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A Preliminary Analysis of Web Accessibility, Usability, and Security on the Front-Facing Webpages of Leading Universities:
Comparing the UK, Israel, and Africa

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ABSTRACT

University front-facing webpages, such as homepages and course entry details, provide essential information to prospective students and external stakeholders, necessitating accessibility, usability, and security. This study evaluates the web accessibility, usability, and security of 242 front-facing webpages from the top 10 higher education institutions in the UK, Africa, and Israel, based on Webometrics rankings. Automated tools were employed for assessment. Findings indicate that African universities require more work on web accessibility than those in the UK and Israel. All three regions violated accessibility success criteria, with most issues occurring at level A, the minimum standard for accessibility conformance. Over 80% of webpages scored at or above average in usability. The security analysis revealed numerous vulnerabilities in African and Israeli institutions' webpages, including outdated architecture, missing certificates, and lack of encryption. This study suggests that strict web accessibility legislation does not necessarily guarantee improved webpage accessibility.

KEYWORDS

Front-Facing Webpages, Universities, Web Accessibility, Web Security, Web Usability

INTRODUCTION

Web accessibility plays an important role in higher education, due to the rise in the use of digital services. Web accessibility equates to inclusion: An accessible website that adapts to the evolution of technologies (such as voice recognition, mobile accessibility, and artificial intelligence assistants), caters to different audiences, has a design that is inclusive to all, is linguistically diverse, and meets ethical and legal obligations can make a big difference to the experience of the user (Repasky, 2023).

University websites present information not only to current staff and students but also to prospective students and internal/external stakeholders, which may include donors. An exploration of the influence of university websites and a prospective student's decision to attend a given university found that websites needed to be attractive and to contain clearly understood content and readily navigable information on topics such as course offerings, locations, accreditation, and programs (Schimmel et al., 2010). These websites present the identity and the image of the university to the world (Macakoğlu & Peker, 2022). In 2022, researchers from Wiley University Services surveyed 2,500 prospective, current, and recently graduated online learners regarding what they looked for in

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an online course. One aspect that was highlighted in terms of supporting online learners is the need for education establishments to focus on their websites, especially their digital marketing channels, and to make important information such as tuition fees, course information, and admission information transparent and easy to access (Capranos et al., 2022)

Web accessibility does not simply refer to users with disabilities and should be focused on all users. Accessibility means that a user can access shared information, and it does not relate to disability (Rutter et al., 2007). This statement aligns with Berners-Lee's famous statement "The power of the Web is in its universality. Access by everyone, regardless of disability, is an essential aspect" (Web Accessibility Initiative, n.d.-a), which set in motion efforts to study and design webpages to ensure that they meet the needs of the user. Web accessibility promotes usability and a better user experience. Features that can benefit people without disabilities include the ability to adjust screen brightness in a dark/bright room, providing a presentation transcript to reinforce the information learned and offering captions for when a video is watched in a noisy environment (University of North Carolina at Greensboro, n.d.).

Legislation and policy have been used to form a framework for web accessibility. In 1997, the Web Content Accessibility Guidelines (WCAG) were published by the W3C, which consisted of checkpoints for use in the design of accessible webpages. Later versions included WCAG 2.0, published in 2008, WCAG 2.1, released in 2018, and WCAG 2.2, which was published as a W3C recommendation in October 2023 (Web Accessibility Initiative, 2024a). For each checkpoint, there are testable criteria for success at three levels: A (the least strict), AA, and AAA (the strictest). WCAG 2.0 contained 12 guidelines, whereas WCAG 2.1 contained 13 guidelines and 17 success criteria. In WCAG 2.2, a further nine success criteria were added. In July 2023, a working draft of WCAG 3 was released by the Web Accessibility Initiative (2024b) to keep up with the latest technological changes.

The guidelines for WCAG 2.0, 2.1, and 2.2 set out four principles to which web content must conform: perceivability, operability, understandability, and robustness. These are detailed in Table 1.

Table 1. Principles of web accessibility

Principle	Meaning
Perceivable	Information and user interface components must be presented to users in ways in which they can perceive them.
Operable	User interface components and navigation must be operable.
Understandable	The information and method of operation of the user interface must be understandable.
Robust	The content must be sufficiently robust that it can be interpreted by a wide variety of user agents, including assistive technologies.

The aim of this study was to explore the accessibility, usability, and security of the front-facing webpages of top universities in the United Kingdom, Africa, and Israel. The countries were selected to investigate how varying web accessibility legislation translates into compliance (or lack of compliance) for front-facing webpages of universities with also a focus on the usability and security of these webpages. Israel has strict web accessibility legislation, while the United Kingdom has strong web accessibility legislation, and Africa has a lack of unified web accessibility legislation, which is weaker than the United Kingdom and Israel. There exists a lack of studies that analyze accessibility, usability, and security of front-facing university pages.

Usability and security are seldom investigated in accessibility studies involving university webpages. Although recent studies such as those by Akgül (2021) and Macakoğlu et al. (2023) focused on assessing the accessibility, usability, and security of university webpages, those of institutions