
d) Interruptions	AAA	No problems found
e) Re-authenticating	AAA	Not applicable
(3) Seizures		
a) Three Flashes or Below Threshold	A	Not applicable
b) Three Flashes	AAA	Not applicable
(4) Navigable		
a) Bypass Blocks	A	Not applicable
b) Page Titled	A	Not applicable
c) Focus Order	A	Not applicable

Guideline	Level	Result
d) Link Purpose (In Context)	A	Problems found
e) Multiple Ways	AA	Not applicaple
f) Headings and Labels	AA	Not applicaple
g) Focus Visible	AA	No problems found
h) Location	AAA	Not applicaple
i) Link Purpose (Link Only)	AAA	Problems found
j) Section Headings	AAA	Problems found

(1) KEYBOARD ACCESSIBLE

The results clarified that the accessibility of all functionality of the content without requiring keystrokes and using other input methods is not applicable. These criteria depend only on the underlying function such as text input, not the input technique such as handwriting that requires path-dependent input. Furthermore, the possibility of using a keyboard interface is not available for moving to all components of the webpage. Success of this criterion depends on users' ability to use the whole page.

(2) ENOUGH TIME

Time **LIMIT** is essential because it is an important part of a real-time event. It helps tourists to complete tasks without unforeseen changes in content or context. There are some time limit features that are not available on the websites such as turn off the time limit before encountering, warning the user before time expires. The moving, blinking, scrolling, or auto-updating information processes help disabled tourists to pause and hide it or to manage the frequency of the update. The results clarified that most elements of this criterion are not applicable as shown in table no (2), so it can affect tourists' ability to use the whole page. The results confirmed the website's ability to postpone or suppress interruptions.

(3) SEIZURES

The results reflected that the website does not provide flash features. The main success of the seizure's criterion is providing flashes less than three times in any one-second period and is less than the general and red flash thresholds. When web pages cannot meet this success, the criterion can affect tourists' ability to use their whole pages.

(4) NAVIGABLE

When webpages have titles described the topic or purpose and navigation sequences, they become more effective. There are some problems facing the evaluation of navigable criteria such as (see table 2): -

- The absence of a mechanism that bypasses blocks of repeated contents on multiple web pages.
- The absence of navigated sequentially inside the web page.
- Inability to detect the link intent programmatically by determining the link text alone or the link text along with the link context.
- Lack of the ability to provide multiple ways to locate a web page inside a collection of online pages.

THE THIRD PRINCIPLE: UNDERSTANDABLE

Table No3. Understandable Principle Analysis

Guideline	Level	Result
(1) Readable		
a) Language of Page	A	Problems found
b) Language of Parts	AA	Not applicable
c) Unusual Words	AAA	Not applicable
d) Abbreviations	AAA	Not applicable
e) Reading Level	AAA	Not applicable
f) Pronunciation	AAA	Not applicable
(2) Predictable		
a) On Focus	A	Not applicable
b) On Input	A	Problems found
c) Consistent Navigation	AA	Not applicable
d) Consistent Identification	AA	Not applicable
e) Change on Request	AAA	Not applicable
(3) Input Assistance		
a) Error Identification	A	Not applicable
b) Labels or Instructions	A	
c) Error Suggestion	AA	Not applicable
d) Error Prevention (Legal, Financial, Data)	AA	Not applicable
e) Help	AAA	Not applicable
f) Error Prevention	AAA	Not applicable

(1) READABLE

The results indicated that when these criteria were achieved, the default human language for the web pages might be determined programmatically for each phrase. A technique for establishing particular definitions of words or phrases that are used in a limited context includes idioms, terms, and abbreviations. Without understanding the pronunciation, the mechanism for improving individual word pronunciation is uncertain. The results of the analysis of The Egyptian Tourism Authority website indicated that most of these criteria were not applied.

(2) PREDICTABLE

The results indicated that when applied these criteria (Predictable), it does not initiate a change of context. Changing the settings of any user interface component does not automatically result in a change of context unless the user is informed of the behavior prior to using the component. Unless the user initiates a change, navigational processes that are repeated on many web pages within a set of web pages occur in the same relative order. The results of the analysis of the Egyptian Tourism Authority website indicated that most of these criteria are not applied.

(3) INPUT ASSISTANCE

The results indicated that when applied these criteria (Input Assistance), The item in error is recognized, and the error is conveyed in the text to the user. When material requires user input, labels or instructions are supplied. If an input error is identified automatically and corrective ideas are known, the suggestions are supplied to the user, unless doing so would risk the security or purpose of the material. Web sites that induce legal obligations or financial transactions for user-controllable data in data storage systems and submit user test results are required. The results of the analysis of The Egyptian Tourism Authority website indicated that most of these criteria are not applied.

THE FOURTH PRINCIPLE: ROBUST

Table No 4. Robust Principle Analysis

Guideline	Level	Result
(1) Compatible		
a) Parsing	A	Not applicable
b) Name, Role, Value	A	Problems found

Some of the aspects that are critical of applying these criteria are the content is implemented using markup languages, elements have full start and end tags, elements are nested according to their specifications, and elements do not include duplicate attributes. The results of the analysis of The Egyptian Tourism Authority website indicated that most of these criteria are not applied.

TOURISM EXPERTS INTERVIEW ANALYSIS

Individual interviews with experts who represent various tourism sectors were conducted and their results include a discussion of the interview data as they relate to the aims of the study. The interview results are introduced by a description of five significant issues that include: -

PERSONAL INFORMATION OF THE INTERVIEWEES

The results revealed that several jobs of interviewees are social media administrator, a chief executive officer "CEO" of Digital Experts Marketing, Destination Marketing Expert, Chairman, professors and associate professors in the tourism field, and Economic advisor to the World Tourism Organization "WTO". The answers showed that most of the participants have significant practical experience in the field of travel agencies' work. Since the most percentage (80%) have experience of more than 25 years as well as the smallest percentage has experience ranging from 15 to 25 years.

USER INTERFACE AND CONTENTS OF THE EGYPTIAN TOURISM AUTHORITY WEBSITE

The majority of the administrators indicated that The Egyptian Tourism Authority website does not provide information and user interface components in ways that special needs can perceive. They clarified the interaction with the website is missed and there are not many facilities to help PwD to navigate easily and obtain their needs. By providing these facilities, the website could attract this segment to visit Egypt.

All interviewees agreed that there are no text alternatives for any non-text content such as large print, symbols, speech, braille, or simpler language. It is very important to provide these alternative ways for accessing PwD to the website. Moreover, PwD cannot hear and see the content easily, and the content is not submitted in a simpler layout without losing information on the website. Furthermore, the majority of respondents agreed that the text content may be readable and understandable for some special needs

tourists, but there is a need to provide alternative input ways suitable for all PwD.

OPERATION AND ROBUSTNESS OF THE EGYPTIAN TOURISM AUTHORITY WEBSITE

The experts were asked to determine if web pages of the website operate in predictable ways and help special needs tourists during browsing the website. The majority clarified that the website needs to be developed for providing ways that facilitate the usage of the website and motivate special needs tourists for coming to Egypt. Expert answers showed that the content is not strong enough because a wide range of PwD cannot consistently understand it. There are many deficiencies in assistive technologies that help them to use them easily.

THE EGYPTIAN TOURISM AUTHORITY WEBSITE DEVELOPMENT

With regard to the ability of The Egyptian Tourism Authority Website for compatibility with current and future special needs agents. Most experts clarified that website needs to use sound messages and texts, and figures for achieving this compatibility. They assured that special needs tourists can operate all functions easily in the case of providing various inputs beyond the keyboard on the website. In addition to that, the website developers need to do their best to solve the difficulties to access information encountered during visiting the site.

Tourism Experts advise that web content developers pay attention access of all special needs to the information on the website during the development process as well as they suggest many recommendations as follows:

- The developers need to analyze other destination websites to see how they deal with special needs.
- The website needs update with high technical support from professionals .
- Many facilities for special needs must be added.
- Effective procedures are needed to be the website be in a better position.
- All the accessibility features should be periodically checked for accuracy.
- A suitable alternative text must be used.
- Websites must have descriptive and informative form labels.

CONCLUSION AND RECOMMENDATIONS

Web accessibility and its improvement for all people especially PwD became an important element for organizations and authorities to optimal use of sites and access to services easily. The paper aims to assess the Egyptian tourism authority website for overcoming potential accessibility issues confronting PwD. This research used a web analysis tool "TAW" for assessing the official website of the Egyptian tourism authority. Furthermore, ten interviews were conducted with tourism experts to reach the important problems and unimplemented standards related to access and use of the website.

The empirical results revealed that the interaction of PwD with the website is missed because facilities that help them to navigate easily and obtain their needs are lacking. The website is facing large technical problems. Moreover, the navigated sequentially inside the website, the possibility of using a keyboard interface for moving to all components of the webpage, and the various types of sensory perception for non-text content are not provided. The research recommends that developers must provide more various facilities to facilitate special needs site visitors' navigation. The websites should be compatible with these assistive technologies such as screen readers and other assistive technologies for accessing and modifying content through various senses.

For all of the above, E-services must be made available directly to individuals with disabilities and accessible from anywhere to facilitate the service for them, and in order to apply the principles of web accessibility, government tourism authority must pay attention to compatibility with assistive technologies: i.e., access to services and content without errors through the use of screen reading software or electronic interaction devices with the disabled.

Therefore, it is necessary for government tourism institutions to strive for accessibility of their websites and to provide their services accessible to PwD, where the logical organization of the structure of the website, which in turn facilitates access to information, Services and materials through lists, frames, forms and tables, also provides a better focus on the content of the structure of the site and the focus on access to its content are structured by following a set of standards developed by W3C, which works in conjunction with many organizations interested in the web to develop and develop accessibility standards through these companies.

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