Digital libraries and their applications in the Arab world: Uses, Challenges and Solutions

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Abstract

This work deals with a very important topic, which is the uses of the digital library in the Arab countries and the role it has become in the field of scientific research, especially since the world is witnessing today a great revolution in the field of information and communication technologies that it has never known before. In its first part, we will discuss the most important definitions of the concept of the digital library and the reasons for the researcher's use of this type of library and the facilities it provides to him. The second part of the work will present the most important challenges facing the use and spread of these libraries in the Arab world and their impact on both research and researchers.

1. Introduction

It is certain that the role and importance that the digital environment has become in the life of the individual. In addition to abolishing temporal and spatial boundaries, it has also led to changes in various fields, including education and research. Technological development and modern techniques and the great capabilities they have produced in the field of information production, processing, storage and retrieval have contributed to fundamental changes in the nature of information on the one hand and the forms of media it contains on the other.

Digital libraries are emerging as one of the most important and increasingly adopted applications in the world today, with the aim of utilizing them to raise the level and quality of teaching and learning and improve their effectiveness and thus outputs. It strives to acquire

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various sources of information, produce new sources of information, and establish channels of communication and dialogue between researchers, allowing a qualitative leap in the field of scientific research. He called for the growing volume of information, the emergence of electronic information sources in various forms, and the growth of researchers' needs to obtain diverse information in various fields and from different regions of the world, to the emergence of the need to develop information services available through digital libraries, which have become an important role through the books and scientific studies published electronically, which helps to save time and effort for the researcher in preparing scientific research.

Thus, digital libraries have constituted a permanent use for beneficiaries, especially university students and researchers, as a result of the unlimited time during which the browser can access information, Which previously ended when the traditional library's working time ended, in addition to getting rid of the issue of one copy, thus providing a huge amount of data and information in the least possible time and effort (Al-Dhafiri, 2013, p. 54). Thus, the digital library has become a support for education and an important source in its development, as it helps to review, understand lessons and increase academic achievement in a way that develops achievement capabilities and thus university outputs, and benefits the whole community. Despite all the benefits and positives that the digital environment has brought to both the individual and society, however, it is undeniable that there are difficulties and problems in their use, which in themselves pose challenges for both the researcher and digital applications. Therefore, we will try through this scientific paper to address the following points:

- What is meant by the digital library and what is the reasons for its use for the researcher?
- What are the challenges facing users of the digital environment in scientific research?

2. Digital Library and its Uses

Writing and codification of heritage were known in ancient times in different ways and forms, as they developed through the ages and led to the emergence of libraries, which became considered one of the most important landmarks indicating the culture and development of peoples. Libraries have flourished and diversified throughout the ages, as a result of the growing means of preserving data and information. Libraries were not limited to paper books, but also

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developed and electronic services emerged through which the beneficiary can obtain information under the supervision of the library administrator, as the library was known as a place to save books. It is the place of book and writing and is defined by the Oxford Dictionary as a room or a group of rooms, in which there are various books for the benefit of the general public or categories dedicated to reading and study (Tarawneh, 2013, p. 28). Thus, the nature of the services provided varies according to the diversity of the institution to which it belongs, including the university library, which is the basis of the university, because of its benefits and importance in scientific research processes. It provides services to faculty members, students and administrators and assists students in preparing their studies and research. Books, periodicals, theses, digital libraries, research and others are also available (Fadli, 2006, p. 41). The form of the library and its services have evolved to keep pace with the development of the times, to emerge new concepts and terms such as the digital environment, the digital space, electronic applications, the digital library and others.

1.2 The concept of the digital library

The concept of digital library is the subject of controversy and discussion among those interested, as the term digital library has different connotations and uses such as: electronic library, virtual library, interlocking library and integrated library (composite)... etc. I have published several definitions that clarify the concept of the digital library, some of which are presented below:

− Christine Borgman et al. point out that digital libraries are: "It is a collection of electronic resources and technical facilities associated with the production, research and use of information. These libraries thus become an extension and development of information storage and retrieval systems, which process digital data in any medium (text, images, sound, static and moving images) and available on distributed networks. The content of the digital library includes data and metadata descriptors that describe various forms of data such as originator, display, owner, copyright, and data specifications that consist of links or relationships to other data or other specifications both inside and outside the digital library" (Issa, 2006, p. 67).

− The administrators of the UK's INSPIRA project to design a digital library in religious sciences adopt a practical definition that emphasizes the importance of overlap and

networking for educational environments based on the use of digital library services. This definition explains that a digital library provides digital resources and services, and the digital information sources acquired by these libraries may take a variety of forms. The delivery of information services depends on the same skills as traditional information services: Such as evaluation, organization, storage, retrieval and availability. The digital library differs from a traditional library in that it does not rely on the idea of a physical location, but it provides scattered access points available online. They also provide access to sources in the locations they are connected to as much as they do their holdings. (inspiral, 2022)

– According to Ahmed Ali, the digital library is described as huge databases that contain many stored information sources and retrieval systems and allow data processing through multimedia, whether texts, images, sounds, fixed or animated graphics, which supports the beneficiary in dealing with information through information banks and networks (Ali, 2011, p. 651).

– (Bakir & Daraghmeh, 2018, p. 195) stressed that it is that library whose contents are represented by a set of electronic digital resources, which makes it not need a building, but rather is replaced by a set of servers and a connection network based on connecting it to the terminals of use. Digital content represents the set of knowledge materials that are being prepared for the purpose of publishing digitally on the Internet, in a documented and indexed manner to facilitate dealing with them and for the benefit of users free of charge.

Although there are many differences in the previous definitions, it can be said that the digital library is the default version of the traditional library, while overcoming the obstacles faced by the latter. It allows the researcher to browse electronically books, articles, magazines, photos, films and various sources of information that he needs in his research, which are organized and displayed via the Internet. In general, there are some basic characteristics of the digital library, which can be summarized as follows:

– The ability to store a huge amount of information sources.
– The diversity of forms of information media acquired by users.
– Managing the available sources of information in a decentralized (distributed) manner, which facilitates access to information for the largest number of individuals.
– Rely on participation and sharing of sources of information.

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- Use smart retrieval techniques.

- Providing information services that are not subject to the limits of space or time.

All these characteristics have worked to attract interested and researchers due to the services and facilities it provides in obtaining information as soon as possible and with the least effort, thus opening new horizons for scientific research by facilitating the process of interaction between researchers. Which leads us to wonder and research the reasons for their use in the field of scientific research?

2.2 Indications for the use of the digital library in scientific research

The digital library has many advantages that push users to adopt it to meet their various needs, including scientific research, and we will present the following the most important reasons for using these applications:

- The digital library is a system that provides, accesses, and maintains information over time. Thus, it enables easy access to and use of information by different individuals and according to educational needs, due to its high ability to store, organize, disseminate and retrieve data accurately and effectively.

- Mansour Al-Zamil's study in 2017 stated that it is based on the interest in increasing information sources, through the establishment of a library through which search options, information retrieval and access to all its contents are provided via the Internet, and work is done to control, organize and maintain it in an automated digital manner (Al-Zamil, 2017, p. 11). Thus, it provides the researcher with all the information he needs about the subject of his research in a timely and new manner (whether this information is old or new).

- It is considered an effective means in supporting the educational process and meeting the needs of individuals in higher education institutions and benefiting from the available electronic information sources, due to the books, periodicals, university theses, conferences and seminars that are indispensable in the educational process. In addition to providing lessons and lectures with explanations, it also provides work, exercises and applications that facilitate the process of perception and understanding of the student browser.

- Shih, Hwang, Chu, & Chaung, 2011, point out that the digital library contributes significantly to supporting educational goals, as capable of providing high-level sources of information, it can provide students with opportunities to exchange information, including inquiry-based

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− learning, enable them to investigate many scientific issues and develop their research capabilities. (Shih, Hwang, Chu, & Chaung, 2011)

− The digital library is characterized by its complete reliance on the computer, which saves time and effort in searching for information, while overcoming the spatial barrier of the traditional library. In addition, it plays an important role in enabling a large number of browsers to access the same version of electronic resources such as books and articles, compared to the relatively high cost of obtaining a printed copy of the same source. Therefore, the digital library makes us overcome the problem of a single copy that the researcher suffered from with the traditional library.

− Singh & Thapliyal (Singh & Thapliyal, 2015, p. 63) points out that digital libraries are characterized by connecting the user to other resources in other digital libraries in an easy and participatory manner. In addition to obtaining all the new information in a particular field without the need to fully examine the content to reach what the user needs. It enables the realization of distance learning opportunities for many students due to the large knowledge store and the ability to benefit from it across various devices.

− Digital libraries are characterized by dealing with different topics, providing the reader with extensive information on many topics. In addition, this information is often up-to-date as a result of interest in developments and the latest discoveries in various fields, and the ability to access information with ease. In addition to the ease of downloading content, that gives the reader the opportunity to read it at any time (Wady, 2018, p. 337).

From the above, we note how these libraries help the researcher in shortening the place and time by enabling him to access information via the Internet by entering keywords only. It also facilitates the use of the digital resource by more than one person at the same time, a service that traditional libraries cannot provide as the reference or only one user uses book. Digital libraries are also characterized by the fact that they provide the feature of "organization and storage capacity", as they facilitate the process of accessing a reference or part of it in a very short time, which facilitates the collection of a huge amount of information in a short time, reducing and storing it in applications and digital devices with a small space compared to traditional references and sources. All these characteristics allow the researcher to be aware of everything new in his field in order to achieve one of the conditions for the success of scientific

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research. However, despite all these advantages and features, the process of benefiting the researcher from these applications and libraries still faces many challenges.

3. Challenges facing digital library users in scientific research

Despite the widespread use of the Internet and digital libraries in Arab universities, it is undeniable that a set of challenges have become necessary for digital libraries and even users to raise and reduce their effects, especially in the field of scientific research. Among these challenges are:

− Despite the fact that digital libraries are distinguished from traditional ones by being more accessible and accessible without being restricted to a specific time or place, and are distinguished by their shortening of time, speed of search and ease of borrowing, the Arab researcher faces difficulties in using them: Such as the inability to browse it except from inside the university library, where the student cannot obtain information using digital libraries from anywhere he wants (Al-Ayed, 2020, p. 62).

− The lack of awareness in these countries of the importance of digital libraries due to the lack of information in this regard, and thus ignoring their role in providing many sources of information electronically, to enable students in particular to prepare research, which is a prerequisite in their studies. This may lead to a decrease in their ability to prepare good quality research, which negatively affects the development of their research skills.

− The problem of the language used in the digital library resources and the lack of sufficient resources in Arabic. We note that many students are not fluent in foreign languages, especially English, which is the most used language in the field of information and communication technology, which reduces their chances of benefiting from the mother of references, especially scientific information from its source. Another problem is the deterioration of the language level of university students (most of whom are almost fluent in Arabic). The problem that calls for serious guessing and trying to find solutions to it.

− Libraries are no longer just about making the materials they acquire, but also about providing access to networked digital resources regardless of the locations, they own. This entails fundamental changes in the nature of the library as an institution and the services it provides. This will also affect the type of skills that must be available in both librarians and users, as skills to deal with modern information and communication technologies, such as: The ability

to employ and use information systems, search for information on the Internet, apply modern methods in evaluating information, design web pages ... etc. (Naseer, 2022)

− The existence of obstacles related to the structural and technological aspect, such as the weakness of the communication network, the frequent interruption of the Internet or even its unavailability, the small number of computers or their malfunction, and sometimes the complete absence of halls prepared for digital research at the university level.

− The need to create the principle of complementarity between digital contents and those that still adopt the paper option, so that there is no imbalance between what is available digitally and what is available on paper on the one hand, and on the other hand, the need to work to achieve integration between intertwined sources of information, so that the researcher does not fall into the contradictions of the scientific proposal and to avoid the lack of scientific credibility that we face today in many locations.

− Difficulty in predicting the needs of beneficiaries: The continuous attention to the factors of flexibility and ease in facilitating users' interaction with the available information systems has led to a lack of ability to predict the needs of browsers, due to the increase and diversity of the elements and needs of the target community. Therefore, the expectations of surfers in the digital environment should be treated with some caution, as the majority of beneficiaries believe that they can always access "all the information" provided by information systems using simple search methods such as those provided by public search engines such as Google, so that they can constantly get the latest information, which is wrong. (Naseer, 2022)

− The need to use databases capable of accommodating the vast amount of information issued in the form of articles, reports, bulletins and books, in line with the characteristic of the era in which information is multiplied every two years.

− Education and training on the use of modern technologies Deegan & Tanner consider that the education and training processes will be of paramount importance in order to develop the managerial and creative skills necessary to provide information services in the digital environment. This represents a major challenge for academic institutions, which will bear the brunt of the burden to inform and teach students new facts and skills that will give them the ability to deal with the electronic environment with sufficient awareness (Deegan & Tanner, 2001, p. 09). Then develop the basic capabilities and skills required to work in such an

environment, such as: innovating new research strategies, evaluating websites, guiding and training beneficiaries, analyzing and interpreting information, digitizing information... etc. The reality has confirmed to us that investing in the field of human resources is one of the most important conditions for the success of the information system, as the intensity of changes in it (technology, devices, etc.) increases in a way that requires those working in it to be constantly and continuously informed of the various developments that occur in it, enabling them to perform their tasks to the fullest.

− Securing legal protection represented by intellectual property rights and copyrights, which are often the stumbling block to the republication of material contained on the digital carrier. The manifestations of this influence vary, as they emerge in several areas, the most important of which may be intellectual cultural production and scientific theft in particular, which has become one of the most important problems resulting from the spread of the use of the digital environment in scientific research.

− The existence of abuses in the digital environment embodied in the explosion of content without structuring or monitoring, which would make the browser of various digital sites vulnerable to what is termed "digital or media pollution", which is considered reprehensible by all standards. Thus, the bet becomes how to develop a technology or build a digital method that helps maintain the plurality and quality of information in digital networks (Yahya, 2016).

− The need to pay attention to the so-called "citizen journalists", who have emerged from successive generations of the Internet. They are not professionals in the conventional sense as much as they are ordinary people, but they play an active role in the process of collecting, storing, broadcasting, analyzing and disseminating news and information in all its forms and sizes (written, visual and audio), without respecting professional ethics such as advertising and documenting sources, bringing them from the original and sifting them and respecting the privacy of their owners. This greatly calls into question the sources of information available on these sites, and reduces the possibilities of their adoption, especially in the field of research (Yahya, 2016).

In general, it can be said that the adoption of digitization in scientific research faces many challenges, including what is related to the structural factor and infrastructure of providing an advanced digital environment such as a sober communication network that provides the Internet

at all times and everywhere, which gives the user's psyche a sense of reassurance and comfort in his work, as well as providing equipment and offices dedicated to digital research at the level of university libraries and other requirements that some may see as simple, but may create a difference in the outputs of scientific research. In addition to the challenges associated with the human factor of qualifying and training workers in this field to adapt them to the developments in the field, which are very fast, allowing them to provide high-end services and assistance to the researcher and research in general.

Conclusion

No one disagrees on the role played by university libraries in the Arab world in providing scientific heritage such as books, publications and articles in supporting and enriching scientific research. Like other scientific institutions, the university library has had to keep pace with the development witnessed by the field of modern technology, so that it can provide its services to users, at the forefront of researchers. Through this work, we have observed how the digitization of libraries aims primarily to support the functions of the traditional library and enhance searches to access information, by facilitating the collection of digital resources and working to provide a coherent organization for them, which helps to access large amounts of information in an easy, fast and high-quality manner, which contributes greatly to the development of scientific research. Despite all the difficulties and challenges facing the process of using these technologies, it must be recognized that we have to deal with them with all awareness and wisdom, and it is our duty to address the challenges associated with

. them so that the benefit and benefit from them increases. All these challenges require us to pay academic scientific attention to this subject and research it, to diagnose the current reality and then find possibilities that facilitate us to overcome the obstacles that may face us in exploiting and controlling it and then directing it towards achieving the interest of the researcher and society alike. On the other hand, it is not possible to talk about developing the use of the digital library in the absence of awareness among all actors in this field, of the need to provide it with financial support from the development of the digital network and continuous training for

professionals on the use of information technology, in order to provide high-end services to researchers and surfers in general. As for the Arab countries, it has become necessary to seek to link their libraries with foreign libraries to generalize the use of them and work on translating the contents into Arabic in a way that allows expanding the area of coverage for research needs and brings a large number of users who were suffering from the language problem.

References

- Al-Ayed, R. M. (2020). The Reality of the Use of Digital Libraries by Graduate Students at the Middle East University. *Master's Thesis in Information and Communication Technology in Education*. Jordan: Middle East University.

- Al-Dhafiri, F. M. (2013). *Faculty use of information sources.* Kuwait: Kuwait University - College of Education.

- Ali, A. (2011). Digital Library: Foundations, Concepts and Challenges. *Damascus University Journal*, 635-686.

- Al-Zamil, M. (2017). Academic Libraries in the Kingdom of Saudi Arabia Adopt Digital Libraries According to a Statement from the Point of View of Decision Makers. *King Fahd National Library Journal*, 5-56.

- Bakir, R., & Daraghmeh, M. (2018). A central project to link Palestinian school libraries with the central library of the Ministry of Education and Higher Education and Content Management digitally. *The Journal of the Association of Arab Univer*, 191-216.

- Deegan, M., & Tanner, S. (2001). *Digital Librarians : New Roles for the Information Age.* (M. Deegan, & S. Tanner, Eds.) London: Digital Features : Strategies for the Information Age. Library Association Publishing.

- Fadli, A. A. (2006). University Libraries Portal. *The Jordanian Journal of Libraries and Information*.

- *inspiral*. (2022, 03 22). Retrieved from inspiral: http://inspiral.cdlr.strath.ac.uk/

- Issa, I. (2006). *Digital Libraries: Theoretical Foundations and Practical Applications.* Cairo: Egyptian Lebanese House.

- Naseer, M. (2022, 03 15). *The Impact of the Digital Environment on the Preparation of Information Professionals: Challenges and Aspirations*. Retrieved from kenanaonline: http://kenanaonline.com/users/nassirmoussi/posts/394

- Shih, J., Hwang, G., Chu, Y., & Chaung, C. (2011). *An investigation - based learning model for using digital libraries to support mobile learning activities* (Vol. 29). The Electronic Library.

- Singh, S., & Thapliyal, S. (2015). Digital library and its advantages. *National Conference on Library Information Science and Information Technology for Education, 27th August, 2015.* New Delhi, India.

- Tarawneh, H. K. (2013). *Library and Information Center Science.* Amman: Dar Al Manhal.

- Wady, F. (2018). The Use of Traditional and Electronic Periodicals in Central Libraries in Iraqi Universities: A Survey Study. *Al-Ustad Journal*, 337-360.

- Yahya, Y. (2016). *The Challenges of the Digital Environment.* Retrieved 8 11, 2016, from https://arabi21.com/story/952506/تحديات-البيئة-الرقمية