

Chapter 3

Accessibility and Usability Evaluation of Digital Library Article Pages

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ABSTRACT

This study aims to present an exploratory study about the accessibility and usability evaluation of digital library article pages. For this purpose, four widely known digital libraries (DLs), namely Science Direct, Institute of Electric and Electronic Engineering Xplore, Association for Computing Machinery, and SpringerLink, were examined. In the first stage, article web interfaces of these selected DLs were analyzed based on standard web guidelines using automatic evaluation tools to assess their accessibility. In the second stage, to evaluate the usability of these web interfaces, eye-tracking experiments with 30 participants were conducted. Obtained results of the analysis show that article pages of digital libraries are not free of accessibility and usability problems. Overall, this study highlights accessibility and usability problems of digital library article interfaces, and these findings can provide the feedback to web developers in making their article pages more accessible and usable for their users.

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INTRODUCTION

Digital libraries (DLs) have emerged as a consequence of the advances in Information and Communications Technology (ICT). A DL serves a collection of documents in well-organized digital version to improve the access of user communities to information (Borgman, 1999). The explosive growth of the Internet has led to a flood of books, journals, and any types of research articles in electronic form. This abundance of digital resources such as journal issues, book chapters and conference proceedings in today's academy has put academic DLs into a critical position for research activities. With the increased availability of such massive amounts of electronic research materials, DLs present a platform for students, academicians, and researchers. In this context, most higher education institutions subscribe to academic DLs such as IEEE Xplore Digital Library and ACM Digital Library in order to get access their digital resources.

The highly usage of DLs removes the barriers to information access and enables many users accessing various academic materials simultaneously as well. Due to their importance in accessing research documents, numerous research efforts been made on DLs in the last two decades. In this context, service quality is one of the important practices and research areas in academic DLs (Zhang, 2010). Providing high quality service delivery to users plays a very crucial role in encouraging them to use DL services, and thereby it is a key factor in the success of a DL.

The major indicators that impact the quality of a DL are accessibility and usability (Bertot, Snead, Jaeger, & McClure, 2006; Saracevic, 2004). Accessibility can be defined as “the ability of a product, service, environment or equipment to be used by a large range of people with very different capabilities” (ISO, 2008). In this sense, interfaces should be designed based on the corresponding universal accessibility practices so that all potential users can have equal access and effectively utilize their digital resources on the same level. Another important characteristic for the success of DLs is usability. The International Organization for Standardization (ISO) defines usability as “the level of effectiveness, efficiency and satisfaction a certain group of users, of a product or environment, accomplishes for a specific purpose in a certain context of use” (International Organization for Standardization, 1998). When a website is hard to use, this may prevent users to visit that website again in the future (Matera, Rizzo, & Carughi, 2006). Therefore, it is important to make sure that websites are well designed so that users can easily interact with them and perform tasks on them successfully (Yan & Guo, 2010).

Academic DLs should be accessible to all users, with or without disabilities and have usable interfaces as well. Both factors are relatively essential for DLs to deliver high quality of services to their main targeted users. Hence, to ensure high level quality in academic DLs, it is crucial to evaluate both accessibility and usability of

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