

## “The Effects of Using Digital Data on Libraries”

**Researcher:**

**Kamla Muhammad Talab Abu Sila:**

city: Zarqa - District: Dhlail - municipality of Dhlail



## 1. Abstract:

The goal of this study was to look into the consequences of using technology and digital data in libraries. Two research questions were supplied and explored for the purposes of this study. For the academic year 2021-2022, the study participants were (150) undergraduate and postgraduate students from three institutions. It is a scientific research study. A survey was designed to collect data for this investigation. Due to the COVID-19 situation, many students have the option of using digital libraries to maintain their health, according to the conclusions of this study.

**Key words:** Information Communication Technology (ICT), Library Services, Digital age - COVID -19.

## 2. Introduction:

Libraries play a great role in meeting the information needs of users. For that, libraries need technology in their daily activities, considering the importance role it plays in sharing information. Technology helps the librarians to carry out their duties and services effectively. This research discusses the need of technology and new application in modern libraries system. It also discusses the benefits of this technology for both librarian and users. This study aims to assess the using of applications in libraries and how it affects in modern librarianship.

In the Digital Age, librarians cannot be simply information providers. Technological changes and the use of electronically stored information systems have changed the way students and researchers are able to access, retrieve and use information. The instantaneous access to information through the Internet has made vast amounts of information and data available to anyone.

The function of librarians is evolving as a result of digital information. First, they don't have to wait for pupils to ask for help in locating material in a library. Second, their new duty requires them to deliver services at all times and in all places. Rather than accumulating and sharing information with the public through workshops, orientations, and training, a librarian or information worker must be able to actively participate in the educational process. They must ensure that information is available to users in a timely manner. This is a complicated communication chain in which libraries and information systems play a key role. In this modern age, the information professional must be able to deal with the changing and complex environment for libraries, information systems, and services while focusing on current problems, developments, and solutions. They are unable to act unless they are familiar with new tactics and are educated about new approaches. Furthermore, librarians must understand how people connect to information in every social environment in order to provide effective information system services. Librarians must also be able to connect their clients to the information they need, regardless of where that information can be obtained. Librarians must be able to teach users how to use the Internet to find information. They are expected to assist in the separation of good from harmful information. As a result, they must be information managers.

### 2.1. Definition of a Librarian:

A librarian is a professional who works at a library and is in charge of its management and services. The librarian is concerned about the library's resources. Cataloging, collections administration, circulation, and a variety of services, such as reference, information, instruction, and training, are all common responsibilities of a librarian.

Librarians should have a strong background in library and information science. They assist in the provision of library services and typically hold a library science degree.

One librarian may be responsible for managing all functions of a small library, such as a school library, but large libraries almost always have a large staff to carry out different functions of the library based on their qualifications, experiences, and specializations, such as cataloging librarians, metadata librarians, electronic resources acquisition librarians, archivists, librarians, reference librarians, serials librarians, and systems librarians. Librarians are classed as school librarians, academic librarians, or special librarians depending on the sort of library they serve.

## 2.2. Information technology in public libraries:

Because of recent developments in the field of information services, retrieval, and dissemination (and reliance on services and new jobs), the concept of work in public libraries has changed. It has become a figure of modern technology that is a necessary alternative to detail the work of libraries and increase the level of performance and productivity. The emergence of information networks in our time, which has resulted from advances in the field of speech-mail between computer devices, has facilitated the exchange and transfer of information of all kinds across countries where libraries in colleges and universities have traditionally been competent to access information, management, and administration sources, and with the emergence of computers, information-related issues have become more complex. This recurrence may be owing to our failure to grasp the nature and prerequisites of technological change (Abo Eid, 2005).

The key issues arising from information technology in libraries began to emerge with the advent of systems of local libraries with direct on-line contact, and information networks within universities, and personal computers in offices, along with the increasing demand, largely from users of information from computers. Suddenly, all of the librarians foresaw certain issues while ignoring others. (Barracough, 1998; Berndtson, 2002; Chisenga, 2004; Abo Eid, 2005; Galluzzi, 2009; Glaser, 1997; Hammond, 1999; Barracough, 1998; Berndtson, 2002; Chisenga, 2004; Abo Eid, 2005; Galluzzi, 2009; Glaser, 1997; Hammond, 1999) Librarians hope to create a community by assisting the public's everyday information requirements and bridging the digital divide through their services.

The relevance of using information technology in public libraries has been emphasized in most research. It was the invention of printing, so it changed the course of human science completely. It cannot be compared to earlier ones prior to this significant event, which encouraged library enthusiasts to design classification systems and use scientific indexes and extraction methods. Today, we are witnessing a revolution in information and communication. We all know that the traditional procedures used in paper systems are no longer adequate to deal with the enormous increase in the volume of data that has reached previously inconceivable dimensions. As a result, experts must come up with a phrase to characterize this phenomenon (information explosion). Libraries can leverage today's current indexes and information retrieval systems, as well as their own, to provide this information to users at their offices or at home, making it simple to identify the book or article to be photographed and demand this. Libraries can create a modern optical system for archiving approaches to replace thumbnail film, allowing them to save images of essential articles, reports, magazines, and pamphlets, as well as enter and retrieve recent materials quickly. Libraries can also deal with modern digital electronic books, and they can get the most out of full-text information retrieval. The following section demonstrates how residents and communities' benefit from digital community services provided by public libraries, as well as how these services help to strengthen communities.

## 2.3. Online information systems in Jordanian university libraries:

The introduction of computers in the early 1940s, followed by their evolution in the 1950s and 1960s, and finally up to the present day, is a remarkable example of how scientific and technical advancement may affect practically every element of human life in every culture. Libraries and information centers are among the numerous organizations that need to computerize their tasks and operations in order to provide the best possible service to its users. Since we live in the "technology age," it has become harder to handle, let alone continue, technological information processing using traditional methods (Younis, 1999). To put it another way, libraries must embrace current technology in order to maintain their relevance in the information era, particularly in the face of competition from information networks like the internet. Electronic libraries (online public access libraries, CD-ROM databases (local area networks (LANs), and online searching will be examined as features of online information systems in Jordanian university libraries. Catalogues that are computerized (OPACs) An increasing number of library and information center catalogs are now available for searching online as a result of the use of computerized systems in libraries and information centers. OPACs are the acronym for online public access catalogs. These OPACs can be searched from within the library, at a terminal outside the library, or remotely via national and/or international telecommunications networks. The most recent development is the availability of these OPACs on the internet for authorized individuals to access. "Obviously, searching a library catalog from afar is a significant advancement in the utilization of library catalogs" (Hartley, 1990, p. 319).

Jordanian university libraries are keeping up with these technological advancements. According to Younis (1999), computerized systems based on the Arabic versions of the MINISIS and CDS/ISIS software packages were used by six (75%) of state university libraries and ten (90.9%) of private university libraries. According to the study, these packages were used by all of these libraries for technical processing operations (cataloging and classification). All of these libraries have created OPAC catalogs that are fully automated. The survey also found that technological processing was mostly focused on

monographs, which made up the majority of library materials records (86.3%). Periodical records make up a minor portion of the total number of records (10.1 percent). Other sorts of records (audiovisual, microforms, manuscripts, etc.) make up a small percentage of the total (3.6 percent).

Jordanian university libraries use either a locally built system or a globally developed integrated package. The University of Jordan Library (UJL) is one of a kind in that it has created its own local system, which was constructed by the university's computer department. Three other state university libraries, the Al-Hussein bin Talal University Library (Sahtoot, 2001), the University of Science and Technology Library (Kasasbeh and Al-Hammouri, 2002), and the Balqa' Applied University Library (Abdul Halim et al., 2002), as well as the private Isra' University Library (Mansour and Al-Abboushi, 2002), have developed their own systems based on the Oracle programming language. The director of that private university library stated that the library is now utilizing MINISIS, but that it is experimenting with a newly designed system based on the Oracle database with the university's computer department's assistance. The Arabic version of MINISIS is used by both Yarmouk University Library (YUL) and El-Hashmiyah University Library (HUL). YUL and the Philadelphia University Library have recently upgraded to the latest version of MINISIS, the mini version M2L. Technical processing, lending, acquisition, serials control, reference services, and queries are only a few of the library and documentation functions and services that these systems are built. MINISIS (M2L) has clearly superior functionality. M2L is being tested in two large public libraries: Abdul Hameed Shoman Public Library and the Greater Amman Municipality Public Library.

Databases on CD-ROM (LANS) Electronic alternatives and internet searches have previously been restricted to a small number of Jordanian libraries. The Royal Scientific Society (RSS) library, the University of Jordan Library (UJL), Yarmouk University Library (YUL), Jordan University of Science and Technology Library (JUSTL), and the National Information Center all provided online searching services (NIC). The Yarmouk University Library was the first to implement a CD-ROM-based local information system (LAN) (Akroush et al., 1993, p. 9). Jordanian academic libraries have established CD-ROM collections of databases, directories, and books. The University of Jordan Library (JUL) and the Yarmouk University Library are two Jordanian university libraries that use CD-ROM-based LAN systems (YUL). JUL did not adopt an automated system for the maintenance of bibliographic databases until twelve years later (El-Shafi', 1998), while YUL did it in 1986 (Sotari, 1997). It's worth noting that JUL began acquiring databases on CD-ROM in 1993, whereas YUL began two years earlier. In 1993, YUL established a LAN based on CD-ROM databases, and in 1998, JUL established a LAN based on CD-ROM databases. Through 11 CD-ROM players connected to four workstations, the YUL system gives users access to 13 CD-ROM databases. The library's network has been upgraded to allow all faculties on campus to use it (Sotari, 1997, p. 20). Using the JUL system, the library was able to create a LAN that connected roughly 25 branch libraries, reading halls, and scientific research centers on campus, as well as some academic and administrative offices (El-Shafi', 1998, p. 6). Both systems offer remote database searching, access to the libraries' automated catalogs (OPACs), and the ability to search databases on CD-ROM for their respective users. Medical, chemistry, biology, physics, mathematics, education, the social sciences, agriculture, engineering, science, and technology are among the topic areas covered by these websites.

Future CD-ROM database applications electronic information sources can be accessed by libraries all over the world via network tapes, CD-ROMs, or the internet. Rather than enabling online searching of external databases, many libraries have established database collections on CD-ROM. Databases (whether in networks or on CD-ROM) are increasingly being made available via the internet. In addition to print editions, books released on CD-ROM are becoming more widely available on the internet. This stride forward in book publishing is a precursor to electronic books, which are now available on the internet (Barker, 1992). Furthermore, electronic journals are forcing libraries to move to online (i.e. internet) access rather than expanding their print or CD-ROM journal holdings. OCLC is the most well-known online service now available to libraries. Digital full-text access to almost 5,000 magazines is possible via other commercial providers. The First Search service will increase access to the full articles in electronic journals available through the OCLC's FirstSearch Electronic Receivables Online service by linking those articles to abstracting and index databases throughout the system, according to Nilges (1999, p.38). As a result of these modifications, any library that uses New FirstSearch can now give full-text access to electronic journals from Electronic Collections Online. The integration of Electronic Collections Online with FirstSearch brings together the increasing Electronic Collections with all of the ASCII full-text databases already available through the FirstSearch services. These resources combine to provide access to over 5,000 different titles.

In light of these developments, academic library directors in Jordan, as well as in other areas of the world, are rethinking their long-term objectives. Librarians have been shifting away from developing holdings and toward giving access to information, either through online means or by developing LAN systems based on CD-ROMs, for some time. Libraries have been eager to adapt new trends as information sources become more freely available through more convenient media. The

internet is now being used as the primary gateway to information sources. The internet is becoming more convenient and less expensive than traditional options for accessing information sources. Furthermore, many CD-ROM databases are out of current as soon as they are released, if not sooner. Information is constantly updated in a text-based, real-time environment for internet users. At this moment, the future applicability of CD-ROMs is unknown. As more databases become available on the internet, librarians have posed the issue, "Will the internet replace CD-ROMs as the primary source of information?" (El-Shaf'i, p. 11 in El-Shaf'i, 1998). Comparing the fees paid to access databases through the internet with the subscription rates for databases on CD-ROM raises more questions. Until rational answers to these concerns are discovered, future applications will be limited.

#### 2.4. The developing role of librarians in a digital age:

Academic scholars use online sources to begin their study in the digital age. It is critical for librarians to keep up with this transition because it is so obvious.

The growing importance of technology in libraries has a significant impact on librarians' evolving jobs. Librarians in the twenty-first century must be quite familiar with technology advancements. To make the library more popular and useful, new age librarians are using technology into the management and services of the library. New generation librarians are high-tech information experts who are also good communicators, assisting people in finding information in books and digital records.

#### 2.5. Advantages of using information technology in libraries:

The use of information technology (IT) in libraries provides a lot of benefits. According to Igbeke (2008) and Adeleke (2014), the following are some of the advantages of IT in library services:

1- Assist researchers with their literature review needs.

2-To establish and supply new services, as well as revive existing services by allowing speedier access to resources and overcoming space and time constraints.

3-The Online Public Access Catalogue (OPAC) is a computer-based system that helps library users catalog library materials.

4-To give users with customized browsing and search services based on their needs. CDs containing a vast number of databases. Libraries have been helped by computers, which have created a digital library that takes up minimal room but has a vast storage capacity. Capacity

5- To make better use of the employees so that greater information services can be provided. To retrieve and disseminate information in a format that the user specifies.6-To improve the skills of professionals. Information is retained and conserved over a lengthy period of time with no degradation in picture or quality.

7-To increase local networking and resource sharing.

8-Ordering, checking for duplicate books, price, and ordering are all done extremely efficiently with the use of ICT.

9-Access to a number of national and international periodicals that are only available in machine-readable format. To save space and preserve the records by digitizing them.

10-To collect, store, manipulate, and disseminate data.

11-To make library functions more efficient.

12-Assists with serial control by producing a union list of serials and distributing it by e-mail to branch libraries in various places.

The goal is to make library operations more cost-effective.

13-To assist with library duties such as circulation, serials control, acquisition control, stock control, and other normal office tasks, as well as the development of an internal database. Maintenance: To have access to other libraries' catalogs and databases via library networks. Integration of library services on a global scale. Because of the Internet, everyone has access to information. Increased innovation and the conversion of knowledge from hardcopy to softcopy books. The library's ideology has shifted from being a physical structure that houses books to a database that provides universal access to information.

14-By storing, retrieving, and discriminating information in real time, it has improved the library's services and organization. Thereby staff have greatly benefited from library automation.

### 3. Literature review:

Jordanian libraries and information centers have recognized the significance of automation in improving their user services. New approaches to library resources selection and acquisition, subscription methods, and reference services have all evolved from the deployment of digital technologies. Information and full-text publications that could not otherwise be accessed have been available thanks to online searching of remote databases in networks. "By implementing computerized information systems, libraries and information centers will be able to complete the objectives they demand while also offering better and more cost-effective services" (Younis,2002a). Jordan began automating libraries and information centers in the mid-1980s. Several research on the usage of computer-based technologies in Jordanian libraries have been done.

According to research conducted by Younis (1990), only one of the three state university libraries was automated in 1986. The study also discovered that ten (3.9 percent) of the 255 libraries assessed used automated systems in technical processing, acquisitions, information services (CAS, SDI), and administration. There was only one academic library among these.

Other research looked into the extent to which the Arabic software packages MINISIS and CDS/ISIS were used. In 1992, Younis (1992) looked at a sample of 41 libraries that were known to be employing computerized systems at the time. Three (10%) of the 30 (73.2%) respondent libraries (three of which were academic) were utilizing the MINISIS package, 18 (60%) were using CDS/ISIS, and nine (30%) were using customized programs.

According to Bakhit (1991), 60 libraries of various sorts had purchased the CDS/ISIS package by 1991, but only 35 (58.3%) of them had used it to create 78 bibliographic databases and 12 non-bibliographic databases (i.e. directories).

The goal of El-(1995) Kharouf's study was to assess the CDS/ISIS systems deployed in Jordanian libraries and information centers from the perspective of the users. The evaluation looked into four main areas: the package's simplicity of use, user friendliness, problems encountered, and user attitudes. Only 50 (66.6 percent) of the 75 libraries that had purchased the system by 1994 had actually deployed it, according to the report. The study revealed (as did Bakhit's earlier study) that the system's apps were mostly used to create academic and semi archives (121). (7). Participants tended to create separate, language-oriented databases for Arabic and English texts, according to the study. Users' sentiments toward the system were found to be favourable in the study. They thought the system was efficient, but not up to par in terms of customer pleasure.

Another study (Younis, 1999b) looked into the impact of automation on the organizational structure and technical and administrative services of university libraries. The impact of automation on technical and administrative services was demonstrated by the development of a computer applications department in nine of the seventeen (52.9%) libraries studied. The study stressed the importance of developing software packages that are tailored to the needs of Arab libraries, as well as developing training programs for academic staff and establishing network connections. The study also found that electronic databases on CD-ROMs are used by five out of seven state university libraries (SULs) and six out of eleven private university libraries (PULS).

According to research conducted by Abu-Eid (1998) on the accrediting standards of private university libraries in Jordan, eight out of twelve (66.7 percent) used the CDS/ISIS package, while the other four (33.3 percent) used MINISIS. One of the latter libraries, he noted, was using both packages at the same time.

All university libraries, both public and private, were automated by the end of the twentieth century. This is demonstrated by their purchases of non-traditional information sources such as CD-ROMs and subscriptions to internet databases and services. Connecting to the internet is the latest trend. Most academic libraries in the country were connected to the internet by the year 2000. Younis (2002b) looked into the benefits, services, and applications of the internet in 18 academic libraries, as well



as its impact on acquisitions, library organizational structures, administration, expenses, and services. The results revealed that 13 (86.7 percent) of the 15 (83.3 percent) libraries that answered were connected to the internet. It was used for technical purposes, as well as information services and web sites. The study found that head librarians saw the internet as a supplement to library holdings, a replacement for CD-ROM databases, and a method to save money on printed journal membership fees, but not as a replacement for printed books. The internet had an impact on employee satisfaction and motivation, service delivery speed and ease, user contentment, and turnaround times. Budgets for libraries were the area where it had had the least impact.

#### 4. Research question:

The study is concern with the following questions:

1. What are the most changes that happened for libraries through the last years?
2. What are the advantages and disadvantages that occurred after this change?

#### 5. Methodology:

For the purpose of this study, two research questions were provided and discussed. The participants of the study were ( 150) students who are undergraduate and post graduate students from three universities which are , the University of Jordan, Al-Balqa Applied University and Jerash University for the academic year 2021-2022. This study is a quantitative study. The data for this study was collected through a questionnaire .The findings of this study revealed that

#### 6. Objectives of the study:

The following objectives of the study is : The main objective of this study was to clarify the most changes that happened for libraries through the last years. Study population: undergraduate and postgraduate students from different Jordanian universities, such as the University of Jordan, Jerash University and Al-Balqa Applied University. The questions which mentioned in the questionnaire below aim to know the extent of the impact of digital data on research and researchers during the past few years, which coincided with the Corona pandemic. The participant in the questionnaire: Bachelor's student (first / second / third / fourth / fifth year) / master's / doctoral student / researcher

#### 7. Data Analysis:

In the present study, a range of statistical techniques such as frequencies, percentages, standard deviation, and means is used. In addition, software is used to analyze the data. Table (1). The use of digital libraries

The use of digital libraries	Numbers	Percentage
1. due to covid-19 crisis.	38	25.3%
2. To reduce the times of visiting the traditional libraries.	22	14.6%
3. To get digital books.	15	10%
4. To keep up with the technical development.	10	6.6%
5.to help in writing research, assignment	7	4.6%
6. To be used easily and flexibly.	12	8%
7. To get the references easily.	10	6.6%



Some students use the library for other uses, as it mentioned in table (2):

Table (2). Other uses of the digital libraries:

The use	Numbers	Percentage
1. To know about previous studies.	6	4%
2. To get more information.	10	6.6%
3. To increase awareness about development technology.	7	4.6%
4. to seek information more quickly ..	10	6.6%
5. To do homework and tasks	3	2%

Difficulties that students face through using digital libraries in table (3):

The difficulties	Numbers	Percentage
1. Lack of awareness among libraries staff about the applications used in digital libraries.	65	43.3%
2. the large numbers of available works without being sure of the accuracy of their sources	35	23.3 %
3. Limited encouragement for the use of this type of libraries.	27	17.3%
4. weak use of technology for digital libraries	10	6.6%

5. Slowly loading of the required pages, content, etc...	13	43.6%

#### 8. The results:

##### The study came up with the following answers to the research questions:

To respond to the first question, "What are the most significant changes that have occurred in libraries?"

The study found that digital libraries have gotten a lot of attention in recent years, especially during the Corona pandemic, because a lot of new users and students have been able to learn about the digital services provided by these libraries. Because traditional libraries encounter difficulty in maintaining their services in such an emergency circumstance, great efforts have been made to promote digital libraries and their services as visual and active libraries. The demand for digital libraries has increased, with more free content and dedicated collections being created so that individuals may keep reading, learning remotely, and accessing knowledge without disruption.

The answer to the second question is: "What are the benefits and drawbacks that have resulted from this change?"

According with analysis, one of the most prominent benefits of digital libraries is that they helped students save time and effort by eliminating the need for them to physically visit the library. It also contains the "Multi access" function, which can handle millions of users at once, as well as a vast storage space and, according to students, is simple to use.

As for the most essential feature, the way of obtaining data, where it is possible to find information in a vast number of books and data using a sentence, a word, or the name of a specific topic, which facilitates easy the find out information.

#### 9. Discussion of the results:

The results of this study gave a satisfactory answer to the research questions and it's clear from chart (1) that the reasons that make most students going to digital libraries and have the choice to use its services are, first according to covid-19 crisis which has the main effect of using such type of this libraries with a percentage of ( 25.3%). Second, to reduce the times of visiting the traditional libraries, in this case they save time and effort. Other reason is to keep up with the technology development that occurs , so students must be aware of what happen around them .

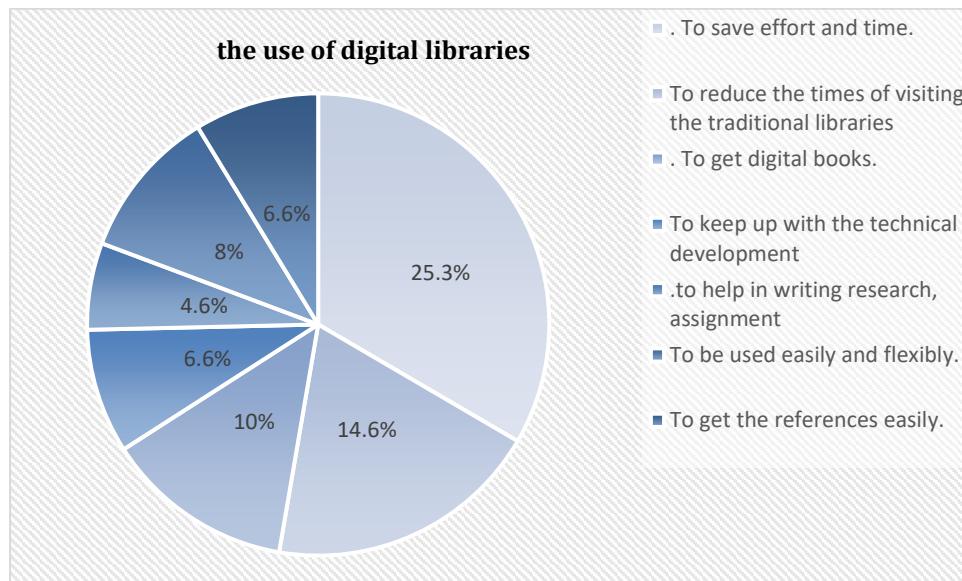


Chart (1) the use of digital libraries.

Students also have other reasons to use this type of library, as shown in figure No. (2), which were not mentioned in the study. One of the reasons is that most students visit these libraries because they need to learn more about past studies that are relevant to their research. This accounted for 4% of the total. On the other hand, many of them want to get information quickly, therefore visiting these libraries will assist them in quickly obtaining the knowledge they require. A small number of students have the option of using these libraries to complete their chores and homework (2 percent).

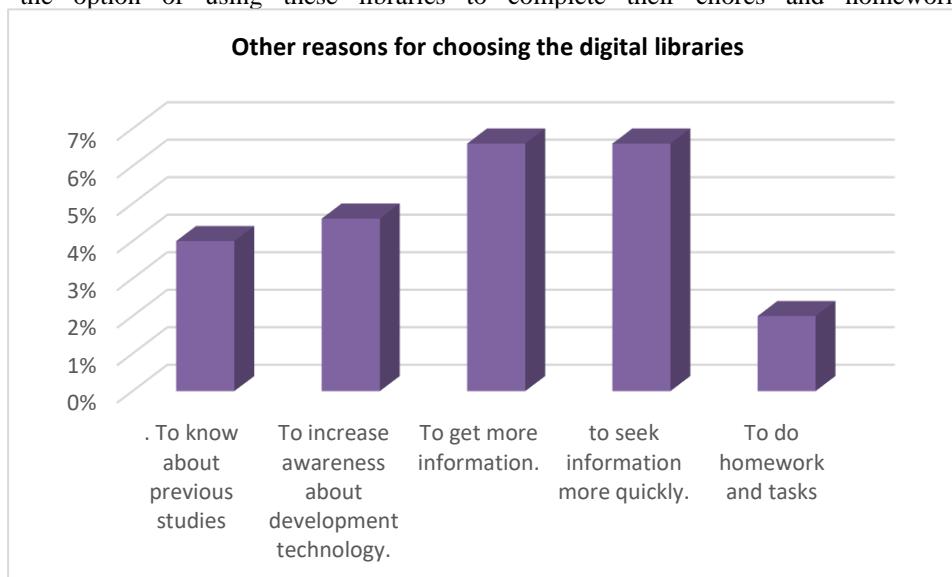


Chart (2) other uses of digital libraries.

Study shows the most frequently difficulties for using these libraries by the study sample. One of these struggles, which appears in chart (3), which has the highest percentage of the participants is the slowly loading of the required content. Then comes the lack of awareness among the libraries' stuff. Next the encouragement of using this kind of information and this is due to the lack of accuracy and relevance of the provided information. Finally, the weak use of technology that has to do with digital libraries with the least percentage.

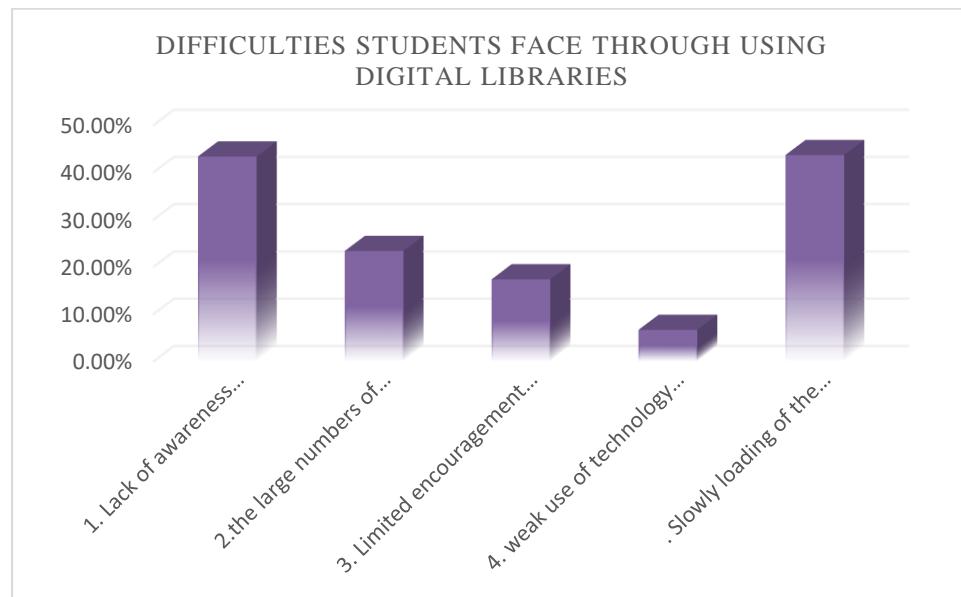


Chart No. (3) Difficulties students face through using the digital libraries.

## 10. Conclusion:

The study shows that the use of digital library systems and their applications in the field of libraries is one of the most significant advancements in the academic sector. This has many positive effects for users, which are based primarily on the statistics mentioned. As a result, it is not surprising for libraries to expand their use of this technology as a method to manage the massive amount of data that is constantly flowing through libraries in a way that is more effective and useful for users. From there, the current study recommends: - Raising user awareness of how to use this technology so that it can be utilized easily by them, especially after the COVID 19 problem, and dealing with the rapid development of scientific disciplines so that they become more reliant on university websites online. - Host online workshops or courses for librarians to improve their knowledge of new applications that have become commonplace in library professions. - Although there appears to be a high degree of application use, many applications are not being utilized to their full potential.

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