

Attitudes of Saudi Arabian Students Toward the Use of Digital Libraries in Higher Education

By
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Abstract

Universities worldwide are transitioning to integrate technology to enhance and augment using E-learning. This study investigated attitudes of Saudi Arabian students toward the use of digital libraries in higher education at Taibah University in Madina. Data were collected to explore the relationship between Saudi students' computer literacy skills, as well as their demographic background, and 1) their use of digital libraries, 2) their attitudes toward digital libraries, and 3) their perceived usability of digital libraries. Descriptive statistics, independent-samples, simple and multiple linear regression analyses were conducted to address the research questions.

Participants were 240 undergraduate students enrolled at Taibah University. Most of them were senior (about 52%), female (about 62%), and majored in Education Science (about 47%). Analyses of the self-report survey data show that students used digital libraries on a weekly basis ($M = 3.52$, $SD = 1.45$), using a 6-point Likert-scale (1 = Never and 6 = More than 4 times per day). Results also show that students' computer literacy skills were pretty good ($M = 3.82$, $SD = 0.88$), based on a 5-point Likert-scale (1 = No experience and 5 = Very skilled). On average, students' attitudes toward digital libraries were positive ($M = 4.21$, $SD = .68$), measured by a 5-point Likert-scale (1 = Strongly disagree and 5 = Strongly agree). In general, the level of students' perceived usability of digital libraries was moderate ($M = 3.34$, $SD = .49$), according to a 5-point Likert-scale (1 = Strongly disagree and 5 = Strongly agree).

Results of linear regression and independent-samples show that students' computer literacy skills were a significant predictor of their use of digital libraries, attitudes toward digital libraries, and perceived usability of digital libraries. The more skilled students were in computer

literacy, the more likely they would use digital libraries ($\beta = .299$, $t(221) = 2.57$, $p = .01$); the more skilled they were in computer literacy, the more positive their attitudes were toward digital libraries ($\beta = .201$, $t(225) = 3.70$, $p < .001$); and the more skilled they were in computer literacy, the higher the level of the perceived usability of digital libraries was ($\beta = .115$, $t(202) = 2.99$, $p = .003$). Only the access to technology and the Internet at school was significantly and positively related to students' attitudes toward digital libraries. No relationships were found between the access to technology and the Internet (either at school or at home) and students' use of digital libraries or their perceived usability of digital libraries. Regarding the impact of students' demographic background on the three dependent variables (i.e., students' use of digital libraries, attitudes toward digital libraries, and perceived usability of digital libraries), only one significant relationship was found. That is, students' perceived usability of digital libraries was significantly related to their gender. Female students had a higher level of perceived usability of digital libraries.

Dedication

I dedicate this work to:

My beloved mother and father,

the source of my optimism and happiness

Thank you for your unlimited support, encouragement, love, and supplications,

I love you.

My wonderful children

Turki, Jumanah, Lujain, Safana, and Abud-Alrazaq

Thank you for your love, which inspires me to work with enthusiasm, hope, and joy

With all my love and my wishes for all of them to be healthy and happy

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Chapter 1

Introduction

Digital libraries have gained popularity around the globe, as higher learning institutions continue to embrace digital resources. In Saudi Arabia, higher learning institutions are now focusing on the digital libraries to keep abreast with the latest technology (Alkoudmani & Elkalimi, 2015; Al-Maliki, 2013). The trend seems to match with the continuing adoption of technology among Saudi Arabians, especially students in higher education institutions. Higher learning institutions in Saudi Arabia expect students to use electronic resources due to the many benefits associated with the technology. Universities and colleges in Saudi Arabia have invested heavily in technology. One of the areas that these institutions have capitalized on is the digital library service.

The benefits of digital libraries in higher education are many. To list a few, the first one is that students can access an unlimited supply of literature. With unlimited access, students can conduct research and expand their knowledge. Second, digital libraries have eliminated overreliance on physical libraries. Students can conveniently access the digital libraries without physically visiting a schools' library. In other words, digital libraries allow students to access learning materials from the comfort of their schools, homes or anywhere as long as they have personal computers, internet connection, and the password to access the schools' library (Alkoudmani & Elkalimi, 2015). Furthermore, digital libraries offer universities and colleges a cheaper option of accessing an unlimited supply of e-books, e-journals, and other study materials. Instead of purchasing printed books, Saudi Arabian universities and colleges are now buying soft copies at significantly lower prices.

Saudi Digital Libraries

The Saudi Arabian Digital Library is also known as the SDL. The higher education's ministry manages the SDL. It was created with the goal of providing information services and access to electronic information sources. It contains approximately 310,000 e-books and 70,000 electronic journals and publications from various university research and conferences in different scientific disciplines; these sources are in multiple forms and published in Arabic and English. The Ministry of Education is investing in building an extensive and sophisticated digital library by including various specializations to support the educational process and meet the needs of students in Saudi Arabia's higher education institutions. To facilitate online learning, the Ministry created the SDL to provide access to electronic information sources, organize them, and make them accessible to faculty, staff, researchers, students, and professionals. This digital library offers more than 300 international publishers to all Saudi universities in various scientific specializations (Saudi Digital Library, 2017).

Kingdom of Saudi Arabia Overview

Saudi Arabia is one of the most an underdeveloped desert countries in the Middle East, thanks to oil resources; it has become one of the wealthiest nations (BBC, 2015). The Kingdom of Saudi Arabia is sometimes called "The Land of The Two Holy Mosques" referring to Mecca and Medina, as the two holiest places of Islam. In 1932 King Abdul-Aziz founded the Kingdom of Saudi Arabia. (Central Intelligence Agency, 2017). Figure 1 shows Kingdom of Saudi Arabia.



Figure 1: Kingdom of Saudi Arabia. Source: (Central Intelligence Agency, 2017)

Kingdom of Saudi Arabia Profile

The Kingdom of Saudi Arabia situated in Southwest Asia, the most massive country of Arabia, bordering Yemen, Jordan, Oman, Iraq, Qatar, Kuwait and the United Arab Emirates. Islam is the state religion of Saudi Arabia given the fact that most of its citizens are Muslims. (Hamid 2014) Saudi Arabia has one of the fastest growing economies in the Middle East and the entire Arab World. (Al-Mulhim, 2009). Table 1 shows socioeconomic information about Saudi Arabia.

Table 1: Socioeconomic Information about Saudi Arabia

Location	Middle East, bordering the Persian Gulf and the Red Sea, north of Yemen
Border countries	Iraq 811 km, Jordan 731 km, Kuwait 221 km, Oman 658 km, Qatar 87 km, UAE 457 km, Yemen 1,307 km
Population	28,571,770 (July 2017 est.)
Religions	Islam
Capital	Riyadh
Language of Instruction	Arabic

Source: <https://www.cia.gov/library/publications/the-world-factbook/geos/sa.html>

Educational System in Saudi Arabia

Ministry of Education of Saudi Arabia (2017) it purposes to provide education with all in an appropriate educational environment within the framework of the Kingdom of Saudi Arabia (KSA) education policy, as well as to promote the quality of educational outcomes, encourage creativity and innovation, develop community partnership and improve the skills, abilities of students, and increase the effectiveness of scientific research.

Additionally, education policy supports education in general and higher education, in particular, to ensure that education address the social needs and economics of the country.

The Ministry of Education, Ministry of Higher Education and the Technical and Vocational Training Corporate (TVTC) (previously known as the General Organization for Technical Education and Vocational Training) are responsible for the education sector in Saudi Arabia. In 1963, the Supreme Committee for Educational Policy was founded, which is the highest authority that administers and regulates the education system in Saudi Arabia. (Saudi Arabia Education, 2017).

The Saudi Arabia Higher Education System

According to the Ministry of Education of Saudi Arabia (2017), The Ministry of Education is responsible for higher education in Saudi Arabia. The Ministry regulates, supervises, and manages the universities and colleges in Saudi Arabia.

In Saudi Arabia, there are five major universities:

- King Saud University
- Umm Al-Qura University
- King Faisal University
- Imam Muhammad Ibn Saud Islamic University
- Taibah University

Higher Education and Universities in Saudi Arabia

Higher education in Saudi universities offers Bachelor, Master, and Ph.D. degrees. According to the Ministry of Education (2017), higher education includes the following:

- Government Universities: 26
- Private Universities: 10
- Private Colleges: 41
- Primary Teacher's Colleges for men: 18

- Primary Teacher's Colleges for women: 80
- Colleges and Institutes for health: 37
- Technical Colleges: 12

Taibah University

According to the official website of Taibah University (2017), Taibah University established in 2003; there were 7,761 enrolled students. The University has first established only seven colleges. By 2012- 2013, the university had evolved to include 28 colleges and one institute 16 of which are in the city of Al Madinah Al Munawarah, and the rest are in six branches: Yanbu –Ula – Hinakivah – Khyber- Almahd – Bade, and colleges are:

Medicine	Dentistry	Pharmacy	Applied Medical Science
Applied Medical Science–Yanbu	Applied Medical Science – Ola	Medical Rehabilitation	Nursing
Science	Community College – Khaibar	Science- Yanbu	Engineering
Engineering – Yanbu	Computer Science	Computer Science – Yanbu	Family Science
Education	Arts & Humanities	Arts & Humanities – Yanbu	Business Administration
Business Administration – Yanbu	Law	Sciences & Arts – Ola	Community College
Community College – Hnakyah		Community College – Mahd	Community College – Ola
		Community College – Badr	Higher Institute of Imams

Source: Taibah University 2017
<https://taibahu.edu.sa/Pages/en/CustomPage.aspx?ID=47>

The total number of Taibah University Academic staff is 2694 classified into 1436 faculty members and 1424 teaching assistants, lecturers and language teachers. The University has witnessed a radical increase in the number of its students (Men & Women). There were 7761 students in 2003. Today, there are 69,110 students enrolled in 165 different academic programs,

and there are 94 graduate studies. The 7 degrees awarded by Taibah University include Diploma, Associate, Bachelor's, General Diploma, Higher Diploma, Master's, and Doctorate. (Taibah University, 2017).

E-Learning in Saudi Arabia

Recently, Saudi Arabia is more focusing and paying attention to development in E-learning. There are various projects to develop the E-learning in Saudi Arabia that have been established by the Ministry of Higher Education. Some E-learning is already established and others are still in progress. For example, Saudi National Center for E-learning, AAFAQ project, and Distance Learning (NCEDL). According to NCEDL, The King Abdullah Ibn Abdul-Aziz Al Saud, the Premier and the Chairman of Higher Education Council, approved the Council's decision on the establishment of Saudi Electronic University on August 13, 2011 (National Center for E-learning and Distance Learning, 2011).

The University is a governmental educational institution that provides electronic education based on information and communication technologies and the techniques of e-learning and distance learning, noting that it includes the Faculty of Administrative and Financial Sciences, the Faculty of Computing and Informatics, and the Faculty of Health Sciences (National Center for E-learning and Distance Learning, 2011).

Taibah Digital Library

Taibah Digital Library was established. In 2006 to 2009, it began to provide electronic links to a simple number of databases. In 2010 it integrated with Saudi Digital Library, the number of departments served by the Deanship of Library Affairs at the University of Taibah serves is all departments and colleges located in the University of Taibah. Languages supported

by the gate are Arabic and English. Users number is more than 8000 users from Taibah University and about 200 accounts from outside the University. Taibah University (2017).

Colleges are the most frequently used gate for electronic libraries

- 1- College of Education
2. College of Arts and Human Sciences
3. College of Science

Statement of the Problem

Recently, the Saudi Arabian higher education sector has experienced changes making it impossible for students to rely on traditional library services. For example, the introduction of online courses and long distance learning make it difficult for students to access traditional library services within the school premises (Alkoudmani & Elkalmi, 2015). The geographical challenges mean that a digital library is the only reasonable options to assure students' access to academic material at the convenience of their localities. While many scholars and experts agree on the numerous benefits that the digital libraries bring, they openly disagree on whether students must use these libraries as planned (Alkoudmani & Elkalmi, 2015; Al- Maliki, 2013; Dulaymi et al., 2004). According to critics, students from different parts of the world are not using digital libraries fully (Alkoudmani & Elkalmi, 2015; Gregory, 2008; Jamali, Nicholas & Rowlands, 2009).

The Need for the Study

Saudi Arabia learners have witnessed improvements in the access and use of knowledge due to the technological changes in the global information system. In the recent past, learners in the country have been prepared for new skills. One instance is when the Ministry of Education

decided to provide most public schools with laptops and other equipment such as videos, projectors, and televisions.

The Saudi Arabia Ministry of Education has integrated technology into higher education. The sole purpose is to engage learners and help them learn in a more meaningful way. In 1996, the Ministry of Education established the Computer and Information Center to provide information communication technology (ICT) services for information and employment in education. Despite the ministry's interest in enhancing the educational process, the government's e-learning policies are still lacking appropriate guidance that is needed to attain the targets and to fulfill the aims or providing training and assistance (Blamire & Balanskat, 2002).

The Higher Education Ministry manages the SDL. It was created with the goal of providing information services and access to electronic information sources. It contains approximately 310,000 e-books and 70,000 electronic journals and publications from various university research and conferences in different scientific disciplines; these sources are in multiple forms and are published in Arabic and English.

The Ministry of Higher Education is investing in building a large and sophisticated digital library by including various specializations to support the educational process and meet the needs of students in Saudi Arabia's higher education institutions. To facilitate online learning, the Ministry created the SDL to provide access to electronic information sources, organizes them, and makes them accessible to faculty, staff, researchers, students, and professionals (Saudi Digital Library, 2017).

This study is necessary because of the lack of studies that have been conducted in Saudi universities regarding attitudes of Saudi Arabian students toward the use of digital libraries in higher education. Thus, this study aims to enrich the Saudi educational resources used in digital

libraries in learning and help the education system get a better understanding of their students' attitudes, expectations, practices, and barriers that they might encounter when utilizing technologies such as digital libraries in learning.

Purpose of the Study

The purpose of this study is to investigate the attitudes of Saudi students at Taibah University, Medina toward using the digital libraries in higher learning institutions. It is necessary to inform Saudi Arabian universities and colleges about the attitudes of their students regarding digital libraries. In so doing, the university and the Ministry of Higher Learning Institutions can create measures that lead to awareness about the benefits that digital libraries offer. Thus, the study is going to provide country specific findings that define the attitude of students towards digital libraries.

Research Questions

Q1: Are Saudi students' use of digital libraries related to their computer literacy skills, access technology, student's status, major, age, and gender?

Q2: Are Saudi students' attitudes toward digital libraries related to their computer literacy skills, access technology, student's status, major, age, and gender?

Q3: Are Saudi students' perceived usability of digital libraries related to their computer literacy skills, access technology, student's status, major, age, and gender?

Research Hypotheses

H1: There is a relationship between the selected demographic variables of Saudi students' computer literacy skills, access technology, student's status, major, age, and gender related to the Saudi students' use of digital libraries.

H2: There is a relationship between the selected demographic variables of Saudi students'

computer literacy skills, access technology, student's status, major, age, and gender related to the Saudi students' attitudes toward digital libraries.

H3: There is a relationship between the selected demographic variables of Saudi students' computer literacy skills, access technology, student's status, major, age, and gender related to the Saudi students' perceived usability of digital libraries.

The Significance of the Study

Since students enjoy the freedom to choose what to access, availing the digital libraries for university and college students is not enough. Saudi Arabian higher learning institutions should examine whether the students are using the resources as planned. The significant step in addressing the problem is to explore the attitudes of Saudi Arabian universities students towards the digital libraries. The study derived its importance from the following ideas: Prensky (2006) stated: "Teachers can learn what technological equipment they need in their classrooms simply by asking students, and they can lobby to get these items installed in school computer labs and libraries" (p. 10). Thus, it is essential to recognize Saudi students' attitudes towards using digital libraries in learning facilitates and assist them to gather information; it also helps instructors understand their students' online learning.

Additionally, understanding learners' attitudes towards using digital libraries would help the instructors to develop their learning and technical knowledge and skills to keep pace with their students' computer skills. Prensky (2006) claimed, "Recognizing and analyzing the characteristics of the new landscape emerging in the digital age will help the educational leadership with which we should be providing our students, both now and in the coming decades" (p.9). Also, Findings of this study will explore the students' attitudes toward the use of digital libraries in learning that contribute to support and encourage them in digital libraries.

Fraser and Deane (1999) state that learners must promote information gathering skills and become masters in learning from Ill-structured resources. Additionally, findings would discover barriers facing Saudi students when planning to utilize digital libraries in learning. This investigation would help Saudi educators to consider steps that can overcome challenges students encounter when they are using digital libraries. Kennedy et al. (2006) argue that understanding and knowing the many advanced technologies the net generation use might overcome barriers when educating this generation. Results in this study will inform Saudi instructors about how digital libraries can help students in learning based on students' perspectives. Findings of the study will assist the instructors to understand their students' interests and need better. Prensky (2006) argued, "Our accent from the pre-digital world often makes it difficult for us to effectively understand and communicate with our students" (p.9).

Although several researchers have addressed the same problem, their findings are irrelevant as far as the Saudi Arabian higher education sector is concerned. Most studies on students' attitudes towards electronic resources have focused on other countries with cultural backgrounds that differ significantly from those in Saudi Arabia (Al-Jabri, Sohail, & Ndubisi, 2015). Therefore, this study aims at addressing the gap in knowledge by providing country-specific findings that fit the Saudi Arabian higher education sector.

Definition of Terms

Attitude: Can refer to the powerful feeling of like or dislike toward an object, which can be anything that affects behavior (Fishbein and Ajzen, 1975; Psychology Glossary, 2011).

Digital Library: A managed collection of electronic knowledge resources to support learning, research, and scholarly communication.

E-books: An electronic version of a traditional printed book where readers use personal

computers or any other Internet-enabled devices to open and read the content.

Higher Education: Education beyond the secondary level, especially education provided by a college or university (Higher Education, 2013).

Online Database: A collection of pieces of information that is organized and used on a computer; examples are e-books and e-journals.

Chapter Summary

Chapter one was an introduction to the current study that was designed to investigate attitudes of Saudi students at Taibah University toward the use of digital libraries in learning.

This chapter presented the need, the purpose, and the significance of the study. Research questions with hypotheses described in detail. Also, the researcher provided the definitions of the terms used in the study.

Chapter 2 **Review of Literature**

Introduction

Digital libraries have become a new phenomenon enhances teaching and learning. Digital libraries are one of the electronic learning tools that learners use to share and obtain information. This study is designed to explore Saudi students' attitudes toward the use of the digital library in learning. Additionally, this study investigated factors that might predict the students' attitudes toward the use of digital libraries. The researcher picked this topic due to the importance of digital libraries in the technology era for the educational field.

The constant advance of network and computer technology has radically changed the potential for support of schooling (Honey et al., 1999). Among a diversity of technology tools, digital libraries and the Internet are two of the essential pieces that make quality educational resources widely available for instruction (Marshall et al., 2006). However, the effectiveness of digital libraries and the Internet often debated as it posited that they do not have a substantial impact on learning and teaching.

This chapter reviews relevant literature regarding digital libraries to provide a better understanding of the use of digital libraries in learning at Taibah University. A Nation at Risk: a report to the Nation and the Secretary of Education, United States Department of Education: recommendations published for considering educational computing as necessary skills if American children were to compete in the global spectrum. Ever since, studies have been conducted to determine the effect of computers on education in a more substantial capacity (Rogers, P. L., 2000).

Definition of Digital Libraries

Several concepts arise in the definition of the term "digital library." Cleveland (1998)

explained that the term is usually confused with others, and this confusion stems from three main factors. He argues that several different phrases are used to denote this concept such as the virtual library, or a library without walls, and electronic library. However, the meanings of these phrases have not been precise. The second issue is that digital libraries have been at the focal point of many research areas. For this reason, it established that whatever constitutes a digital library differs in areas depending on the research community that is describing it. Finally, several items on the Internet commonly referred to as a digital library. However, from a librarian's point of view, they are nothing close to it.

A digital library, therefore, can be defined as a unique library with a collection of digital objects. They may include text, visual material, audio material, and video material, stored as electronic media formats. Also, it has means for organizing, storing, and retrieving the files and media contained in the library collection. Digital libraries vary in scope and size, and they can be maintained by people, entities, or those affiliated with agreeable library buildings (Witten, Bainbridge, & Nichols, 2014). A digital library can also be defined as a managed collection of information with associated services. In these places, data is stored in digital formats and is accessible over a network (Arms, 2002). In this digital era, digital libraries allow users to search using any phrase or word to access the library's content at any time and from any place in the world, a task that is impossible in a physical library (Lesk, 1997).

Educational Digital Library

Education libraries, whether digital or physical, serve the purpose of facilitating, enhancing, and supporting learning in the various educational institutions. Marchionini and Maurer, (1995) explain that users can utilize information sources in resource-based learning activities. Digitization is commonly used to provide information spaces that are valuable for the

long-term protection of information (Russell, 1998). Digital libraries contain more up-to-date information than physical libraries do, and digital libraries facilitate, enhance, and support formal learning at their institutions. The sources can, however, be updated more frequently and searched more efficiently than can those in physical libraries (Gunn, 2002).

The Need for Digital Libraries

According to Krajcik (2002), the innovation of the Internet technology has revolutionized the potential for learners to explore solutions for learning tasks by engaging them with learning resources, such as designing investigations, interpretation of findings, or information gathering. The Internet presents a substantial challenge, which is different from traditional sources. The essential skills regarding information dealt with how to find valuable information from a limited universe of possible sources (Pasch & Norsworthy, 2001). Although the Internet has gained a primary place in research methods, the ease of access and also the lack of uniform standards have made the Internet a huge but uncertain medium (Graham & Metaxas, 2003). Learners can easily read the current day's newspapers from around the world, access real-time stock quotes, look up a book of online library catalogs, consult encyclopedia entries, or take a virtual tour through a museum as they wade through the instantaneous changing information on the Internet to find what they want. Learners encounter the issue that seeking information through the Internet and confirming every page of each linked site is an incredibly time-consuming task because the Web expands at an exponential rate and sites change overnight (Graham & Metaxas, 2003). Pasch and Norsworthy (2001) pointed out that in this technology era, the obstacle is how to confront this mass of data and how to avert being overwhelmed by it. Not surprisingly, one of the primary concerns of instructors who use the Internet in their instruction is that their learners lack the requisite skills to critically evaluate and utilize online resources (Hargis, 2001). Thus, it

is fundamental to have a proper system or a technology tool for educators to address the concerns of helping learners to develop the ability necessary to deal positively with information overload and the varying quality of online resources.

To select appropriate technology tools, Graham and Metaxas (2003) mentioned that an Internet portal should support the development of, and provide access to, the highest quality content on the Web. As Fraser and Deane (1999) stated, learners should improve extensive information collecting skills to become experts in learning from ill-structured resources. Chu et al. (2008) found that with well-structured and well-managed content in e-libraries, students could access a massive amount of digital information on the Internet. According to Chen and Chen (2010), digital libraries facilitate better learning than other open digital resources stored on the Internet. From this point of view, digital libraries are not viewed simply as another source of information for students, but they make a significant contribution to learning. Marchionini and Maurer (1995b) claimed that one of the vast benefits of digital libraries is that they can be informal and professional learning missions that empower the user. Moreover, as the demand of supporting customized educational content and learning activities to meet the needs of a diverse learner population has increased (Jonassen & Grabowski, 1993), educators are exploring how educational technology can become a new style of personalization tools. Also, digital libraries can respond to this demand as these powerful electronic portals can be customized for the learning needs of particular classes, student groups, or teachers (Gunn, 2002). According to Arms (2000), there are several benefits for digital libraries learners:

1. Enabling easier and broader sharing; information can share both locally and internationally.
2. Improving preservation; storing, copying and maintaining digital copies or rare information reduces the fear of maintaining one physical object permanently.

3. Improving access; assisting with massive browsing and searching.
4. Saving money; open twenty-four hours a day at a relatively low cost.
5. Facilitate users to obtain information and collections accessible in any format, anytime, anywhere.
6. Maintaining the collection
7. Bringing the library to the user; allow users to use it at home or school.

Teachers and learners at all levels can benefit from the high volume of high-quality educational materials that have been carefully stored and authored in the educational digital libraries. Moreover, a user's learning attitude can be changed for the better (Thong, Hong, & Tam, 2004) to become enthusiastic and more positive about the quality and value of the discovered learning resources of digital libraries (Recker et al., 2005). Oldenettel et al. (2003) explored the Learning Environment Based on Non-Educational Digital Libraries (LEBONED) project, which concerns integrating digital libraries and their content into web-based learning environments. Sumner and Marlino (2004) demonstrated the value of digital libraries using a series of three thought experiments and claimed that the digital libraries are component repositories, knowledge networks, and cognitive tools. Leazer et al. (2000) stated the effect of digital libraries of the Alexandria Digital Earth Prototype (ADEPT), which is an enhancement and an extension of the Alexandria Digital Library (ADL) that allows a user to learn many research methods. Consequently, educational digital libraries have an essential role in teaching and learning. Therefore, the research literature on digital libraries continues to grow about how developers can improve digital libraries and how users then employ this technology to meet their information needs.

The digital revolution that university libraries have witnessed over the last few years has brought a dramatic change to how students approach different programs. A growing body of literature exists on digital libraries that examine e-book usage trends, advantages and disadvantages of formats, consumer preferences, and usability. In higher learning institutions, students, and administrations are under pressure to keep up with the latest technological advancements that enhance learning. In Saudi Arabia, the rapid increase in Internet usage has allowed higher learning institutions to introduce digital libraries.

Advantages of Digital Libraries

Digital libraries allow students to use content from a massive amount of reliable resources in learning. For example, students in the United States, Saudi Arabia, and the United Arab Emirates can all take a virtual tour through a museum, use the same historical document, or read an essay on Sigmund Freud from the National Archives in the United Kingdom at the same time. According to Fox and Marchionini (1989), vast new possibilities have opened up for learners and educators through the advent of digital libraries.

Digital libraries could be among the most developed forms and complex of information systems. Digital libraries often include digital document preservation, distributed database management, collaboration support hypertext, information retrieval, information filtering, instructional modules, multimedia information services, intellectual property rights management, question answering and reference services, selective dissemination of information, and resource discovery. Marchionini and Maurer (1995b) suggested that one of the significant benefits of digital libraries is that digital libraries can empower and enhance the formal user, professional learning missions and informal users. Moreover, as the need to support learning activities and customized educational content to meet the needs of a diverse student population has increased

(Jonassen & Grabowski, 1993), educators are exploring how educational technology can become a new genre of personalization tools. Digital libraries can respond to this need because these robust electronic portals customized for the learning demand of particular classes, student groups, or teachers (Gunn, 2002).

Indeed, well-designed digital libraries provide enriching experiences for learners to explore the world. Students and teachers at all levels can access volumes of high-quality educational materials that accurately and carefully authored and stored in an educational digital library environment. Furthermore, a user's learning attitude can be changed for the better (Thong, Hong, & Tam, 2004) to become more positive about the quality and the value of the discovered learning resources of digital libraries (Recker et al., 2005). In the last decade, few studies have addressed the effectiveness of digital libraries on educational practices.

Disadvantages of Digital Libraries

Computer viruses, quick degrading properties of the digitized material, lack of standardization for digitized information, health hazard nature of radiation, different display standards of digital products and associated problems from monitors at times handicap digital libraries. Disadvantages of digital libraries include several points. First, the speed of access can be an issue, for as more and more computers connected to the Internet its speed of access reasonably decreasing. If new technology does not evolve to solve the problem, then shortly the Internet will be full of error messages. Next, the initial cost is high; the infrastructure cost of digital libraries such as the cost of hardware, software or leasing a communication circuit is very high. Another concern is copyright issues, as digitization violates the copyright law as the thought content of one author can freely transfer by other without acknowledgment. This difficulty means that digital libraries have to consider ways to distribute information. How does a

digital library distribute information at will while protecting the copyright of the author? The next concern is the environment, as digital libraries cannot reproduce the situation of a traditional library. Many people also find reading printed material to be more accessible than reading content on a computer screen. Preservation is also an issue for due to technological developments, a digital library can rapidly become out-of-date, and its data may become inaccessible. Efficiency is yet another concern, for with the enormous volume of digital information, finding the right material for a particular task becomes increasingly difficult. The final concern is bandwidth, as digital libraries will need a high band to transfer multimedia resources, but the bandwidth is decreasing day by day due to its overutilization.

Format of E-books

The e-book is one of the many emerging technologies that have changed the way students learn, especially in higher education. Many academic libraries in Saudi Arabia have incorporated e-books into their collections while others are planning to expand their databases to include more e-books. As e-books continue to gain popularity among Saudi Arabian university and college students, finding e-readers willing to make use of technology is of paramount importance. A massive number of studies have examined the usage of e-books in the digital library. Jamali, Nicholas, and Rowlands (2009) conducted a survey involving 16,000 students and faculty from 123 universities in the United Kingdom. The study found that convenience is the most significant advantage of e-books. However, Jamali et al. (2009) revealed that e-books are yet to become student-friendly, as many students were uncomfortable with their format. This finding supported a study by Gregory (2008) that indicated a reluctance of students to accept e-books since they were already used to print books. Lopatovska et al. (2014) agreed with Gregory (2008) and Jamal et al. (2009) and noted that by improving features such as

printing and screening, reading could improve students' satisfaction to the format. By analyzing the information provided above, it is possible to identify the format of e-books as something that influences the attitudes of students towards the use of the digital libraries. Nonetheless, that is the case of research on higher learning institutions in developed countries other than Saudi Arabia (Hussain, 2015); it may not emerge as an issue in this country as development can vary from one country to another. Since Saudi Arabia is a developing country, students welcome new technologies, especially those that come with digital libraries such as e-books. They want to experience a new way of reading. To do so, Jamali et al. (2009) proposed an awareness program. It has worked in developed countries when introducing the materials of digital libraries, including e-books and e-journals.

Students' Preferences

A study by Lopatovska et al. (2014) revealed that students prefer digital libraries to printed books, especially when looking for references and technical material. Individually, electronic articles and books that are readily available in large databases make it easier for students to find relevant academic materials for their assignments and research papers. According to Gregory (2008), many students still prefer reading a printed book, terming it as a real book. Others are reluctant to pursue e-content, yet the readily available materials meet their information needs. While examining the preferences of students, it is necessary to consider the specific courses that students take. Just like other universities around the globe, Saudi Arabian universities and colleges offer a broad range of courses ranging from humanities, information technology, and applied sciences. Digital learning resources closely linked to technological courses. A study by Alkoudman and Elkalmi (2015) revealed how pharmacy students in Saudi Arabia lamented the difficulties they faced while using digital libraries. Therefore, this indicates

a need to examine how the attitudes of Saudi Arabian students differ from one course to the other.

Evolution of Library Services

The objective of linking users who needed information to the resources that had the required information guided traditional libraries in print media. However, the introduction of computer-based automation transformed library services for the better according to Bagudu and Sadiq (2013). Initially, libraries adopted Information Technology (IT) just to improve the normal routine functions, such as circulation, acquisitions, serials' control, and interlibrary loans. However, higher learning institutions discovered the possibility of providing the same books in soft copy to allow the faculty and students to access more learning resources digitally. The introduction of Internet services marked a crucial turning point for digital libraries. With the Internet, universities and colleges could now provide digital services online, and students could therefore remotely access academic databases. In 2009, the World Digital Library was established to take advantage of the increase in Internet connectivity across the globe (Bagudu & Sadiq, 2013). Currently, the Internet and CD-ROMs are the most popular electronic resources that universities and colleges use to make digital libraries available. According to Gregory (2008), e-books first appeared on the commercial market in the 1990s. Although experts predicted that print books would become obsolete, they have persisted in the digital 21st century. Despite the continued use of printed books, the use of e-books has continued to grow, especially in higher learning education. Initially, there were as many as 24 firms across the world that offered e-books. The introduction of the Internet forced the e-book firms to shift away from device-based models towards web-based databases (Gregory, 2008).

The trend in digital libraries reflects the concentration on web-based aggregated collections with academic content, such as references, business, and information technology. The introduction of audio e-books has also shaped digital libraries. Saudi Arabian universities and colleges are now offering courses using a variety of media to make education available to students in various locations to serve the bulging education needs of Saudi Arabia's population (Al-Fahad, 2009). For learners in an academic environment, web-based e-books offer 24-hour access to research-oriented e-content through the convenience of their homes, classes, or any location. Since 1992, Saudi Academic Libraries (SALs) have been moving towards the use of electronic resources (Dulaymi et al., 2004). Resource sharing among Saudi Arabian universities and colleges is widespread, as administrators continue to offer their students unlimited access to valuable academic information. For instance, the KKU Central Library allows students to access 58 international databases as of 2013 (Al-Maliki, 2013). Universities and colleges pay subscription fees to allow their students to access these databases, which offer books, journals, and other academic information that will assist them throughout their academic stay. The Saudi Arabian higher learning sector has experienced rapid growth of nontraditional students over the past decade, as more and more mature students are now seeking further studies as they continue working as an opportunity to receive promotions and high earnings that come with such developments. Consequently, students from different age groups find themselves studying in the same class. While they are expected to play their part by reading broadly and conducting personal research, they tend to share different perceptions and views about digital libraries depending on their needs. Aharony (2013) conducted a study on the knowledge of university students towards digital libraries in Israel. The investigation revealed that older students taking further studies find it difficult to experience, learn, and assimilate e-books. In contrast, the

younger students seemed happy with what the digital libraries had to offer since the new platform matched their perceptive technological lifestyle. On the same note, the number of students seeking part-time programs has also increased exponentially over the last few years. Apparently, students share different views and attitudes depending on the study programs that best suit their needs. Many scholars agree that online-based digital libraries offer the best opportunity for distant learners to access academic resources remotely. A study by Taie and Mohamed (2009) revealed that students taking distance-learning courses tend to have positive attitudes towards the digital libraries.

Theoretical Framework

According to Pitcher (2015), a theoretical explanation surrounds an attitude towards an issue. Though many theories exist, the notable one in the case of this study is control theory. It is suitable for explaining why students portray negative or positive attitudes towards change. Also recognized as the change control theory, its understanding is vital in encouraging positivity, especially in situations where negativity reigns. So far, the literature shows that people in the Middle East are not quick to welcome technological changes because of their cultural background, coupled with their systems of governance. Despite this, globalization and internationalization of technology are forcing conservative societies to accept change (Moaddel & Karabenick, 2008). As much as technology is changing people's lives (particularly in knowledge acquisition sector), the willingness of a population to embrace a particular technology depends on the intrinsic values that drive their thoughts. This study considers the views of Saudi Arabian students. Therefore, it is necessary to look at the cultural and religious background of the population under study. As stated by Moaddel and Karabenick (2008), religious beliefs and orientations tend to display functions and dynamics that go far beyond the requirements of

human psychological predispositions or needs. In this case, Saudi Arabia is a conservative society whose religious values play a pivotal role in determining how individuals reason and interpret changes. Farrell (2012) and Cook (2013) point out that it is noticeable how North Africa and the Middle East are areas with under-representation of Internet connectivity. It is the reason why Saudis are skeptical in adopting and implementing the digital libraries in universities and colleges. This disposition is arguably what Al-Kandari and Hasanen (2012) talked about when addressing the impact of the Internet in Kuwait and Egypt.

In agreeing with Al-Kandari and Hasanen (2012), it is essential to consider the outcomes of the steps taken by the government of Saudi Arabia in 1998 that said the country has yet to embrace technological advancements since authorities had not found a system that can block the information flow that goes against the Islamic culture. This undertaking goes hand-in-hand with the propositions of the control theory as explained by Carver and Scheier (2012). This model argues that forms of societal governance dictate the behaviors and habits of people about a particular phenomenon. Therefore, the policies put in place by the Saudi Arabian government to protect the country's culture influence technological advances. It explains why the country has limited motivation to embrace the maximum use of Internet connections. The reason based on the thought that Westerners are using online tools to their advantage but not for the benefit of the world. This misconception has the possibility of influencing the rate at which universities and colleges are adopting and using digital libraries, and it can slow down the process and limit the use of online tools for learning purposes in higher education institutions. If the government continues to censor Internet content, there is no possibility of maximizing the use of the digital libraries in Saudi Arabia. When considering this statement, Aman and Jayroe (2013) adamantly stated that government policies dictate the extent of Internet connectivity (as a primary

constituent in the adoption and usage of the digital libraries) in any country. With these regulations, aspects such as affordability of Internet-accessing devices, availability of Internet connections, widespread of telecommunication infrastructure, and connection bandwidth come into play. These are vital for the functioning of the digital libraries.

In countries that share a similar cultural background with Saudi Arabia (e.g., Lebanon, Algeria, Jordan, Kuwait, Egypt, and Morocco), there is freedom of speech to all Internet users. That is why it is impossible to blame the Islamic culture for the low level of Internet use in Saudi Arabia (Alssbaiheen & Love, 2015). Though the culture is conservative, educationists and scholars in other Islamic countries are aware of the interests that come from the use of the digital libraries in schools, particularly in higher education institutions. By applying the framework of the control theory, there are increased chances to change students' attitudes by ensuring that they recognize the importance of the digital libraries. It is possible to increase awareness about the benefits of e-learning materials, specifically the ones made available by the digital libraries. What emerges from this academic practice is the application of the perception theory. Pitcher (2015) stated that this model is actionable in changing the way people perceive things. It is possible to conclude that, by changing perceptions, one changes attitude. Pitcher (2015) reinstated this idea in a bid to study the extent to which the theory affects thoughts, noting that it is one way of moving forward to spread knowledge among students. This proposition means that the assertions of culture as an influencing factor in the adoption of the digital libraries are correct. Nevertheless, the degree of influence depends on the government's inclination (Al-Kandari & Hasanen, 2012). Cook (2013) attested to the fact that government regulations are forces behind the inflexibility of education culture in Saudi Arabia. This information indicates that the Saudi Arabian government is reluctant to invest in digital libraries. The reason are based

on concerns about the scarcity of resources, the desire to safeguard monopolistic rights of state telecommunication, and fear of losing information control. If this is what is happening, students are apt to have poor awareness about the importance of digital libraries. In such cases, negative attitudes can develop. But Ross (2012) denied the given possibility by noting that the government of Saudi Arabia is currently providing the infrastructure that enables Internet connectivity, especially in areas of higher learning. Therefore, this means that even if there is censoring of information, universities and colleges are free to adopt and use the digital libraries since they promote learning. With this recognition, there is no denying that cultural background has a negligible effect on adoption of digital libraries (Aman & Jayroe, 2013). What remains unanswered is the attitude of students towards this initiative. In finding an answer to this question, there is the need to explore possible obstacles to the adoption of e-learning amenities.

Conceptual Framework

After noting that the theoretical frameworks support the idea of attitude, it is essential to explore the influence of various concepts in the adoption of digital libraries. One area to consider is the concept of hindrances, which are things that can limit the uses of e-learning materials in Saudi Arabian universities and colleges. Since e-learning constitutes digital libraries, it is time to determine what obstacles can prevent the conceptualization of these initiatives. Several obstacles make the digital libraries less attractive, especially to students. Lopatovska (2014) argued that the lack of e-reading devices and lack of demand from users are the major hindrances to full adoption of the digital libraries in higher learning. But, before that, there is need to recognize other intrinsic hindrances to the adoption of digital libraries across the world about the trends observed in Saudi Arabia. Based on the research done by Ifijeh (2014), the primary obstacle when adopting and implementing digital libraries in higher learning institutions is the issue of

librarians. Similarly to the traditional library framework, digital libraries require professionals, specifically librarians and other supporting staff. It is unfortunate to note that some these individuals have little competency in the context of digital libraries as asserted by Ross (2012). It is a hindrance that arises due to training inadequacies coupled with lack of necessary procedures to execute an organized transition from traditional to digital forms of libraries. Since this occurs in developing countries, Saudi Arabia is not an exception as it struggles to set up digital libraries in higher education institutions. By the work published by Alssbaiheen and Love (2015), there is little doubt that librarians of universities and colleges in Saudi Arabia are inclined to operate traditionally as opposed to digitally. They have limited exposure to universal syllabi or mechanisms of training to meet the extra requirements needed for the operation of the digital libraries. It is a difficulty that Ross (2012) and Ifijeh (2014) wanted to be resolved immediately by removing unprepared library staff members so that they do not discourage the use of digital libraries. In providing a solution, Xanthidis and Nikolaidis (2014) agreed with the finding that the Saudi Arabian universities and colleges are at the precedence of providing proper training in IT, especially in the areas concerning the handling of digital information. Since the obstacle noted above is solvable, Alssbaiheen and Love (2015) concluded in their study that the Internet is one of the challenges to digital library adoption. Saudi Arabia, as a developing country, faces challenges regarding the indifferences in upgrading technological systems that align with those existing in developed countries such as those in Western countries. Researchers like AlMegren and Yassin (2013), Xanthidis and Nikolaidis (2014), and Hussain (2015) suggested that the cultural background, as noted by Moaddel and Karabenick (2008), is to blame for the laxity in upgrading Saudi Arabia's IT systems. If procedures are not set in place to deal with conservative orientation predisposed by religious beliefs about technological advancements, it will be difficult

for universities and colleges to have dependable digital libraries. This idea is seconded by Ifijeh (2014) idea that developing countries need to maximize the benefits that come with the use of digital libraries in higher education institutions. However, it is possible that Saudi Arabia could upgrade IT systems in universities and colleges with time. According to findings of Xanthidis and Nikolaidis (2014), the country has the financial capability to support the adoption of digital libraries in higher learning institutions. What it needs is a commitment by all interested agencies. This move is capable of alienating negative cultural outlooks about IT in Saudi Arabia. They are behind the low demand for the digital libraries, something that leads to the low supply of items like e-reading tools. This indicates that the government and non-governmental agencies need to invest in digital libraries to enable their acceptance in universities and colleges as a developmental move for promoting knowledge acquisition.

The investment in information technology is a conception that Saudis must consider if they want to eliminate obstacles. Al-Shehri (2013) reiterates this idea when discussing the future of mobile learning in Saudi Arabia, stating that it is a move that is poised to remove hindrances for the adoption of digital libraries in Saudi Arabian higher education institutions. More so, parties tasked with the provision of knowledge in universities and colleges have no option as they have to deal with obstacles that prevent the adoption and implementation of the digital libraries whether they are in favor of it or not. This statement is correct in the scope of Alssbaiheen and Love (2015). They acknowledged that the development of reading platforms and libraries tends to exist out of necessity and not otherwise. This implication shows that compulsion has nothing to do with the emergence of digital libraries. The growing rate of online education is enough to explain why Saudis must embrace the use of digital libraries now more than ever. AlMegren and Yassin (2013) and Hussain (2015) concluded that obstacles on the

subject of adopting the digital libraries are nothing to worry about since they are solvable with commitment, collaboration, and investment initiatives. What remains is the attitude of students towards the use of digital libraries in universities and colleges. As it is an area least explored in the circumstances of Saudi Arabia, students' attitudes, as noted earlier, is still a primary issue in dealing with hindrances that prevent not only the adoption but also the use of digital libraries around the world, especially in developing countries. According to AlMegren and Yassin (2013), if students are unwilling to embrace the benefits that come with the digital library, there is no possibility of necessitating successful inculcation of IT in higher learning institutions across Saudi Arabia. But, there is no existing information on how students perceive the use of digital libraries in Saudi Arabia. Its availability is essential to defining attitudes of students on the same subject, thereby leading to the provision of actionable solutions. It is a research that needs consideration.

Diffusion of Innovation Theory

Rogers (1995) developed the Innovation Diffusion Theory (IDT). He states that innovations are communicated through certain channels over time among the members of a social system. Rogers said that four elements impact the spread of a new idea and the adoption of technological innovations: (1) the innovation, (2) communication channels, (3) time, and (4) a social system. Rogers (1995) defined innovation as “an idea, practice, or object that is perceived as new by an individual or another unit of adoption” (p.11). However, in this research, the innovation is a digital library as a tool that Saudi students use in learning.

Rogers (2003) conducted a study to explore factors that affect users' attitudes toward adopting the technology. The results found that the higher the perceived usefulness, ease of use, and compatibility of the technology, the more positive the attitude toward using the technology.

Rogers (2003) said, “An innovation is an idea, practice, or project that realize as new by a one or another unit of adoption” (p. 12). He stated that many innovations required a lengthy period of years from the time when they become available to the time when they are vastly adopted (p. 1). Diffusion is defined as the procedure by which an innovation is communicated through particular channels over a period through the members of a social system (p. 5). In simple words, four essential elements impact the adoption of an innovation. These include (a) the innovation itself, (b) the vast and various forms of channeling that are used to spread the information about the innovation, (c) time, and (d) the nature of the society to which it introduced (see Table 2 and Figure 2).

Table 2: The Four Main Elements in the Diffusion of Innovations

	Descriptions
The Innovation	An innovation is an idea, practice, or object that is perceived as new by an individual or other unit of adoption. Therefore, if an idea seems new to the individual, it is an innovation. However, newness in an innovation need not just involve new knowledge because someone may have known about an innovation for some time but not yet developed a favorable or unfavorable attitude toward it, nor have adopted or rejected it.
Communication	Communication is the process by which participants create and share Channels of information with one another in order to reach a mutual understanding. Diffusion is a particular type of communication in which the message content that is exchanged is connected with a new idea. A communication channel is the means by which messages get from one individual to another.
Time	The time dimension is involved in diffusion in 1. The innovation decision process by which an individual passes from first knowledge of an innovation through its adoption or rejection. 2. The innovativeness of an individual or other unit of adoption compared with other members of a system. 3. An innovation's rate of adoption within a system usually measured as the number of members of the system who adopt the innovation in a given time period.
A Social System	A social system is a set of inter-related units are engaged in joint problem solving to accomplish a common goal. The members or units of a social system may be individuals, informal groups, organizations, and/or subsystems.

Source: Adapted from (Moukale, 2012, p. 9) and (Elshaikhi, 2015, P 23).

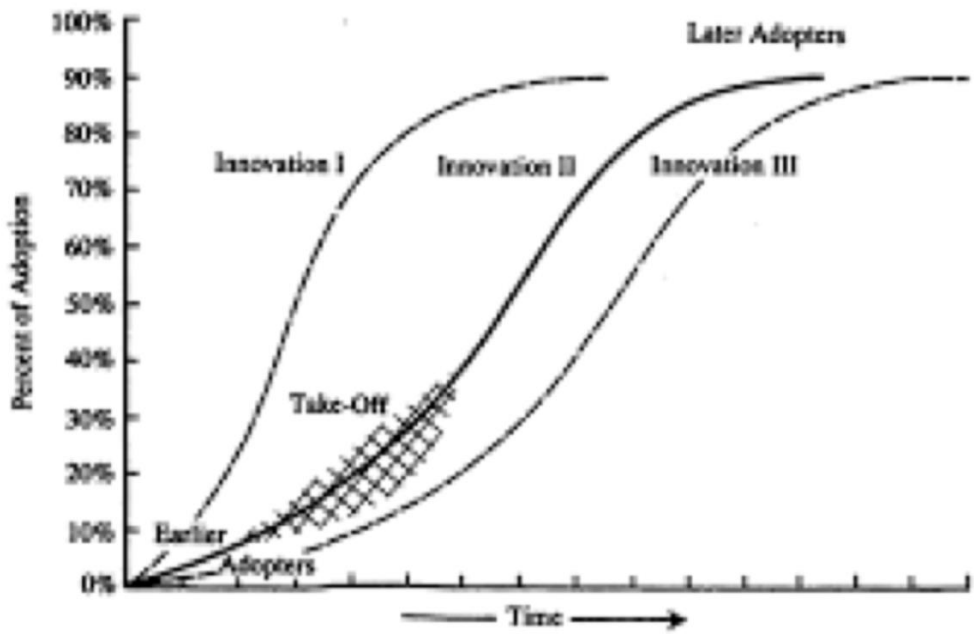


Figure 2: The Diffusion Process: Diffusion is the process by which (1) an Innovation is (2) Communicated through certain Channels (3) Over time (4) among the members of a Social

Rogers (1995) mentioned that an innovation based on adopters judge's perceptions regarding five attributes of the innovation. These attributes are Relative Advantage, Compatibility, Complexity, Triability, and Observability. The theory holds that an innovation will experience an increased rate of diffusion if potential adopters perceive that the innovation:

- 1) Can be tried on a limited basis before adoption;
- 2) Offers observable results;
- 3) Has advantages relative to other innovations;
- 4) Is not overly complex; and
- 5) Is compatible with existing practices and values (See Table3).

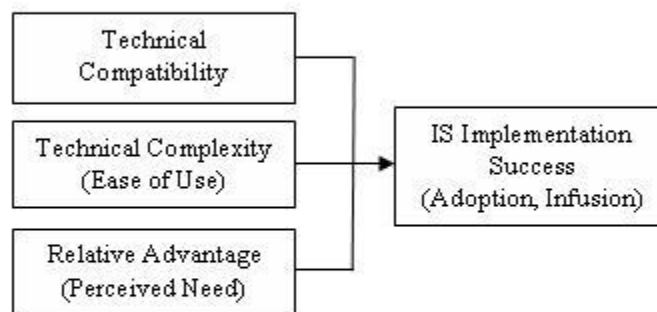
Table 3: Summary Definitions of Five Factors of IDT

Factor	Definition
Relative Advantage	<p>The degree to which an innovation is perceived as being better than the idea it supersedes.</p> <p style="text-align: center;">OR</p> <p>The extent to which a technology offers improvements over currently available tools.</p>
Compatibility	<p>The degree to which an innovation is perceived as consistent with the existing values, past experiences, and needs of potential adopters.</p> <p style="text-align: center;">OR</p> <p>Its consistency with social practices and norms among its users.</p>
Complexity	<p>The degree to which an innovation is perceived as relatively difficult to understand and use.</p> <p style="text-align: center;">OR</p> <p>Its ease of use or learning.</p>
Triability	<p>The degree to which an innovation may be experimented with on a limited basis.</p> <p style="text-align: center;">OR</p> <p>The opportunity to try an innovation before committing to use it.</p>
Observability	<p>The degree to which the results of an innovation are visible to others.</p> <p style="text-align: center;">OR</p> <p>The extent to which the technology's outputs and its gains are clear to see.</p>

Source: Masrom and Hussein (2008, p.96)

On the other hand, Bradford and Florin (2003), and Crum et al. (1996) stated that compatibility (social norms), relative advantages (perceived usefulness), and complexity (perceived ease of use) have the greatest influence on user's adoption of innovations, as cited in Masrom and Hussein (2008). (see figure3).

Figure 3: Information System (IS) Diffusion Variance Model



Source: Agarwal and Prasad (1998), Cooper and Zmud (1990), Crum et al. (1996).

Swanson (1994) defined innovation as "an idea or behavior that is new to the organization adopting it" (p. 1070). Sahin (2006), Medlin (2001), and Parisot (1995) agreed with him arguing that "Rogers' diffusion of innovations theory is the most appropriate and adequate for investigating the adoption of technology in higher education and all educational environments" (p.14).

Surry (1997) suggests three other reasons for the importance of examining the diffusion of innovation theory in the educational technology field. First, for the most part, instructional technologists do not fully comprehend the reason why innovation is a success or a failure. Frequently, Surry noted, in technology adoption, the factors for failures are such things as resistant teachers, bureaucratic administrators, misinformed training, or lack of funds. Second, technology innovations present radical changes in the process of instruction, and innovation theory is the best way to prepare the social group for the innovation. Third, these studies may lead to a systematic model of innovation diffusion in educational technology related to the systematic models that set the format in the field of instructional design (Page, 2000).

Rogers's (2003) theory stated there are four various elements of the innovation process. These include (a) the innovation-decision process, (b) individual innovativeness, (c) rate of adoption, and (d) perceived attributes.

1. Innovation decision process. This procedure includes the following five stages: (1) knowledge; (2) persuasion; (3) decision; (4) implementation; 5) confirmation. According to Rogers, a decision-maker starts with learning about the innovation, proceeds to the formation of an attitude that generates innovation, decides to adopt or reject the applied the innovation, and confirms the decision (see Figure 4).

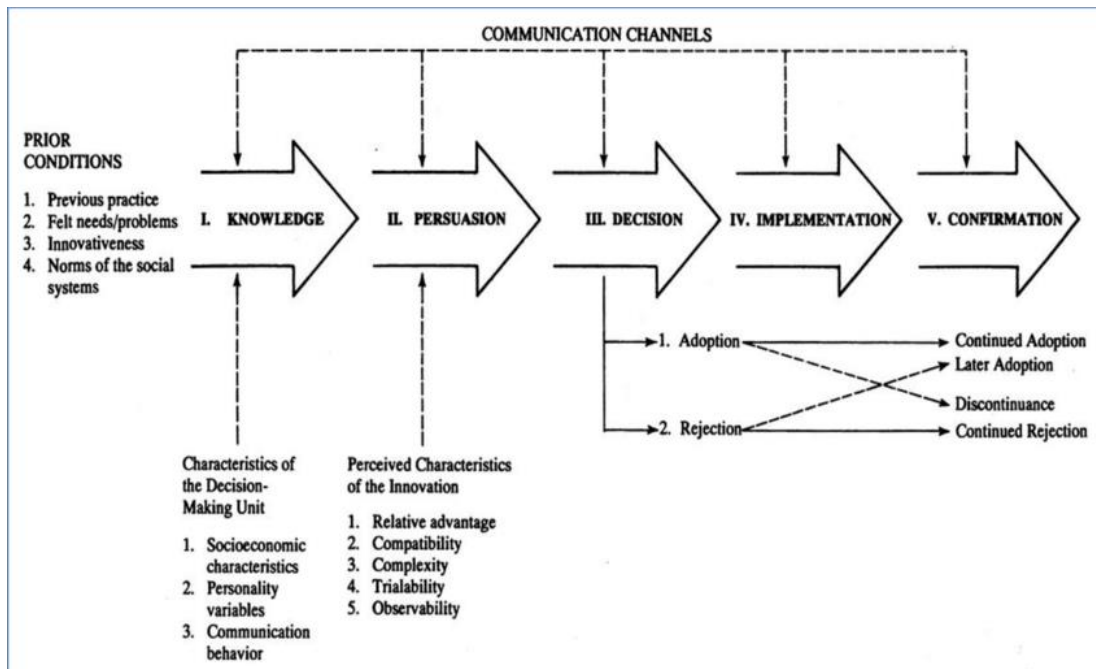


Figure 4: A Model of Five Stages in the Innovation-Decision Process. The stages of the innovation adoption process include: knowledge, persuasion, decision, implementation, and confirmation. Source: Adapted from (Rogers, 2003, p.170).

2. Individual innovativeness. Individuals who are a tendency to being innovative are more probable to adapt to an innovation quickly than those who are not a tendency. This theory is based on a bell shaped distribution curve (see Figure 4) amongst the adopters, ranging from 31 the innovators (2.5%), are the fast adopters (13.5%), the majority of early adopters (34%), the less likely to adopt (34%), and those who are expected to adopt and do not (16%) (See Figure 5).

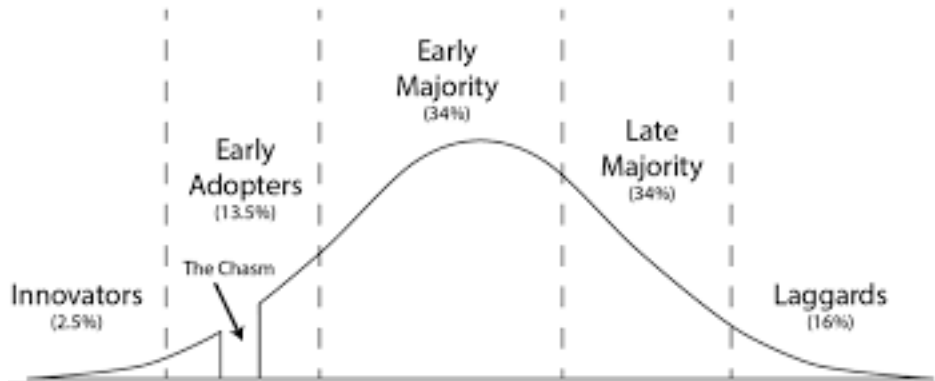


Figure 5: Individual innovativeness Source: Adapted from (Rogers, 2003, p. 28)

3. Rate of Adoption. This theory is spread over a term of time in a way that represents an s-shaped curve (see Figure 5). This theory states that innovation goes through a process of stages, from slow to gradual growth that will allow dramatic and fast growth (See Figure 6).

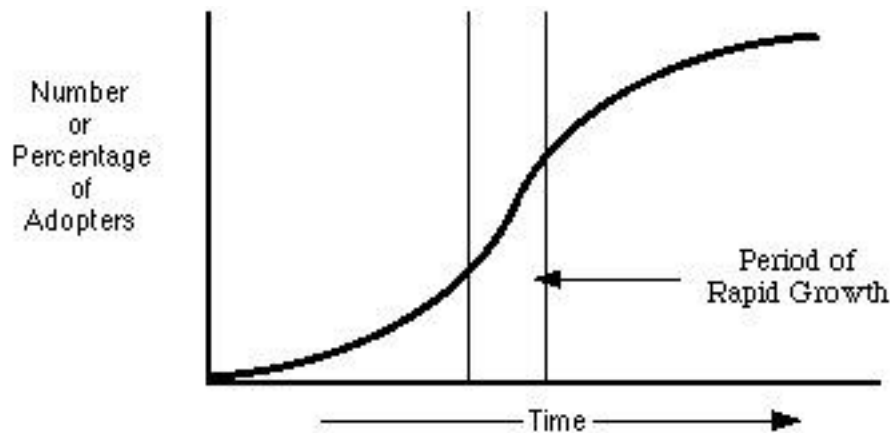


Figure 6: Rate of adoption. Source: Adapted from (Page, 2000, p. 63).

4. Perceived Attributes. Rogers’s theory noted that some individuals judge an innovation based on their beliefs. The innovation has these five attributes:

- a. Simplicity: "Simplicity" It is easy explain to others.
- b. Trialability: Rogers defines "trialability" as the tried on a limited basis before adoption.
- c. Observability: "Observability" is a degree that provides visible results to others who can see how it works.
- d. Relative Advantage: Rogers defines "relative advantage" as the degree to which an innovation has an advantage over other innovation.
- e. Compatibility: "Compatibility" is the innovation compatible with the existing values, needs, and practices.

Theory of Technology Acceptance Model (TAM), and Diffusion of Innovations

Theory (DIT). Davis' (1989) developed Technology Acceptance Model (TAM); most studies of people's attitudes towards using technology are built based on this. This theory models how users come to use and accept a computer-based technology. TAM states that when users presented with a new software package, many factors influence their decision about when and how they will use it (Masrom and Hussein, 2008). TAM suggested that one's adoption of information technology depends on two major factors, which are perceived ease-of-use (PEO) of the technology and perceived usefulness (PU). TAM argued that when individuals perceive technologies as easy to use and useful, they would have positive attitudes toward this technology and the reverse. These positive attitudes will result in accepting and using this technology (e.g., digital libraries) (See Figure 7 TAM).

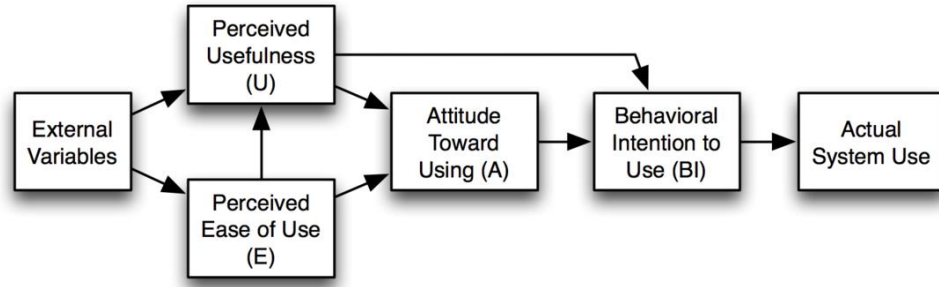


Figure 7: Technology Acceptance Model (TAM). Source: Davis (1989)

Another theory is the Innovation Diffusion Theory (IDT), which was developed by Rogers (1995). IDT theory suggested that four fundamental elements influence the spread of a new idea and the adoption of technological innovations: the innovation, communication channels, time, and a social system. Rogers defined innovation as “an idea, practice, or object that is perceived as new by an individual or another unit of adoption” (p.11). However, in this current research, the innovations of digital libraries are learning tools that Saudi students use in learning.

Many studies have been conducted to investigate factors that influence people when adopting and using emerging technologies. Rogers (2003) concluded a study that explored factors that affect users’ attitudes toward adopting the technology. Findings show that the higher the perceived usefulness, compatibility, and ease of use, the more positive the attitude toward using the technology. Masrom and Hussein (2008) concluded a study to explore factors influencing the users to adopt electronic collaboration technology. The results of the study show that perceived ease of use of the electronic collaboration technology has a positive impact on perceived usefulness. Davis (1989) also conducted that perceived usefulness had the substantial effect and significant on attitude. However, ease of use had a smaller but also the significant impact on attitudes toward adopting electronic mail.

Technology and Gender Differences. Studies focused on gender differences and their impact on the Internet usage and web-based applications. Male and female differences are related to the usage of the Internet and attitude towards its use as well (Jackson, Ervin, Gardner, and Schmitt, 2001). Shashaani (1994) also conducted that males have more experiences with computers and more positive attitudes than females. Also, Kayaoglu (2012) stated that males have more positive attitudes towards technological aids and computer use while females do not feel as confident as males. Other studies concluded that males have more experiences and more competent in using the computer and the Internet than females (Durndell & Thomson, 1997). Sherman, End, and Kraan (2000) revealed that gender differences among college students' usage of the Internet remain observable. Li, Kirkup, and Hodgson, (2001); Sherman et al. (2000); Jackson et al. (2001); and Joiner et al. (2005) concluded that females might have high anxiety, less competence, and a less positive attitude toward using the Internet and its applications than males. Sherman, End, and Kraan (2000) revealed that gender differences among college students' usage of the Internet remain observable.

Technology and People's Age

Studies conducted that users' age prophecies their attitudes toward using technologies such as computers and the Internet. Pew Internet and the America Life Project (2004) concluded that younger users who use the Internet for information searching and emailing report highest rates than seniors. Furthermore, Pew Internet and the America Life Project revealed that why older people do not use computers and the Internet include: lack of skills, concerns about privacy and security of information, lack of knowledge, lack of access to the Internet, and costs. Aharony (2013) conducted a study on the perception of university students towards digital libraries in Israel. The study revealed that older students taking further studies find it difficult to experience,

learn, and assimilate e-books. In contrast, younger students seemed happy with what the digital libraries had to offer since the new platform matched their perceptive technological lifestyle. Additionally, Porter and Donthu (2006) reported that people's age was related to their beliefs about the Internet and that these beliefs impact a user's attitude toward the use of the Internet and its applications. However, other studies show that there are different patterns for age differences in the users' perceptions of using technology in their academic learning. In Hong Kong, Yau and Cheng (2012) concluded a study to know how age differences impact students' perception of technology usage. The results show that younger students had less confidence in using technology for learning than older students.

Factors influencing Students Attitudes towards the Digital Libraries

Some factors might prevent the effective implementation of the use of digital libraries in higher education from the perspective of students at Taibah University. These factors include the following:

Access to Internet connection and technology

Access to Internet connection and technology is one of the effective factors that students encounter when they are willing to use digital libraries. Seo (2012) stated students should have high-speed Internet access that has little to no interruptions in service and good equipment. Terri pointed out, "The issue of access to free programs is a problem. You will use one and then it's taken down, or they start charging you to use it. You have to be flexible and knowledgeable about emerging technologies" (2013, p.27). Terri argued that free online programs often shift to a fee-based model once the program has obtained its success or modify access privileges or modify access privileges.

Language

According to Alaugab (2007), the lack of using the English language is the important barrier to online instruction for female faculty and students at Al-Imam Muhammad Bin Saud Islamic University. Furthermore, he stated that the highest mean of barriers both Saudi female faculty and students encounter is the lack of using English because the research, most of the online technologies, and the studies available on the Internet are in English. Also, one of his study findings presented that the best the students' English language skills were, the most interested they were to take courses online. Therefore, female faculty and students in Saudi universities need to take English courses to effectively use online technologies. Moreover, findings of his study show that female students who had more positive attitudes toward online instruction had better English language skills.

The lack of instructional pedagogy

An additional factor that may impact to use digital libraries in learning is the lack of instructional curricula that integrate e-learning in learning. Thus, Institutions should focus on principles of integrated design that involve e-learning in the design of instruction curricula. Without good technological principles for instructional designs, students may find themselves lost in an ever-blurring digital landscape. Karasavvidis (2010) argued that one of the most significant noted problems related to E-learning is the lack of pedagogy. Murphy and Terry (1995) identified five general categories of limitations: lack of a formal reward system for faculty to adopt technology; lack of time; the cost of equipment; the lack of properly designing facilities for using the technology; and lack of technical support for using the technology. Also, according to the students' perspective at Taibah University, that one factor that might prevent the effective implementation of using digital libraries in their learning environments is the lack of

instructional pedagogy that motivates the implementation of using digital libraries into the learning environments.

Prior Technological knowledge

Corbin (2003) identified five barriers and grouped them into three areas: (a) lack of experience in pre-service training, (b) lack of access to computers at school, and (c) lack of onsite technical support. Also, he argued that the most significant barrier teachers must deal with is lack of access to computers, either in a lab setting or the classroom. Additionally, he illustrated in detail what computer access means. It is not only the physical access to the computer but also develops a general familiarization with the system and computer hardware, test out activities, and access to the time to experiment with the computer. (Collis et al., 1996). Successful technology integration in a classroom setting seems to require will, skill, and access to technology tools on behalf of the teacher. Seo (2012) argues that teachers must resist the assumption that all digital natives share equal expertise in all digital online interactions, as there are gaps in computer knowledge and experience. According to some of the instructors at Taibah University, there is a relationship between students' prior experience with using digital libraries, their technical skills, and attitudes towards using digital libraries.

Chapter Summary

Chapter two has provided an overview that describes digital libraries and a review of literature related to digital libraries. The subtopics and topics organized to be compatible with the purpose of this study and the research instrument variables. Moreover, details related to digital libraries were described to provide a better understanding of the use of digital libraries in learning, digital libraries definition, the need of digital libraries, and advantages and disadvantages of digital libraries in higher education.

Chapter 3 Methodology

Introduction

The purpose of this study is to determine the attitudes of Saudi Arabia students on the digital libraries at Taibah University in Madina. This researcher conducted a systematic literature review and identified the gaps in the knowledge. The researcher decided upon using more hypotheses, refined research questions, and considered information that can assist in addressing the identified gaps in the knowledge. This chapter described the methods and procedures used to collect data. The descriptions of these procedures are explained in the sections that follow.

Research Design

The research used in this study was descriptive-correlational research that provided information about events, conditions, and situations that occur in the present and included the search for relationships between variables through the use of quantitative research methods to test the hypotheses of the study (UNESCO, 2009). According to Gay and Airasian (2000), descriptive research is “useful for investigating a variety of educational problems, and concerned with the assessment of attitudes, opinions, and preferences” (p. 275). The research used the descriptive parts to explain the existing relationships between different variables (Fraenkel & Wallen, 2003).

A descriptive survey was conducted to measure the characteristics of the research sample and investigate any relationship between the selected demographic variables of students (computer literacy skills, access technology, student’s status, major, age, and gender) and students’ attitudes toward using digital libraries in learning.

Review of Research Questions

Q1: Are Saudi students’ use of digital libraries related to their computer literacy skills, access

technology, student's status, major, age, and gender?

Q2: Are Saudi students' attitudes toward digital libraries related to their computer literacy skills, access technology, student's status, major, age, and gender?

Q3: Are Saudi students' perceived usability of digital libraries related to their computer literacy skills, access technology, student's status, major, age, and gender?

Hypotheses of the Study

H1: There is a relationship between the selected demographic variables of Saudi students' computer literacy skills, access technology, student's status, major, age, and gender related to the Saudi students' use of digital libraries.

H2: There is a relationship between the selected demographic variables of Saudi students' computer literacy skills, access technology, student's status, major, age, and gender related to the Saudi students' attitudes toward digital libraries.

H3: There is a relationship between the selected demographic variables of Saudi students' computer literacy skills, access technology, student's status, major, age, and gender related to the Saudi students' perceived usability of digital libraries.

Research Setting

Taibah University includes two separate main campuses, one for males and another for females according to Islamic regulations. The female and male sections inaugurated in the same year. Each of these campuses is provided with cultural, athletic, and recreational facilities. Each campus has an extensive library equipped with the most recent advanced technologies to serve students and faculty. (Ministry of Higher Education, 2017).

This university offers educational programs for preparing students to do jobs that meet the needs of the community. Further, Taibah University has regular and external programs to

provide for all students who seek higher education. Taibah University established the Deanship of Distant Teaching to develop learning and education in teaching technology.(Taibah University, 2017).

Taibah Colleges

According to the official website of Taibah University (2017), Taibah University was established in 2003 with 7,761 enrolled students. The University first established only seven colleges. By 2012- 2013, the university had evolved to include 28 colleges and one institute. Sixteen of these collages are in the city of Al Madinah Al Munawarah, and the rest are in six branches: Yanbu –Ula – Hinakivah – Khyber- Almahd – Bade, and these colleges are:

Medicine	Dentistry	Pharmacy	Applied Medical Science
Applied Medical Science–Yanbu	Applied Medical Science – Ola	Medical Rehabilitation	Nursing
Science	Community College – Khaibar	Science- Yanbu	Engineering
Engineering – Yanbu	Computer Science	Computer Science – Yanbu	Family Science
Education	Arts & Humanities	Arts & Humanities – Yanbu	Business Administration
Business Administration – Yanbu	Law	Sciences & Arts – Ola	Community College
Community College – Hnakyah		Community College – Mahd	Community College – Ola
		Community College – Badr	Higher Institute of Imams

Source: <https://taibahu.edu.sa/Pages/en/CustomPage.aspx?ID=47>

The total number of Taibah University Academic staff is 2,860, classified into 1436 faculty members and 1424 teaching assistants, lecturers and language teachers. The University has witnessed a radical increase in the number of its students (Men & Women). There were 7761

students in 2003. Today, there are 69110 students enrolled in 165 different academic programs, and there are 94 graduate studies. The 7 degrees awarded by Taibah University include Diploma, Associate, Bachelor's, General Diploma, Higher Diploma, Master's, and Doctorate. In addition to its regular programs, the University offers parallel and distance education using advanced technology and partial face-to-face training. These programs enable students from the Madinah Region to pursue their studies in various fields.

Data Collection Procedures

The data collected via an electronic survey was developed to determine the student's attitudes toward the use of digital libraries in higher education. The population of this study was native Arabic speakers; an Arabic version of the survey used.

The researcher went to Taibah University after she got the Human Subjects' Committee approval by May 2017. A request to conduct this study was sent an email to the office of the Vice President of Graduate Studies at Taibah University The survey was given to the students who were participating in this study Fall 2017. Two hundred and forty students responded to the survey questionnaire. There were some missing values because not all the participants responded to every the survey question. The pairwise deletion method applied to analyses.

Human Subjects Committee Approval. A request to conduct this study was sent to the Human Subject Committee Lawrence (HSCL) at the University of Kansas to get their approval to conduct the study, and approval was granted to collect the study data (See Appendix A).

Research Field Study Approval

Permission was requested from Taibah University to conduct the study. Study approval required to obtain approval from Saudi Arabian Cultural Mission (SACM) at Washington D.C., and Taibah University at Madina, Saudi Arabia, to conduct the study and collect the data. The

researcher sent all the required documents to SACM including a letter of support from the academic advisor, letter of support from the academic advisor, a copy of the research survey, and other related documents. SACM sent all documents to the Ministry of Higher Education in Riyadh, Saudi Arabia. The documents reviewed at the Ministry of Higher Education and Taibah University and approval issued for conducting the research study. Finally, Taibah University sent an approval letter to SACM (see Appendix B).

Consent to Conduct the Study

While conducting a survey, seeking consent is an essential ethics requirement. Therefore, the researcher sought permission from the school administration. Once the researcher received permission, the next step was to seek the consent of the participants. The researcher has ensured that all participants understood the intent of the study, and they agreed to join in it. As part of the agreement, the researcher guaranteed confidentiality and anonymity.

Translation from English to Arabic

Back-translation is the process of translating survey items or a document that has already translated into a foreign language (e.g., English) back to the original language (e.g., Arabic). An independent translator is preferred to conduct the translation. Because Saudi Arabia is an Arabic speaking country, most higher learning institutions use Arabic as the primary language for communication and class instructions. Therefore, the researcher translated the questionnaire into Arabic to allow the students to fill out the surveys. The researcher gave the Arabic version of the questionnaire to a specialist in both Arabic and English, who is individually specialized in teaching English as a second language, to translate the Arabic version back into English. Both versions, this English version and the first English version, were given to a native English speaker who is specializing in English linguistics to confirm the translation to investigate any

differences between the two versions.

Description of the Variables

The following is a description of independent and dependent variables in this study:

The Independent Variables

The independent variables were derived from the demographic information that includes:

1. Computer literacy skills
2. Access technology (access to Internet connection and technology)
3. Student's status
4. Major
5. Age
6. Gender

The Dependent Variables

The dependent variables in this study are:

1. The Saudi students' use of digital libraries.
2. The Saudi students' attitudes toward using digital libraries.
3. The Saudi students' perceived usability of digital libraries.

Participant Sample

The participant sample for this study consisted of male and female students who were undergraduates at Taibah University during fall 2017; participants have differences in computer literacy skills, technology access, status, major, age, and gender. The sample was from the School of Applied Science and School of Education Science. According to the Administration of Applied Sciences (2017), 4027 students are studying in Applied Sciences Department, with 2852 males and 1175 females. The participant sample for this study was 5% of the students as a

sample size of 201 students. According to the Administration of Education Sciences (2017), 3405 students are studying in Education Sciences Department, with 2171 male and 1234 female. The participant sample for this study was 5% of the students as the sample was 170 students. The sample was approved by the administration of Applied Sciences and the administration of Education Sciences at Taibah University. They used research to find out which students were available, who were willing to volunteer and were interested in participating in the study. The researcher asked the chairs of academic departments for help to reach the participant sample by distributing an online survey. The researcher distributed the survey to each student. The sample size was 240 participants from two schools at Taibah University. After that, the researcher collected and analyzed data. This process took two months.

Limitations of the Study

The current study has the following limitations. This study was conducted in fall 2017 and only focused on undergraduate students, and the sample drawn from only one university in Saudi Arabia, Taibah University. Therefore, the findings of this study might not be generalizable to other Saudi universities. This study focused on investigating the relationship between the demographic variables (computer literacy skills, access technology, student's status, major, age, and gender) and the Saudi students' attitudes toward using digital libraries in their learning, and perceived usability of digital libraries. Finally, the participants were selected to participate in this study based on those students who were available, willing to volunteer, and interested in participating in the study.

Instrumentation

To collect data, the researcher used a questionnaire as the tool for collecting students' responses. The survey measures the attitudes of Saudi Arabian students toward the use of digital

libraries. The researcher developed the construct of the survey after reviewing the literature and several existing surveys that are related to digital libraries and technology. The researcher built the survey items from the literature reviews to fit the needs of this study.

The first source is a study conducted in 2013 by Aifan, “Saudi Students’ Attitudes Toward Using Social Media to Support Learning.” The second source is the usability.gov website. The third source is a study conducted in 2015 by Elshaikhi, “Barriers to Integrating Information Technology in Libyan Higher Education.” In order for the researcher to use items from the Aifan survey and Elshaikhi survey, permission requests were sent to the original researchers who provided the researcher with permission to use the survey or items from it.

The questionnaire divided into six sections:

1. Digital libraries usage
2. Attitudes to using digital libraries
3. Usability of digital libraries
4. Computer literacy skills
5. Access to technology and the Internet
6. Demographic information

Section 1: Digital Libraries Usage. The first section evaluates the current level of Saudi students’ use of digital libraries. It contains four items to gather information about Saudi students’ use of digital libraries that measured on Likert-scale questions with six possible responses: (1) More than 4 Times Per Day; (2) 2 to 4 Times a Day; (3) Once a Day; (4) Weekly; (5) Monthly; (6) Never (See Appendix C for the English version and Appendix D for the Arabic version).^[11]

Section 2: Attitudes to Use Digital Libraries. The second section evaluates the current level of Saudi students' attitudes towards digital libraries. It contains eight items to gather information about Saudi students' attitudes use of digital libraries that measured on Likert-scale questions with five possible responses: (1) Strongly Agree; (2) Agree; (3) Somewhat Agree; (4) Neither Agree nor Disagree; (5) Strongly Disagree.

Section 3: Usability of Digital Libraries. The third section evaluates the current level of Saudi students' perceived usability. It contains nine items to gather information about Saudi student's perceived use of digital libraries that measured on Likert-scale questions with five possible responses: (1) Strongly Agree; (2) Agree; (3) Somewhat Agree; (4) Neither Agree nor Disagree; (5) Strongly Disagree.

Section 4: Computer Literacy Skills. The fourth section evaluates the current level of Saudi students' computer literacy skills. It contains ten items to gather information about Saudi students' computer literacy skills that measured on Likert-scale questions with five possible responses: (1) Very Skilled; (2) Somewhat Skilled; (3) Average; (4) Poor; (5) No Experience.

Section 5: Access to technology and the Internet. The fifth section focused on Saudi student's access to technology and the Internet. It contains two yes or no questions to gather information about Saudi student's access to technology and the Internet.

Section 6: Demographic Information. The sixth section focused on demographic information. It contains four items to collect demographic information about Saudi students. The first section gathers information about student's status. The second section gathers information about Saudi student's academic department. The third section collects information about Saudi student's age, and the last section gathers information about Saudi student's gender.

Reliability and Validity

Reliability. According to McIntire and Miller (2006), “a reliable test is one we can trust to measure each person in approximately the same way every time it used” (p. 181). The term reliability refers to the degree to which a survey instrument consistently measures whatever it is designed to measure (Slavin, 1990). Reliability in statistics refers to the overall consistency of a measure. A reliable survey instrument measures consistently whatever it is designed to measure. Reliability can determine through several different approaches.

The researcher calculated the internal consistency coefficient (Cronbach’s Alpha) to evaluate the reliability of the survey instrument used in this study. There were four major measures in the survey: students’ use of digital libraries, students’ attitudes toward digital libraries, students’ perceived usability of digital libraries, and students’ computer literacy skills. The internal consistency of the items within each measure evaluated and the results are as follows.

- Students’ use of digital libraries measured by four items and the coefficient of Cronbach’s Alpha for this measure is 0.90.
- Students’ attitudes toward digital libraries measured by eight items and the coefficient of Cronbach’s Alpha for this measure is 0.90.
- Students’ perceived usability of digital libraries measured by nine items and the coefficient of Cronbach’s Alpha for this measure is 0.55.
- Students’ computer literacy skills measured by ten items, and the coefficient of Cronbach’s Alpha for this measure is 0.83.
- Other than the measure of students’ perceived usability of digital libraries, the values of Cronbach’s Alpha coefficient were high enough to indicate that the items within the measures were highly correlated. The reason why the Cronbach’s Alpha coefficient was

much lower may be because 5 out of the nine items under this measure were reversely worded and participants may not have paid attention to this and did not read the items carefully before responding. Instead, they may have followed the same pattern when selecting a response from the Likert-scales: 1 = Strongly disagree, 2 = Somewhat disagree, 3 = Neither agree nor disagree, 4 = Agree, and 5 = Strongly agree. Thus, their response choice could be right opposite to what they thought or meant.

Validity. According to Frey (2006), validity is the extent to which the instrument measures what it is intended to measure (p. 136). The term validity refers to whether one can draw meaningful and useful inferences from scores on particular instruments Creswell (2009, p. 235). People use the term of face validity to describe a set of items that assess what they appear to measure (DeVellis, 2003, p. 57). To ensure that the survey is accurate in measuring Saudi student's attitudes toward using digital libraries in higher education, experts at the University of Kansas in Educational Technology, Psychology and Research, and Design and Art in Education departments reviewed the survey to ensure that items are accurately measuring Saudi students' attitudes toward utilizing digital library in higher education. The researcher received feedback and adjustments items, removed survey items, added new items, and kept items to provide quality survey items. DeVellis (2003) stated that the effect of dropping items of the survey could either increase or decrease alpha depending on how poor the items that are dropped and the total number of items remaining in the scale. The researcher modified the survey based on the expert's suggestions and then translated it into the Arabic language because Saudi Arabia is an Arabic speaking country, and most higher learning institutions use Arabic as the main language for communication and class instructions. Therefore, the researcher considered translating the questionnaire into Arabic in order to better understand the questionnaire and allow the

participants fill it out. The Arabic version of the questionnaire was reviewed by two native Arabic speakers to examine the legibility before it was given to a person who is fluent in both Arabic and English well, and she was asked to translate the Arabic version back into English. This English version and the first English version were given to a native English speaker to investigate any differences between the two versions. There were no significant differences between the two versions.

Data Analysis

The researcher analyzed questions using different types of data analysis methods. To answer the research questions above, the Statistical Package for Social Science (SPSS) software (Version 24) was used to conduct linear regression and independent sample analyses. All analyses conducted were tested at a significance level of $p < .05$. In the regression models, descriptive statistics were also computed to summarize the demographic data and provide an overview of the sample distribution.

Research Questions

Q1: Are Saudi students' use of digital libraries related to their computer literacy skills, access technology, student's status, major, age, and gender?

Q2: Are Saudi students' attitudes toward digital libraries related to their computer literacy skills, access technology, student's status, major, age, and gender?

Q3: Are Saudi students' perceived usability of digital libraries related to their computer literacy skills, access technology, student's status, major, age, and gender?

All analyses in this study required ($P < .05$) as a level of statistical significance. In the first question (Q1), a multiple regression analysis was conducted to evaluate how the selected demographic variables of students could predict the use of digital libraries in their learning.

For the second question (Q2), a multiple regression analysis was conducted to evaluate how the selected demographic variables of students could predict the attitudes of digital libraries in their learning.

For the third question (Q3), a multiple regression analysis was conducted to evaluate how the selected demographic variables of students could predict the perceived usability of digital libraries.

Chapter Summary

The purpose of this study was to investigate the Saudi student's attitudes toward the use of digital libraries in higher education at Taibah University. The research described the methods and procedures that were used in this study. This chapter included several sections such as research design, review of the research questions, research hypotheses, and the research site. Also, it included an explanation of the data collection procedures, description of the variables, participants, limitation of the study, a detailed description of the instrumentation, validity, reliability, and data analysis. Chapter Four will present the results of the study for each research question.

Chapter 4 Results

Introduction

The focus of this chapter is to present the results of analyses related to the three research questions of the study using linear regression and independent-samples t test. This chapter consists of three major sections: (1) data description, (2) research questions and results, and (3) a summary of major findings.

Data and Participants Description

The participants in this study were both male and female undergraduate students enrolled in 2017 the fall semester at Taibah University. The study was conducted at the beginning of Fall 2017. An electronic survey was sent to the office of the Vice President of Graduate Studies at Taibah University. The survey was given to Fall 2017 students. Two hundred and forty students responded to the survey questionnaire. There were some missing values because not all the participants responded to every survey questions. The pairwise deletion method applied to analyses. The participants' demographic information was presented in the following tables.

Table 4 presents participants' enrollment status. Most participants who responded to survey question No. 6, Student Status, were senior students. They accounted for 51.5% of all who responded. Participants from other grade levels were nearly evenly distributed, with slightly fewer freshmen (12.9%).

Table 4: Summary of Participants' Enrollment Status

Status	Frequency	Percent
Freshman	26	12.9
Sophomore	34	16.8
Junior	38	18.8
Senior	104	51.5
Total	202	100.0

Note. Number of total participants = 240; number of missing responses = 38.

Table 5 shows which school or department the participants were from. Among 101 participants who responded to this question, most of them were from the School of Education Science (46.5%).

Table 5: Summary of Participants' Majors

Department	Frequency	Percent
School of Applied Science	23	22.8
School of Education Science	47	46.5
Other	31	30.7
Total	101	100.0

Note. Number of total participants = 240; number of missing responses = 139.

Table 6 is a summary of participants' gender. Number of female participants nearly doubled the number of male participants.

Table 6: Summary of Participants' Gender

Department	Frequency	Percent
Male	89	37.7
Female	147	62.3
Total	236	100.0

Note. Number of total participants = 240; number of missing responses = 4.

Table 7 summarizes participants' ages. Two hundred and twenty-one out of the total 240 participants provided their ages. The average age of the participants was around 25. Most participants' (147 out of 221) ages ranged from 20 to 25, which accounted for 66.5% of the sample who responded. The youngest participants were 18 years old. There was one participant who reported her age as 73.

Table 7: Summary of Participants' ages

N	Min. age	Max. age	Average age	Standard deviation
221	18	73	24.69	5.77

Note. Number of total participants = 240; number of missing responses = 19.

Table 8 displays participants' access to technology and the Internet at school and home. Results show that most participants had access to technology and the Internet at school (81.8%) and home (87.7%).

Table 8: Participants' Access to Technology And the Internet

	School		Home	
	Frequency	Percent	Frequency	Percent
Have access	184	81.8	193	87.7
No access	41	18.2	27	12.3
Total	225	100.0	220	100.0

Note. Number of total participants = 240; numbers of missing responses varied in terms of at home or school.

Research Questions and Results

This study addressed three research questions:

Q1. Are Saudi students' use of digital libraries related to their computer literacy skills, access to technology, student's status, major, age, and gender?

Q2. Are Saudi students' attitudes toward digital libraries related to their computer literacy skills, access to technology, student's status, major, age, and gender?

Q3. Are Saudi students' perceived usability of digital libraries related to their computer literacy skills, access to technology, student's status, major, age, and gender?

In order to answer the research questions above, the Statistical Package for Social Science (SPSS) software (Version 24) was used to conduct linear regression and independent samples analyses. All analyses conducted were tested at a significance level of $p < .05$. In the regression models, the dependent variables are students' use of digital libraries (measured by 4 survey questions), students' attitudes toward digital libraries (measured by 8 survey questions), and students' perceived usability of digital libraries (measured by 9 survey questions).

Independent variables include students' computer literacy skills (measured by 10 questions), access to technology and the Internet, students' enrollment status, students' major, and their age

and gender. Likert-scales were used to measure and answer some of the survey questions. Descriptive statistics were also computed to summarize the demographic data and provide an overview of the sample distribution.

Answers to Question 1. *Are Saudi students' use of digital libraries related to their computer literacy skills, access to technology, student's status, major, age, and gender?*

H1: There is a relationship between the selected demographic variables of Saudi students' computer literacy skills, access technology, student's status, major, age, and gender related to the Saudi students' use of digital libraries.

Participants were asked in the survey to indicate how often they used digital libraries. Likert-scales were used to measure the frequency of their use of digital libraries: 1 = Never, 2 = Monthly, 3 = Weekly, 4 = Once a day, 5 = 2 to 4 times a day, and 6 = More than 4 times per day. Four questions were asked in order to get information about participants' use of digital libraries. These questions and a summary of participants' responses to the questions are shown in Table 9. It is shown that, on average, participants' used digital libraries on a weekly basis ($M = 3.52$, $SD = 1.45$).

Table 9: Participants' Use of Digital Libraries

Question	N	Mean	SD
How often do you use digital libraries for school coursework assignments?	227	3.50	1.60
How often do you use digital libraries for individual needs related to personal or family interest?	227	3.33	1.63
How often do you use digital libraries for fun/play?	226	3.57	1.73
Overall, how often do you use digital libraries?	225	3.70	1.62
Average	228	3.52	1.45

Note. 1 = Never, 2 = Monthly, 3 = Weekly, 4 = Once a day, 5 = 2 to 4 times a day, and 6 = More than 4 times per day.

A series of linear regressions and independent-samples *t* tests were conducted to examine the relationships between Saudi students' use of digital libraries and their computer literacy skills, access to technology, student's status, major, age, and gender.

First, the relationship between Saudi students' use of digital libraries and their computer literacy skills was examined. Ten questions were asked to measure participants' computer literacy skills. The Likert scales used to measure the level of students' computer literacy skills were: 1 = No experience, 2 = Poor, 3 = Average, 4 = Somewhat skilled, and 5 = Very skilled. Table 10 presents these 10 questions and summarizes participants' responses. It shows that participants were most skilled in "web searching" ($M = 4.21, SD = 1.19$) and least skilled in "threaded discussions" ($M = 3.24, SD = 1.54$).

Table 10: Participants' Computer Literacy Skills

Question	N	Mean	SD
Computer operating system (e.g., PC, Mac, etc.)	224	4.09	1.23
Microsoft office (e.g., Word, PowerPoint, spreadsheet, etc.)	222	4.04	1.27
E-mail programs (e.g., Outlook Express, Yahoo, etc.)	222	3.96	1.32
Imaging device (e.g., using scanner, digital or video camera, etc.)	224	3.94	1.25
Internet browser (e.g., Netscape, Safari, Internet Explorer, etc.)	222	4.12	1.21
Web searching (e.g., Google, Yahoo, etc.)	223	4.21	1.19
Web page creation programs (e.g., Front Page, Dreamweaver, etc.)	198	3.42	1.54
Online course support (e.g., course web pages, Blackboard, Web CT, etc.)	198	3.40	1.49
Threaded discussions (e.g., electronic bulletin board)	199	3.24	1.54
Computers in general	222	3.87	1.24
Average	227	3.82	0.88

Note. 1 = No experience, 2 = Poor, 3 = Average, 4 = Somewhat skilled, and 5 = Very skilled.

Table 11 presents summary statistics about participants' use of digital libraries and their computer literacy skills. On average, the frequency of students using digital libraries was somewhere between "Weekly" and "Once a day" ($M = 3.51$, $SD = 1.45$). The average level of students' computer literacy skills was close to "Somewhat skilled" ($M = 3.82$, $SD = .88$).

Table 11: Summary Statistics of Use of Digital Libraries And Computer Literacy Skills

	N	Minimum	Maximum	Mean	SD
Use of digital libraries	228	1	6	3.51	1.45
Computer literacy skills	227	1	5	3.82	0.88

Table 12 shows results of regression analysis of two models. Model 1 used students' computer literacy skills only to predict their usage of digital libraries. Model 2 examined the same relationship after controlling for some demographic variables: students' enrollment status, major, their age, and gender. Results indicate that there was a statistically significant relationship between students' usage of digital libraries and their computer literacy skills. The more skilled they were in computer literacy, the more likely they would use digital libraries. After controlling the demographic information, students' computer literacy skills accounted for approximately 6% of the unique variance of their usage of digital libraries, $R^2 = .06$, $F(5, 202) = 2.66$, $p = .02$.

Table 12: Results of Regression Analysis: Computer Literacy Skills Predicting Usage of Digital Libraries

Variable	Model 1			Model 2		
	<i>B</i>	<i>SE(B)</i>	β	<i>B</i>	<i>SE(B)</i>	β
Age				.002	.018	.007
Major				.531	.345	.108
Gender				-.001	.204	.000
Enrollment status				-.093	.084	-.076
Computer literacy skills	.348	.109	.209***	.229	.116	.181*
R^2	.04			.06		

F 10.19** 2.66*

Note: Degrees of freedom for the two regression equations are $F(1, 223)$ for Model 1, and $F(5, 202)$ for Model 2.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Second, the relationship between Saudi students' use of digital libraries and their access to technology and the Internet was examined. To obtain information about their access to technology and the Internet, participants were asked to respond to two survey questions: 1) do you have access to an Internet connection at school? 2) Do you have access to an Internet connection at home? As shown in Table 5, about 82% of the students who responded to the questions had access to technology and the Internet at school and about 88% of them had access at home. Results show that students' use of digital libraries was not related to their access to technology or the Internet; neither access predicted students' use of digital libraries with a statistical significance. Less than 1% of variance in students' use of digital libraries was accounted for by their access to technology and the Internet. Table 13 presents the detailed results.

Table 13: Results of Regression Analysis: Access to Technology And Internet Predicting Usage of Digital Libraries

Variable	B	$SE(B)$	β
Access at school	.101	.259	.026
Access at home	-.248	.302	-.056
R^2		.004	
F		.411	

Note: Degrees of freedom for the model: $F(2, 216)$.

Third, the relationships between students' use of digital libraries and their enrollment status, major, age, and gender were examined. Before the regression analysis was conducted, the variable "Major" was dummy coded as 1 = the School of Applied Science and 0 = the School of

Education Science and other. The variable “Gender” was also dummy coded: 1 = Male and 0 = Female. Results of regression analysis in Table 14 show that the demographic information, in combination, explained 17% of the variance in students’ use of digital libraries. Results show that there was no significant relationship between students’ use of digital libraries and their enrollment status, major, age or gender. However, compared to their peers in School of Education Science and other departments, students in School of Applied Science used digital libraries more frequently. In addition, independent-samples *t* tests were conducted to show how similar or different the average usage of digital libraries between male and female students as well as between students majoring in applied science and those majoring in education science. Results of the *t* tests in Tables 15 and 16 show that there was no significant difference regarding use of digital libraries between gender groups, but significant difference between academic major groups ($t(33.76) = -3.03, p < .01$).

Table 14: Results of Regression Analysis: Demographic Information Predicting Usage of Digital Libraries

Variable	<i>B</i>	<i>SE(B)</i>	β	<i>t</i>	<i>p</i>
Enrollment status	-.079	.085	-.067	-0.93	.356
Major	.594	.335	.129	1.78	.077
Age	-.005	.023	-.016	-0.22	.828
Gender	.190	.210	.066	0.90	.367
<i>R</i> ²	0.17				
<i>F</i>	1.40				

Note: Degrees of freedom for the model: $F(4, 192)$.

Table 15: Results of *t* test and Descriptive Statistics for Use of Digital Libraries by Gender

Use of Digital Libraries						95% CI for Mean Difference	
Female			Male			<i>t</i>	<i>Df</i>
M	SD	N	M	SD	N		

3.5									
2	1.45	138	3.51	1.47	88	-0.389, .393	.014	224	

Table 16: Results of *t* test and Descriptive Statistics for Use of Digital Libraries by Major

Use of Digital Libraries						95% CI for Mean Difference		<i>T</i>	<i>Df</i>
Education Science			Applied Science						
M	SD	N	M	SD	N				
3.45	1.47	205	4.15	1.00	23	-1.327, -.084		-3.028**	33.76 ^a

^aEqual variance between two groups were not assumed.

p* < .05. *p* < .01. ****p* < .001.

Answers to Question 2. *Are Saudi students' attitudes toward digital libraries related to their computer literacy skills, access to technology, student's status, major, age, and gender?*

H2: There is a relationship between the selected demographic variables of Saudi students' computer literacy skills, access technology, student's status, major, age, and gender related to the Saudi students' attitudes toward digital libraries.

Participants were asked in the survey to describe their attitudes toward digital libraries based on 8 statements. Likert-scales were used to measure their agreement to each of the statements: 1 = Strongly disagree, 2 = Somewhat disagree, 3 = Neither agree nor disagree, 4 = Agree, and 5 = Strongly agree. These 8 statements and a summary of participants' ratings of these statements are shown in Table 17. It is shown that, on average, students' attitudes toward digital libraries were positive (*M* = 4.21, *SD* = .68).

Table 17: Participants' Attitudes toward Digital Libraries

Statement	N	Mean	SD
I like to use digital libraries for learning purposes.	227	4.30	0.87
Digital libraries are important because they support my learning positively.	225	4.36	0.74

In my opinion, using digital libraries to support learning is a good idea.	226	4.43	0.73
I find learning online through using digital libraries is fun.	226	4.22	0.85
I find using digital libraries for learning is very desirable.	227	4.25	0.84
I enjoy using digital libraries in collaborative projects with other students.	225	4.19	0.87
I prefer to attend a class where the instructor is using digital libraries in his/her teaching.	226	4.07	0.93
When I started using the digital libraries to support learning, I found it difficult to stop.	226	3.99	0.95
Average	228	4.21	0.68

Note. 1 = Strongly disagree, 2 = Somewhat disagree, 3 = Neither agree nor disagree, 4 = Agree, and 5 = Strongly agree.

A series of linear regressions and independent-samples *t* tests were conducted to examine the relationships between Saudi students' attitudes toward digital libraries and their computer literacy skills, access to technology, student's status, major, age, and gender.

First, the relationship between Saudi students' attitudes toward digital libraries and their computer literacy skills was examined. Regression analysis was conducted to examine this relationship and Table 18 presents results of two regression models. Model 1 used students' computer literacy skills only to predict their attitudes toward digital libraries. Model 2 examined the same relationship after controlling for some demographic variables: students' enrollment status, major, and their age and gender. Results indicate that there was a statistically significant relationship between students' attitudes toward digital libraries and their computer literacy skills. The more skilled they were in computer literacy, the more positive they were toward digital libraries. After controlling for demographic information, students' computer literacy skills

accounted for approximately 8% of the unique variance in their attitudes toward digital libraries, $R^2 = .08$, $F(5, 202) = 3.48$, $p = .005$.

Table 18: Results of Regression Analysis: Computer Literacy Skills Predicting Attitude Toward Digital Libraries

Variable	Model 1			Model 2		
	<i>B</i>	<i>SE(B)</i>	β	<i>B</i>	<i>SE(B)</i>	β
Age				.009	.008	.075
Major				.152	.161	.066
Gender				-.107	.095	-.076
Enrollment status				.013	.039	.022
Computer literacy skills	.200	.050	.256***	.201	.054	.257***
R^2	.066			.079		
<i>F</i>	15.728***			3.477**		

Note: Degrees of freedom for the two regression equations are $F(1, 224)$ for Model 1, and $F(5, 202)$ for Model 2.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Second, the relationship between Saudi students' attitudes toward digital libraries and their access to technology and Internet was examined. Results of regression analysis show that there was a statistically significant relationship between students' attitudes toward digital libraries and their access to technology and Internet at school; however, there was not relationship between the attitudes and their access to technology and Internet at home. About 3% of variance in students' attitudes toward digital libraries was accounted for by their access to technology and Internet. Table 19 presents the detailed results.

Table 19: Results of Regression Analysis: Access to Technology And Internet Predicting Attitude Toward Digital Libraries

Variable	<i>B</i>	<i>SE(B)</i>	β
Access at school	.228	.113	.134*

Access at home	.214	.132	.108
R^2		.030	
F		3.353*	

Note: Degrees of freedom for the model: $F(2, 217)$.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Third, the relationships between students' attitudes toward digital libraries and their enrollment status, major, age, and gender were examined. Results of regression analysis in Table 20 show that the demographic information, in combination, explained 11% of the variance in students' attitudes toward digital libraries. Results show that there was no significant relationship between students' attitudes toward digital libraries and their enrollment status, major, age or gender. However, compared to their peers in School of Education Science and other departments, attitudes of students in School of Applied Science were more positive toward digital libraries. Further, independent-samples t tests were conducted to show how similar or different the average attitude of students toward digital libraries between male and female students as well as between students majoring in Applied Science and those majoring in Education Science and other areas. Results of the t tests in Tables 21 and 22 agree with results of the regression analysis; that is, there was no significant difference regarding students' attitude toward digital libraries between either gender groups or academic major groups.

Table 20: Results of Regression Analysis: Demographic Information Predicting Attitude toward Digital Libraries

Variable	B	$SE(B)$	β	t	P
Enrollment status	.000	.041	.001	0.01	.993
Major	.205	.161	.094	1.27	.204
Age	.004	.011	.024	0.33	.744
Gender	-.074	.101	-.054	-0.73	.465
R^2	0.11				

Table 21: Results of *t* test and Descriptive Statistics for Attitude toward Digital Libraries by Gender

Use of Digital Libraries						95% CI for Mean Difference	<i>t</i>	Df
Female			Male					
M	SD	N	M	SD	N			
4.25	.69	139	4.15	.68	87	-.079, .290	1.13	224

Table 22: Results of *t* test and Descriptive Statistics for Attitude toward Digital Libraries by Major

Use of Digital Libraries						95% CI for Mean Difference	<i>T</i>	Df
Education science			Applied science					
M	SD	N	M	SD	N			
4.19	.69	205	4.41	.61	23	-.504, .053	-1.66	226

Answers to Question 3. *Are Saudi students’ perceived usability of digital libraries related to their computer literacy skills, access to technology, student’s status, major, age, and gender?*

H3: There is a relationship between the selected demographic variables of Saudi students’ computer literacy skills, access technology, student’s status, major, age, and gender related to the Saudi students’ perceived usability of digital libraries.

Participants were asked in the survey to describe their perceived usability of digital libraries based on 9 statements. Likert-scales were used to measure their agreement to each of the statements: 1 = Strongly disagree, 2 = Somewhat disagree, 3 = Neither agree nor disagree, 4 = Agree, and 5 = Strongly agree. Among the 9 statements, Statements 1, 3, 5, 7, and 9 were

worded in a negative format. Therefore, participants' responses to these negatively worded statements were reversely coded. By doing this, a larger number in response represented a more positive attitude regarding the usability of digital library, and vice versa. These 9 statements and a summary of participants' ratings of these statements are shown in Table 23. It is shown that, on average, students' perceived usability of digital libraries was not very high ($M = 3.34$, $SD = .49$). They felt pretty confident using digital libraries and rated Statement 8 the highest ($M = 4.18$, $SD = .85$). Compared to the positively worded statements, all the negatively worded statements (i.e., Statements 1, 3, 5, 7, and 9) received lower ratings. That indicates, in general, students tended to consider usability of digital libraries easy, friendly, and consistent.

Table 23: Participants' Perceived Usability of Digital Libraries

Statement	N	Mean	SD
1. I find digital libraries unnecessarily complex.	227	3.32	1.22
2. I think digital libraries are easy to use.	228	3.70	0.91
3. I need the support of a technical person to be able to use digital libraries.	228	2.53	1.17
4. I found the various functions in digital libraries were well integrated.	229	4.14	0.80
5. I think there is too much inconsistency in digital libraries.	226	2.55	1.02
6. I believe that most college students learn to use digital libraries very quickly.	226	4.11	0.94
7. I find digital libraries very cumbersome to use.	223	3.03	1.26
8. I feel very confident using digital libraries.	225	4.18	0.85
9. I needed to learn about technology before I could get going with using digital libraries.	226	2.28	1.10
Average	229	3.34	0.49

Note. 1 = Strongly disagree, 2 = Somewhat disagree, 3 = Neither agree nor disagree, 4 = Agree, and 5 = Strongly agree.

A series of linear regressions and independent-samples *t* tests were conducted to examine the relationships between Saudi students' perceived usability of digital libraries and their computer literacy skills, access to technology, student's status, major, age, and gender.

First, the relationship between Saudi students' perceived usability of digital libraries and their computer literacy skills was examined. Regression analysis was conducted to examine this relationship and Table 24 presents results of two regression models. Model 1 used students' computer literacy skills only to predict their perceived usability of digital libraries. Model 2 examined the same relationship after controlling for some demographic variables: students' enrollment status, major, age, and gender. Results indicate that there was a statistically significant relationship between students' perceived usability of digital libraries and their computer literacy skills. The more skilled they were in computer literacy, the more likely they considered digital libraries easy to use. After controlling for demographic information, students' computer literacy skills accounted for approximately 9% of the unique variance in their usability of digital libraries, $R^2 = .09$, $F(5, 202) = 3.75$, $p = .003$.

Table 24: Results of Regression Analysis: Computer Literacy Skills Predicting Perceived Usability of Digital Libraries

Variable	Model 1			Model 2		
	<i>B</i>	<i>SE(B)</i>	β	<i>B</i>	<i>SE(B)</i>	β
Age				.003	.006	.033
Major				-.071	.114	-.043
Gender				-.204	.068	-.204**
Enrollment status				-.016	.028	-.039
Computer literacy skills	.112	.036	.202***	.115	.039	.208**
R^2	.041			.085		
<i>F</i>	9.572**			3.748**		

Note: Degrees of freedom for the two regression equations are $F(1, 225)$ for Model 1, and $F(5, 202)$ for Model 2.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Second, the relationship between Saudi students' perceived usability of digital libraries and their access to technology and Internet was examined. Results of regression analysis show that there was no significant relationship between students' perceived usability of digital libraries and their access to technology and Internet either at school or at home. Only about 1% of variance in students' perceived usability of digital libraries was accounted for by their access to technology and Internet. Table 25 presents the detailed results.

Table 25: Results of Regression Analysis: Access to Technology And Internet Predicting Perceived Usability of Digital Libraries

Variable	<i>B</i>	<i>SE(B)</i>	β
Access at school	.081	.086	.063
Access at home	.145	.101	.097
R^2		.014	
F		1.495	

Note: Degrees of freedom for the model: $F(2, 217)$.

Third, the relationships between students' perceived usability of digital libraries and their enrollment status, major, age, and gender were examined. Results of regression analysis in Table 26 show that the demographic information, in combination, explained 20% of the variance in students' perceived usability of digital libraries. As shown in Table 26, there was a statistically significant relationship between students' perceived usability of digital libraries and their gender. To be specific, female students perceived higher usability of digital libraries than male students ($\beta = -.192$, $t(193) = -2.76$, $p = .006$). It is shown that there was no significant relationship between students' perceived usability of digital libraries and their enrollment status, major or age.

Further, independent-samples *t* tests were conducted to show how similar or different the average perceived usability of digital libraries between male and female students as well as between students majoring in Applied Science and those majoring in Education Science and other programs. Results of the *s* in Tables 27 and 28 agree with results of the regression analysis. That is, there was no significant difference regarding perceived usability of digital libraries between academic major groups, but significant difference between gender groups. Female students had a higher level of perceived usability of digital libraries than male students ($M = 3.22$ for male students vs $M = 3.42$ for female students, $t(225) = 3.08, p = .002$).

Table 26: Results of Regression Analysis: Demographic Information Predicting Usability of Digital Libraries

Variable	<i>B</i>	<i>SE(B)</i>	β	<i>t</i>	<i>P</i>
Enrollment status	-.021	.029	-.051	-0.72	.473
Major	-.007	.111	-.005	-0.07	.946
Age	.002	.008	.021	0.29	.776
Gender	-.192	.070	-.198	-2.76	.006
<i>R</i> ²	0.20				
<i>F</i>	1.97				

Note: Degrees of freedom for the model: $F(4, 193)$.

Table 27: Results of *t* test and Descriptive Statistics for Usability of Digital Libraries by Gender

Usability of Digital Libraries						95% CI for Mean Difference		<i>df</i>
Female			Male					
M	SD	N	M	SD	N			
3.42	.51	140	3.22	.42	87	.073, .330	3.08**	225

* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 28: Results of *t* test and Descriptive Statistics for Usability of Digital Libraries by Major

Usability of Digital Libraries						95% CI for Mean Difference	
--------------------------------	--	--	--	--	--	----------------------------	--

Education science			Applied science			<i>t</i>	<i>Df</i>
M	SD	N	M	SD	N		
3.35	.51	206	3.34	.26	23	-.126, .135	.071 43.77 ^a

^aEqual variance between two groups were not assumed.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Chapter Summary

To summarize, the major findings are listed as follows:

1. Students' computer literacy skills were significantly related to their usage of digital libraries, attitudes toward digital libraries, and perceived usability of digital libraries. The more skilled students were in computer literacy, the more likely they would use digital libraries ($\beta = .299, t(221) = 2.57, p = .01$), the more positive their attitudes were toward digital libraries ($\beta = .201, t(225) = 3.70, p < .001$), and the more confident they were when using digital libraries ($\beta = .115, t(202) = 2.99, p = .003$).
2. Both students' use and their perceived usability of digital libraries were not related to their access to technology or Internet either at school or at home. However, students' attitudes toward digital libraries were significantly and positively related to their access to technology and Internet at school ($\beta = .228, t(218) = 2.01, p = .046$), but not at home.
3. In terms of the impact of students' demographic background (i.e., enrollment status, major, age, and gender) on the three dependent variables, we found the following:
 - a) There was no relationship between students' use of digital libraries and their enrollment status, major, age, or gender.
 - b) There was no relationship between students' attitudes toward digital libraries and their enrollment status, major, age, or gender.
 - c) Students' perceived usability of digital libraries was significantly related their gender. Female students ($M = 3.42, SD = .51$) were more confident in using

digital libraries than male students ($M = 3.22$, $SD = .42$). Students' perceived usability of digital libraries had no relationship with any of the other demographic variables.

Chapter 5 Discussion

Introduction

This chapter includes the following sections: the purpose of the study, reviews the research hypotheses, description of participants, and discussion of the research questions findings. It also presents the limitation of the study, implications, recommendations for future research, and conclusion.

Purpose of the Study

The purpose of this study was to explore attitudes of Saudi students at Taibah University toward the use of digital libraries in higher education. This study also investigates the factors that might prevent the effective implementation of using digital libraries in Saudi Higher Education from the perspective of students at Taibah University. The research was conducted to answer the following research questions:

Q1: Are Saudi students' use of digital libraries related to their computer literacy skills, access technology, student's status, major, age, and gender?

Q2: Are Saudi students' attitudes toward digital libraries related to their computer literacy skills, access technology, student's status, major, age, and gender?

Q3: Are Saudi students' perceived usability of digital libraries related to their computer literacy skills, access technology, student's status, major, age, and gender?

Hypotheses of the Study

H1: There is a relationship between the selected demographic variables of Saudi students' computer literacy skills, access technology, student's status, major, age, and gender related to the Saudi students' use of digital libraries.

H2: There is a relationship between the selected demographic variables of Saudi students' computer literacy skills, access technology, student's status, major, age, and gender related to the Saudi students' attitudes toward digital libraries.

H3: There is a relationship between the selected demographic variables of Saudi students' computer literacy skills, access technology, student's status, major, age, and gender related to the Saudi students' perceived usability of digital libraries.

Participants

The participant sample for this study consisted of male and female students who were undergraduates at Taibah University during fall 2017; participants have differences in computer literacy skills, technology access, status, major, age, and gender. The sample was from the School of Applied Science and School of Education Science. According to the Administration of Applied Sciences (2017), 4027 students are studying in Applied Sciences Department, with 2852 males and 1175 females. The participant sample for this study was 5% of the students as the sample was 201 students. According to the Administration of Education Sciences (2017), 3405 students are studying in Education Sciences Department, with 2171 male and 1234 female. The participant sample for this study was 5% of the students as the sample was 170 students. The Administration of Applied Sciences and the Administration of Education Sciences at Taibah University approved the sample. They used research to find out which students were available who were willing to volunteer and were interested in participating in the study. The researcher asked the chairs of academic departments for help to reach the participant sample by distributing an online survey. The researcher distributed the survey to each student.

Discussion of Research Question Findings

Research Question One. *Are Saudi students' use of digital libraries related to their computer literacy skills, access to technology, student's status, major, age, and gender?*

Participants were asked in the survey to respond to 4 questions to indicate how often they used digital libraries. Likert-scales were used to measure the frequency of their use of digital libraries: 0 = Never, 1 = Monthly, 2 = Weekly, 3 = Once a day, 4 = 2 to 4 times a day, and 5 = More than 4 times per day. Table 9 in Chapter 4 presents the summary statistics of the 4 questions with more details. Results in Table 9 show that participants used digital libraries on a weekly basis ($M = 3.52$, $SD = 1.45$). As seen in the responses of the participants, overall students use digital libraries weekly. This might regard to the students experiences with digital libraries, access to computers or the Internet, or onsite technical support. Also, this is consistent with Corbin's theory (2003) which identified five barriers and grouped them into three areas: (a) lack of experience in-service training, (b) lack of access to computers at school, and (c) lack of onsite technical support. Additionally, this is consistent with Collis' et al., (1996). Successful technology integration in a classroom setting seems to require will, skill, and access to technology tools on behalf of the teacher. Additionally, this is consistent with Seo's (2012) argument that teachers must resist the assumption that all digital natives share equal expertise in all digital online interactions, as there are gaps in computer knowledge and experience. Further, this is consistent with some of the instructors at Taibah University stated there is a relationship between students' prior experience with using digital libraries, their technical skills, and attitudes towards using digital libraries. Ten questions were given to participants in the survey to describe their computer literacy skills. Table 10 in Chapter 4 presents all these questions and summarizes

participants' responses to these questions. According to the Likert-scales measuring participants' computer literacy skills (i.e., 1 = No experience, 2 = Poor, 3 = Average, 4 = Somewhat skilled, and 5 = Very skilled), results in Table 10 show that the average level of their computer literacy skills was close to "Somewhat skilled" ($M = 3.82$, $SD = .88$). Results also show that participants were most skilled in "web searching (e.g., Google, Yahoo, etc.)" ($M = 4.21$, $SD = 1.19$) and least skilled in "threaded discussions (e.g., electronic bulletin board)" ($M = 3.24$, $SD = 1.54$). Also, participants' skills in "Internet browser (e.g., Netscape, Safari, Internet Explorer, etc.)" was also statistically high ($M = 4.12$, $SD = 1.21$). The findings indicate that, in general, students had sound computer literacy skills. Further, this is consistent with Lopatovska's et al. (2014) revealing that students prefer digital libraries to printed books, especially when looking for references and technical material. Also, this is consistent with Rogers' (2003) stating that the higher the perceived usefulness, compatibility of the technology, and ease of use, the more positive the attitude toward using the technology. Moreover, this is consistent with Mittal's and Mahesh (2008) conducted within the modern days, students who are computer literate tend to use digital materials compared to those who are computer illiterate. In this case, the use of search engines, such as Google, Google Scholar, or Firefox can help students to locate an online content (Rubin, 2017). Additionally, computer literacy and skills can enable students to download and store material for future use (Ogunsola, 2005). Overall, results revealed that the students' responses to the usage of items reflected that the students' at Tabiha University desire to use digital libraries.

Results of regression analysis in Table 12 in Chapter 4 show that there was a statistically significant relationship between students' use of digital libraries and their computer literacy skills. The more skilled they were in computer literacy, the more likely they would use digital

libraries ($\beta = .299$, $t(221) = 2.57$, $p = .01$). Additionally, this is consistent with a study by Taie's and Mohamed (2009) revealing that students taking distance-learning courses tend to have positive attitudes towards the digital libraries. Findings show that the most students' at Taibah University had good experience with the new emerging technologies, and they were more likely to use digital libraries-

However, the results of the regression analysis in Table 13 in Chapter 4 show that there was no relationship between students' use of digital libraries and their access to technology and Internet, either at school or home. Also, this is not consistent with Seo's (2012) work, revealing that students should have high-speed Internet access that has little to no interruptions in service and good equipment. Furthermore, this is not consistent with Corbin's (2003) work that identified five barriers and grouped them into three areas: (a) lack of experience in-service training, (b) lack of access to computers at school, and (c) lack of onsite technical support. Also, This is not consistent with Collis' et al. (1996) work, revealing that successful technology integration in a classroom setting seems to require will, skill, and access to technology tools on behalf of the teacher. Further, results in Tables 14 in Chapter 4 show that there was no significant relationship between students' use of digital libraries and their enrollment status, major, age or gender. However, compared to their peers in the School of Education Science and other departments, students in the School of Applied Science used digital libraries more frequently. Table 16 in Chapter 4 further shows that there was a significant mean difference between students majoring in Education Science and students majoring in Applied Science in terms of their use of digital libraries. One possible reason is that students in the School of Applied Science were more likely to use technology and Internet in their studies the School of Applied require English to enroll at School of Applied Science, and therefore have better English skills. This is consistent with

Alaugab's (2007) work revealing that the lack of using the English language is the important barrier to online instruction for female faculty and students at Al-Imam Muhammad Bin Saud Islamic University. Furthermore, he stated that the highest mean of barriers both Saudi female faculty and students encounter is the lack of using English because most of the research, online technologies, and studies available on the Internet are in English. However, this is not consistent with Alkoudman's, and Elkalmi (2015) revealing how Pharmacy students in Saudi Arabia lamented the difficulties they faced while using digital libraries. Therefore, this indicates a need to examine how the attitudes of Saudi Arabian students differ from one course to the other. All these findings are reasonable because students' use of digital libraries were more related to their computer skills and academic background, rather than to their demographic background or outside factors, such as access to technology and Internet.

Research Question Two. *Are Saudi students' attitudes toward digital libraries related to their computer literacy skills, access to technology, student's status, major, age, and gender?*

Participants were asked in the survey to describe their attitudes toward digital libraries based on 8 statements. Likert-scales were used to measure their agreement to each of the statements: 1 = Strongly disagree, 2 = Somewhat disagree, 3 = Neither agree nor disagree, 4 = Agree, and 5 = Strongly agree. The Table 17 in Chapter 4 shows that, on average, students' attitudes toward digital libraries were positive ($M = 4.21$, $SD = .68$). They rated "In my opinion, using digital libraries to support learning is a good idea" the highest ($M = 4.43$, $SD = .73$), meaning they nearly strongly agree with this statement. The lowest rating went to "When I started using the digital libraries to support learning, I found it difficult to stop," but can still be considered positive ($M = 3.99$, $SD = .95$). This means that Saudi students at Taibah University believe that using digital libraries in learning is a good idea. This is consistent with Rogers'

(2003) work, stating that the higher the perceived usefulness, compatibility of the technology, and ease of use, the more positive the attitude toward using the technology. Also, this is consistent with Davis' (1989) work claiming that when people perceive any technology as easy to use and useful they would hold positive attitudes toward this technology. Further, this is consistent with Masrom and Hussein (2008), where they argued that perceived usefulness has a significant impact on attitudes toward adoption of the electronic collaboration technology. Additionally, this is consistent with a study by Taie's and Mohamed (2009) revealing that students taking distance-learning courses tend to have positive attitudes towards the digital libraries. Findings show that the higher the perceived usefulness, compatibility of the technology, and ease of use, the more positive the attitude toward using the technology. Results of the regression analysis in Table 18 in Chapter 4 show that there was a statistically significant relationship between students' attitudes toward digital libraries and their computer literacy skills ($\beta = .201$, $t(225) = 3.70$, $p < .001$). The more skilled they were in computer literacy, the more positive they were toward digital libraries. It makes sense because when a student has sound knowledge about computer literacy and is skillful in using technical tools related to computer, he/she will find digital libraries are great resources of learning, communication, and entertainment. With the beneficial experience of using digital libraries, he/she will tend to think positively about digital libraries. Moreover, this is consistent with Rowley's and Hartley (2017), where they stated that students who are more computer literate are associated with a positive attitude towards digital libraries. In this context, it is evident that students' ability to use computers is associated with positive attitudes towards online research (Tella and Mutula, 2008). Furthermore, this is consistent with Rogers' (2003) work, stating that the higher the perceived usefulness, compatibility of the technology, and ease of use, the more positive the attitude

toward using the technology. Also, this is consistent with Davis' (1989) work, claiming that when people perceive any technology as easy to use and useful, they will hold positive attitudes toward this technology. Further, this is consistent with Masrom and Hussein's (2008) work, arguing that the perceived usefulness has a significant impact on attitudes toward adoption of the electronic collaboration technology. On the other hand, Bennett and Kervin (2008) found out that students who are computer illiterate tend to have a negative attitude towards online content because they tend to think that one has to be physically present in the libraries to acquire knowledge. Additionally, this is consistent with a study by Taie's and Mohamed (2009) revealing that students taking distance-learning courses tend to have positive attitudes towards digital libraries. Moreover, this is consistent with some of the instructors at Taibah University that there is a relationship between students' prior experience with using digital libraries, their technical skills, and attitudes towards using digital libraries.

Regarding the relationship between students' attitudes toward digital libraries and their access to technology and the Internet, the results of the regression analysis in Table 19 in Chapter 4 show that students' attitudes toward digital libraries was only related and positively related to their access to technology and Internet at school, but not at home. Probably it was because students accessed technology and Internet mainly for learning purposes at school, but for other purposes mainly at home. The information they obtained from technology and the Internet could make their learning easier, more efficient, and even more enjoyable. Thus, the convenience they enjoyed in accessing technology and the Internet at school made them feel very positive about digital libraries. Moreover, this is consistent with Seo's (2012) work, which revealed students should have high-speed Internet access that has little to no interruptions in service and good equipment. Also, this is consistent with Corbin's (2003) which identified five barriers and

grouped them into three areas: (a) lack of experience in-service training, (b) lack of access to computers at school, and (c) lack of onsite technical support. Further, results in Tables 20 through 22 in Chapter 4 show that participants' attitudes toward digital libraries were not significantly related to students' major, gender, age, or enrollment status. However, compared to their peers in the School of Education Science and other majors, attitudes of students in the School of Applied Science were more positive toward digital libraries. One possible reason is that students in the School of Applied Science were more likely to use technology and the Internet in their studies. Therefore, they became more familiar with digital libraries and, as a consequence, developed a more positive attitude toward digital libraries. The other possible reason is that English is a requirement to enroll at the School of Applied Science. Thus, students at the School of Applied Science have high English skills. This consistent with Alaugab's (2007) work, which revealed that the lack of using the English language is the important barrier to online instruction for female faculty and students at Al-Imam Muhammad Bin Saud Islamic University. Furthermore, he stated that the highest mean of barriers both Saudi female faculty and students encounter is the lack of using English because the research, because most of the online technologies, and the studies available on the Internet are in English. However, this is not consistent with Alkoudman's, and Elkalmi (2015) revealed how pharmacy students in Saudi Arabia lamented the difficulties they faced while using digital libraries. All these findings are defensible because students' positive attitudes toward digital libraries developed from their direct experience of accessing and using digital libraries (e.g., technology and Internet).

Research Question Three. *Are Saudi students' perceived usability of digital libraries related to their computer literacy skills, access to technology, student's status, major, age, or gender?*

Participants were asked in the survey to describe their perceived usability of digital libraries based on 9 statements. Likert-scales were used to measure their agreement to each of the statements: 1 = Strongly disagree, 2 = Somewhat disagree, 3 = Neither agree nor disagree, 4 = Agree, and 5 = Strongly agree. Among the 9 statements, Statements 1, 3, 5, 7, and 9 were worded in a negative format. As shown in Table 23 in Chapter 4, compared to the positively worded statements, all the negatively worded statements (i.e., Statements 1, 3, 5, 7, and 9) received lower ratings. That indicates, in general, students tended to consider the usability of digital libraries easy, friendly, and consistent. Results show that, on average, students' perceived usability of digital libraries was not very high ($M = 3.34$, $SD = .49$), although they rated Statement 8, "I feel very confident using digital libraries," the highest ($M = 4.18$, $SD = .85$). They also found the various functions in digital libraries were well integrated (Statement 4, $M = 3.32$, $SD = 1.22$). That might regard to a lack of students' experience, and this is consistent with Seo (2012) arguing that teachers must resist the assumption that all digital natives share equal expertise in all digital online interactions, as there are gaps in computer knowledge and experience.

Results of the regression analysis in Table 24 in Chapter 4 show that there was a statistically significant relationship between students' perceived usability of digital libraries and their computer literacy skills ($\beta = .115$, $t(202) = 2.99$, $p = .003$). The more skilled they were in computer literacy, the more likely they perceived digital libraries easy and friendly to use. It is legitimate because when a student is knowledgeable about computer literacy, he/she will have better control of the devices when using digital libraries. As a result, the usability of digital libraries appears welcoming, accessible, and convenient to them. Moreover, this is consistent with Rogers' (2003) work that concluded a study that explored factors that affect users' attitudes

toward adopting the technology. Findings show that the higher the perceived usefulness, compatibility of the technology, and ease of use, the more positive the attitude toward using the technology. Additionally, this is consistent with Jabeen et al. (2017) who found out that computer usability can impact on learner's perception of computer use. The limited use of digital library sources for learning and teaching is linked to the perceptions of usefulness, such as level of satisfaction among users and problem in the use of databases (Orfanou et al., 2015). Also, Matusiak (2012) argued that limited use of digital materials is related to perceptions, such as feeling that library systems are not user friendly. Besides the issue of content, coverage, and costs tend to discourage potential users from benefiting from online libraries (Orfanou et al., 2015).

Regarding the relationship between students' perceived usability of digital libraries and their access to technology and Internet, results of the regression analysis in Table 25 in Chapter 4 show that they were not related to each other. It is justifiable because the convenience of accessing technology and Internet does not necessarily mean the convenience of and confidence in using technology and Internet. The perceived usability should be more affected by students' knowledge and skills about computers than by their convenient access to technology and Internet, this is not consistent with Seo's (2013) work, which revealed students should have high-speed Internet access that has little to no interruptions in service and good equipment. Additionally, this is not consistent with Corbin's (2003) work, which identified five barriers and grouped them into three areas: (a) lack of experience in-service training, (b) lack of access to computers at school, and (c) lack of onsite technical support. Also, this is consistent with a study by Taie and Mohamed (2009), which revealed students taking distance-learning courses tend to have positive attitudes towards the digital libraries. Further, results in Tables 26 through 28 in

Chapter 4 show that participants' perceived usability of digital libraries was significantly related to their gender ($\beta = -.201$, $t(225) = -3.08$, $p = .002$), but not significantly related to their major, age, or enrollment status. Female students had a higher level of perceived usability of digital libraries than male students. That means female students perceived digital libraries friendlier to use than their male peers. Moreover, this is not consistent with Jackson, Ervin, Gardner, and Schmitt, (2001). Shashaani (1994) conducted that males have more experiences with computers and more positive attitudes than females. Also, this is not consistent with Kayaoglu (2012) stated that male have more positive attitudes towards technological aids and computer usage, while females does not feel as confident as males. Other studies concluded that males have more experiences and more competent in using the computer and the Internet than females. In addition, this is not consistent with Li, Kirkup, and Hodgson, (2001); Sherman et al. (2000); Jackson et al. (2001); and Joiner et al. (2005) who concluded that females might have high anxiety, less competence, and a less positive attitude toward using the Internet and its applications than males. On the other hand, Alkoudman's, and Elkalmi (2015) revealed how Pharmacy students in Saudi Arabia lamented the difficulties they faced while using digital libraries.

All these findings are plausible because students' perception regarding the usability of digital libraries was based on what they had known about computers, but not on whom they were or if they were given access to technology or Internet.

Limitations of the Study

The current study has the following limitations:

1. This study was conducted in fall 2017 and only focused on undergraduate students, and the sample was drawn from only one university in Saudi Arabia, Taibah University.

Therefore, the findings of this study might not be generalizable to other Saudi universities.

2. This study focused on investigating the relationship between the demographic variables (computer literacy skills, access technology, student's status, major, age, and gender) and the Saudi students' attitudes toward using digital libraries in their learning, and perceived usability of digital libraries.
3. The participants were selected to participate in this study based on those students who were available, willing to volunteer, and interested in participating in the study.
4. The reliability of the study measure of students' perceived usability of digital libraries is low; the coefficient of Cronbach's Alpha is 0.55.

Implications

This study was investigating Saudi Taibah University students' attitudes toward the use of digital libraries. It was also designed to discover some factors that might prevent the effective implementation of the use of digital libraries. The findings of this study will be benefits for both students and faculty. Results of this study indicated that Saudi students at Taibah University have positive attitudes toward the use of digital libraries. However, the adaption of such digital libraries by Saudi instructors at Taibah University will encourage students to use it and help them to improve their learning. Also, administrators should provide faculty with workshops, seminars, and training programs to train and teach the faculty how to prepare curricula that require their implementation the use of digital libraries into their teaching environments by developing the necessary technological infrastructure, such as high-speed Internet and computers. Administrators should also provide students with training program and workshops to train them how to utilize digital libraries. Additionally, administrators should take into

consideration the negative impacts of the factors that the students face when using digital libraries, this can help to implement digital libraries effectively at Taibah University. Furthermore, administrators and faculty should consider and promote students' positive perspectives toward the use of digital libraries.

Moreover, implications of this study discovered that not enough sufficient research has been done to explore why using digital libraries in Saudi higher education has been slow and the factors that may be contributing to this. Additionally, the results of this study provide requisite knowledge into participants' attitudes toward the use of digital libraries in higher education in Saudi Arabia.

Conclusion

The purpose of this study was to investigate the attitudes of Saudi students at Taibah University, Madina, toward the use of digital libraries in higher education. Data was collected via a self-report survey that was developed to gather information regarding students' use of digital libraries, their attitudes toward digital libraries, their perceived usability of digital libraries, their computer literacy skills, their access to technology and the Internet both at school and at home, and some demographic information that the researcher was interested in. The participant sample for this study consisted of male and female undergraduate students enrolled in Taibah University during the fall semester of 2017. Students who participated in this study included freshmen, sophomores, juniors, and seniors. The sample size was 240.

The results of the study show the following:

1. The overall frequency of student's use of digital libraries was between "Weekly" and "Once a day" ($M = 3.52$, $SD = 1.45$), using a 6-point Likert-scale (1 = Never and 6 = More than 4

times per day). Thus, faculty should encourage students to use digital libraries in their academic environment.

2. On average, students' attitudes toward digital libraries were positive ($M = 4.21$, $SD = .68$), measured by a 5-point Likert-scale (1 = Strongly disagree and 5 = Strongly agree).
3. Regarding their attitudes toward digital libraries, participants agreed the most to this statement, "In my opinion, using digital libraries to support learning is a good idea." The statistics were $M = 4.43$ and $SD = .73$, based on a 5-point Likert-scale (1 = Strongly disagree and 5 = Strongly agree).
4. In general, the level of students' perceived usability of digital libraries was moderate ($M = 3.34$, $SD = .49$), according to a 5-point Likert-scale (1 = Strongly disagree and 5 = Strongly agree).
5. In terms of their perceived usability of digital libraries, participants agreed the most to this statement, "I feel very confident using digital libraries." The statistics were $M = 4.18$ and $SD = .85$, based on a 5-point Likert-scale (1 = Strongly disagree and 5 = Strongly agree).
6. Students' computer literacy skills were positive ($M = 3.82$, $SD = 0.88$), based on a 5-point Likert-scale (1 = No experience and 5 = Very skilled).
7. Participants considered themselves most skilled in Web searching (e.g., Google, Yahoo, etc.) ($M = 4.21$, $SD = 1.19$), based on a 5-point Likert-scale (1 = No experience and 5 = Very skilled).
8. Most participants (about 82%, $N = 184$) had access to technology and the Internet at school.
9. Most participants (about 88%, $N = 193$) had access to technology and the Internet at home.

10. After controlling for their age, major, gender and enrollment status, students' use of digital libraries was significantly related to their computer literacy skills ($\beta = .299$, $t(221) = 2.57$, $p = .01$).
11. Students' use of digital libraries was not significantly related to their access to technology and the Internet either at school or home.
12. There was no significant relationship between students' use of digital libraries and their enrollment status, major, gender, or age. Thus, faculty should assist and motivate students to use digital libraries.
13. After controlling for their age, major, gender and enrollment status, students' attitudes toward digital libraries was significantly related to their computer literacy skills ($\beta = .201$, $t(225) = 3.70$, $p < .001$).
14. Students' attitudes toward digital libraries were significantly related to their access to technology and the Internet at school ($\beta = .228$, $t(218) = 2.01$, $p = .046$), but not related to their access to technology and the Internet at home.
15. There was no significant relationship between students' attitudes toward digital libraries and their major, enrollment status, gender, or age. Therefore, faculty should consider and promote positive students' perspectives toward the use of digital libraries.
16. After controlling for their age, major, gender and enrollment status, students' perceived usability of digital libraries was significantly related to their computer literacy skills ($\beta = .115$, $t(202) = 2.99$, $p = .003$).
17. Students' perceived usability of digital libraries was not significantly related to their access to technology and the Internet, either at school or home. Learners did not rate their usability

of digital libraries very High ($M = 3.34, SD = .49$). Consequently, more training in the use of digital libraries and how to locate and evaluate resources is needed.

18. There was a significant relationship between students' perceived usability of digital libraries and their gender. Female students ($M = 3.42, SD = .51$) had a higher level of perceived usability of digital libraries than male students ($M = 3.22, SD = .42$). The difference in the perceived usability of digital libraries between female and male students was significant ($t(225) = 3.08, p < .01$).
19. There was no significant relationship between students' perceived usability of digital libraries and their major, enrollment status, or age. Consequently, implementation of the curriculum should require the use of digital libraries

Recommendations

1. Saudi universities should provide technology development programs to students at the universities to improve their computer literacy skills.
2. Faculty should prepare curricula that require the use of digital libraries.
3. Saudi universities should have developed technological infrastructure to be prepared for using digital libraries.
4. Saudi universities should provide faculty members with workshops and training programs to promote them to use digital libraries to develop their academic performance.
5. Computer labs at universities should be provided with technical support to assist students in using digital libraries.
6. Saudi universities should prompt faculty to attend workshops and conferences about valuable of utilize digital libraries in learning environments.

7. Saudi universities should have the newest technological infrastructure to be prepared for using digital libraries.
8. Faculty should consider and promote positive students' perspectives toward the use of digital libraries.
9. Faculty should encourage students to use digital libraries.
10. There should be cooperation between universities and faculty to assist and motivate students to use digital libraries.

Future Research

1. This study should be replicated at other Saudi universities to explore students' attitudes toward the use of digital libraries in higher education at other universities and investigate factors that might prevent the effective implementation of the use of digital libraries from their perspective.
2. This study should be conducted to include other students' statuses such as graduate students to explore if there are differences between undergraduate and graduate students in their attitudes toward the use of digital libraries.
3. It is recommended that this study should conduct as a comparative study to find out if there are any differences between students' attitudes toward the use of digital libraries in higher education at Taibah University and the attitudes of students at any other university in Saudi Arabia.
4. This study should be replicated to include a vast number of students to obtain clear perceptions about their attitudes toward the use of digital libraries.
5. It is suggested that future studies should be conducted on the qualitative pros and cons of students' attitudes toward the use of digital libraries in higher education at Saudi Arabia

universities.

6. This study should be replicated to explore faculty members' attitudes and perceptions toward adopting digital libraries in higher education.
7. It is recommended that this study should be conducted to include other parties in the educational process (i.e., faculty and administrators) to conduct a comparative study to investigate if there are differences between students, faculty, and administrators in their attitudes and perceptions toward the use of digital libraries.
8. It is recommended that this study should be replicated at other Saudi universities to investigate the factors that might affect students' attitudes toward the use of digital libraries and to examine the relationships between students' attitudes toward the use of digital libraries and their demographic information.
9. Further investigations should be conducted at other Saudi universities to examine factors that might prevent the effective implementation of the use of digital libraries.
10. Further investigations should be conducted to examine the positive impacts of the use of digital libraries in higher education on students' learning and academic performance.

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Appendices

Appendix (A)



APPROVAL OF PROTOCOL

May 10, 2017

Maha Fasi
mahah@ku.edu

Dear Maha Fasi:

On 5/10/2017, the IRB reviewed the following submission:

Type of Review:	Initial Study
Title of Study:	Attitudes of Saudi Arabian Students Toward the Use of Digital Libraries in Higher Education
Investigator:	Maha Fasi
IRB ID:	STUDY00140783
Funding:	None
Grant ID:	None
Documents Reviewed:	• Maha/citiCompletionReport, • Attitudes of Saudi Arabian Students toward the Use of Digital Libraries in Higher Education, • Maha-Survey Agreement.docx, • Maha' Propoasl. 2017.pdf, • Infromation tatement-Maha.docx, • Attitudes of Saudi Arabian Students toward the Use of Digital Libraries in Higher Education, • Maha_HSCL_Initial_Submission_Form.pdf

The IRB approved the study on 5/10/2017.

1. Notify HSCL about any new investigators not named in original application. Note that new investigators must take the online tutorial at https://rps.drupal.ku.edu/human_subjects_compliance_training.
2. Any injury to a subject because of the research procedure must be reported immediately.
3. When signed consent documents are required, the primary investigator must retain the signed consent documents for at least three years past completion of the research activity.

Continuing review is not required for this project, however you are required to report any significant changes to the protocol prior to altering the project.

Please note university data security and handling requirements for your project:
<https://documents.ku.edu/policies/IT/DataClassificationandHandlingProceduresGuide.htm>

You must use the final, watermarked version of the consent form, available under the "Documents" tab in eCompliance.

Sincerely,

Jocelyn Isley, MS, CIP
Interim IRB Administrator, KU Lawrence Campus

Human Research Protection Program
Youngberg Hall | 2385 Irving Hill Rd | Lawrence, KS 66045 | (785) 864-7429 | research.ku.edu/hrpp

Consent Form in English

Appendix (B)



To Whom It May Concern:

This letter is to confirm that Maha Hassan Fasi has enrolled in 6 hours/ Dissertation hours. Maha has finished her coursework in Spring 2017, since then she started working on the doctoral research part.

She is required to conduct a survey and collect data in the Fall 2017. Her research topic is ***The Attitudes of Saudi Arabian Students Toward the Use of Digital Libraries in Higher Education***. To this end, she is kindly requesting you to approve her to complete and collect data in Taibah University in Saudi Arabia.

☐
Sincerely, ☐

☐

A handwritten signature in blue ink that reads 'Ronald Aust'.

☐ April 27, 2017

☐

☐

Ronald Aust
Associate Professor
Educational Leadership and Policy Studies
The University of Kansas

☐

Approval from Taibah University to Conduct the Study

Appendix (C)

KINGDOM OF SAUDI ARABIA
Ministry of Education
TAIBAH UNIVERSITY



المملكة العربية السعودية
وزارة التعليم
جامعة طيبة
(٠٣٩)

(039)

(٠٣٩)

♦ أنت في طيبة.. فكن طيباً ♦

الموضوع: الموافقة على تطبيق استبانة وعلى تسهيل مهمة الطالبة / مها بنت حسن الفاسي

إلى من يهمه الأمر

السلام عليكم ورحمة الله وبركاته وبعد:

إشارة إلى الطلب المقدم من الطالبة / مها حسن الفاسي، المتبنة لنيل درجة الدكتوراة من جامعة كانسس بالولايات المتحدة الأمريكية، في تخصص تقنيات التعليم، والذي تطلب فيه تطبيق استبانة بعنوان: "اتجاهات الطلبة السعوديين نحو استخدام المكتبات الرقمية في التعليم العالي" على طلبة كلية التربية بجامعة طيبة في الفصل الدراسي الأول ١٤٣٨/١٤٣٩ هـ.

عليه.. نفيد بموافقتنا على اجراء البحث الميداني المذكور أعلاه على طلبة الكلية حسب التعليمات المعنية، والتقاليد البحثية المتعارف عليها، مع تمنياتنا لها بالتوفيق،،،

وتفضلوا بقبول خالص التحية والتقدير،،،

عميد كلية التربية بجامعة طيبة


٨٢٤
٢٢٨
أ.د. علي بن ناصر آل مقبل

English Version

Appendix (D)

Attitudes of Saudi Arabian Students Toward the Use of Digital Libraries in Higher Education Survey



English 

Attitudes of Saudi Arabian Students toward the use of Digital Libraries

This survey investigates The Attitudes of Saudi Arabian Students toward the use of Digital Libraries in Higher Education.

The survey has only 5 pages with questions and should take no more than 10 minutes to complete. Your responses will remain anonymous. The Department of Educational Leadership and Policy Studies at the University of Kansas supports the practice of protection for human subjects participating in research. Your participation in this survey is strictly voluntary. You may quit the survey at any time by clicking "Exit this survey."

Please contact Maha Fasi (maha@ku.edu) or Ron Aust (aust@ku.edu) if you have any questions or concerns about participating in this research.

To continue to the survey, please verify you have read this statement by checking "Yes, I have read this statement."

Section 1: Digital Libraries Usage



English

Digital library is defined as “Managed collection of information, with associated services, where the information is stored in digital formats and accessible over a network” (Arms, 2000, p. 2).

How I Use Digital Libraries

	More than 4 Times Per Day	2 to 4 Times a Day	Once a Day	Weekly	Monthly	Never
1-How often do you use digital libraries for school coursework assignments	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2-How often do you use digital libraries for individual needs related to personal or family interest	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3-How often do you use digital libraries for fun/play. Example: as answering trivia questions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4-Overall, how often do you use digital libraries	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Describe Your Attitudes Toward Digital Libraries

Section 2: Attitudes to Use Digital Libraries

Describe Your Attitudes Toward Digital Libraries

	Strongly Agree	Agree	Neither Agree nor Disagree	Somewhat Disagree	Strongly Disagree
1-I like to use digital libraries for learning purposes.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2-Digital libraries are important because they support my learning positively.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3-In my opinion, using digital libraries to support learning is a good idea.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4-I find learning online through using digital libraries is fun.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5-I find using digital libraries for learning is very desirable.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6-I enjoy using digital libraries in collaborative projects with other students.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7-I prefer to attend a class where the instructor is using digital libraries in his/her teaching.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8-When I started using the digital libraries to support learning, I found it difficult to stop.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Section 3: Usability of Digital Libraries

Perceived Usability of Digital Libraries

	Strongly Agree	Agree	Neither Agree nor Disagree	Somewhat Disagree	Strongly Disagree
1-I find digital libraries unnecessarily complex.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2-I think digital libraries are easy to use.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3-I need the support of a technical person to be able to use digital libraries.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4-I found the various functions in digital libraries were well integrated.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5-I think there is too much inconsistency in digital libraries.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6-I believe that most college students learn to use digital libraries very quickly.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7-I find digital libraries very cumbersome to use.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8-I feel very confident using digital libraries.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9-I needed to learn about technology before I could get going with using digital libraries.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Section 4: Computer Literacy Skills

Describe Your Computer Literacy Skills

	Very Skilled	Somewhat Skilled	Average	Poor	No Experience
1-Computer Operating System (e.g. PC, Mac, etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2-Microsoft Office (e.g. Word, PowerPoint, spreadsheet etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3-E-mail programs (e.g. Outlook Express, Yahoo, etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4-Imaging device (e.g. using scanner, digital or video camera, etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5-Internet browsers (e.g. Netscape, Safari, Internet Explorer, etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6-Web searching (e.g. Google, Yahoo, etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7-Web page creation programs (e.g. Front Page, Dreamweaver, etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8-Online course support (e.g. course web pages, Blackboard, Web CT, etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9-Threaded discussions (e.g. electronic bulletin board).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10-Computers in general.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Section 5: Access to technology and the Internet

Access to Technology and the Internet

	Yes	No
Do you have access to an Internet connection at SCHOOL?	<input type="radio"/>	<input type="radio"/>
Do you have access to an Internet connection at HOME?	<input type="radio"/>	<input type="radio"/>

Section 6: Demographic Information

Student Status:

Freshman

Sophomore

Junior

Senior

What is your Major?

- Department of Biology
- Department of Chemistry
- Department of Geology
- Department of Mathematical Science
- Islamic Education Department
- Department of Educational Technology
- Department of Physical Education and Mathematical Sciences
- Department of Educational Psychology
- Department of Foundations of Education
- Department of Educational Administration
- Department of Art Education
- Department of Curricula and Instruction
- Department of Adult Education and Continuing Education
- Other

What is your age?

What is your gender?

Male

Female

Thank You

Thank You for Participating in this Survey

Arabic Version

Appendix (E)



English

هذا الاستبيان يشتمل على خمس صفحات من الأسئلة، مكونة من سبع محاور والتي لا تحتاج لإجابتها أكثر من عشر دقائق. حيث أن المحور الأول يتعلق بكيفية استخدام المكتبات الرقمية ويشتمل على أربعة بنود. المحور الثاني يتعلق بوصف اتجاهات الطالب نحو استخدام المكتبات الرقمية ويشتمل على ثمانية بنود. المحور الثالث يتعلق بسهولة استخدام المكتبات الرقمية ويشتمل على تسعة بنود. المحور الرابع يتعلق بوصف مهارة الحاسب الآلي ويشتمل على عشر بنود. المحور الخامس يتعلق بسهولة الدخول للانترنت ويشتمل على سؤالين نعم أو لا. المحور السادس والسابع يشتمل علي معلومات عن الطالب. إذا كان لديك أسئلة أو للاستمرار في الإجابة. aust@ku.edu أو التواصل مع د. أوست mahah@ku.edu استفسار حول هذا الاستبيان يرجى التواصل مع الباحثة مها الفاسي على هذا الاستبيان انقر نعم

أولاً: استخدام المكتبة الرقمية

تعريف المكتبة الرقمية

يتم تعريف المكتبة الرقمية بأنها "جمع المعلومات (نصوص وصور وفيديو وغيرها) مخزنة بصيغة رقمية ويمكن الوصول إليها عبر عدة وسائط مثل الإنترنت

استخدام المكتبة الرقمية

	أكثر من 4 مرات يومياً	2-4 مرات يومياً	مره واحد يومياً	أسبوعياً	شهرياً	لا استخدم المكتبات الرقمية مطلقاً
1- ما عدد المرات التي تستخدم فيها المكتبات الرقمية لإداء المهام الدراسية -	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2- ما عدد المرات التي تستخدم فيها المكتبات الرقمية لإداء الاحتياجات والمتطلبات المتعلقة بالمهام الشخصية أو العائلية.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3- ما عدد المرات التي تستخدم فيها المكتبات الرقمية للتسلية أو الترفيه -	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4- بشكل عام، كم مرة غالباً تستخدم المكتبة الرقمية -	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

ثانياً: اتجاه الطالب نحو استخدام المكتبات الرقمية

اتجاه الطالب نحو استخدام المكتبات الرقمية

	أوافق بشدة	أوافق	لا أوافق ولا أعارض	لا أوافق إلى حد ما	أعارض بشدة
1- أرغب في استخدام المكتبات الرقمية لأهداف تعليمية -1	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
المكتبات الرقمية مهمة لأنها تعلم تعليمي ايجابياً	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
في رأي أن استخدام المكتبات الرقمية لدعم التعليم هو فكرة جيدة.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4- أجد متعة من خلال استخدام المكتبات الرقمية في التعلم -4	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5- استخدام المكتبات الرقمية للتعلم مرغوب فيه جداً -5	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6- أنا استمتع باستخدام المكتبات الرقمية في مشاريع تعاونية مع الطلاب الآخرين -6	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7- أفضل دراسة المواد التي يستخدم فيها عضو هيئة التدريس المكتبات الرقمية -7	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8- بعد أن بدأت استخدام المكتبات الرقمية جدت أنه من الصعب التوقف عن استخدامها -8	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

ثالثاً: قابلية استخدام المكتبات لرقمية

قابلية استخدام المكتبات لرقمية

	أوافق بشدة	أوافق	لا أوافق ولا أعارض	لا أوافق إلى حد ما	أعارض بشدة
1- أعتقد أن المكتبات الرقمية معقدة.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2- أعتقد أن المكتبات الرقمية سهلة الاستخدام.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3- أعتقد أنا بحاجة إلي دعم من شخص متخصص " تقنيات " لأتمكن من استخدام المكتبات الرقمية.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4- المكتبات الرقمية وظائف مختلفة ومتكاملة.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5- أعتقد أن هناك الكثير من التناقض في المكتبات الرقمية.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6- أعتقد أن معظم طلاب الجامعة يتعلم كيفية استخدام المكتبات الرقمية بسرعة فائقة.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7- أعتقد أن استخدام المكتبات الرقمية مرهق جداً.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8- أعتقد أنني قادر جداً على استخدام المكتبات الرقمية.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9- أعتقد أنني بحاجة لمعرفة المزيد عن التكنولوجيا قبل البدء باستخدام المكتبات الرقمية.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

رابعاً: وصف مهارة الحاسب الآلي

وصف مهارة الحاسب الآلي

	مهارة عالية	مهارة إلى حد ما	مهارة متوسطة	مهارة ضعيفة	لا يوجد مهارة
1- (نظام تشغيل الحاسب الآلي مثل (أجهزة الحاسب الآلي، ماك... الخ-1).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2- (...مايكرو سوفت أوفيس مثل (بورد، بوربوينت، جداول).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3- (...برامج البريد الإلكتروني مثل (أوت لوك اكسبرس، ياهو-3).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4- (جهاز التصوير مثل) استخدام الماسح الضوئي، الكاميرا الرقمية، الفيديو.... الخ-4.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5- (متصفحات الانترنت مثل) نت سكيب، سفاري، انترنت اكسبلورر.... الخ-5.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6- (البحث على شبكة الانترنت مثل) جوجل، ياهو.... الخ-6.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7- (برامج إنشاء صفحات الويب مثل) فروننت بيج، دريم ويفر.... الخ-7.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8- (ويب... الخ CT، دورات على شبكة الانترنت مثل) دورة صفحات الويب، السبورة-8.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9- (المناقشات المترابطة مثل (لوحة الاعلانات الالكترونية-9).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10- أجهزة الكمبيوتر بشكل عام-10.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

خامساً: الإتصال بالإنترنت

الاتصال بالانترنت

	نعم	لا
هل أنت قادر على الاتصال بالانترنت في الجامعة؟-1	<input type="radio"/>	<input type="radio"/>
هل أنت قادر على الاتصال بالانترنت في المنزل؟-2	<input type="radio"/>	<input type="radio"/>

سادساً: المعلومات الديموغرافية

المستوى الأكاديمي

مستوى أول

مستوى ثاني

مستوى ثالث

مستوى رابع

ما هو تخصصك؟

- قسم الأحياء
- قسم الكيمياء
- قسم الفيزياء
- قسم الجولوجيا
- قسم التربية الإسلامية
- قسم تقنيات التعليم
- قسم تربية بدنية وعلوم الرياضية
- قسم علم النفس التربوي
- قسم أصول التربية
- قسم الإدارة التربوية
- قسم التربية الفنية
- قسم المناهج والتدريس
- قسم تعليم الكبار والتعليم المستمر
- آخر

ما هو عمرك؟

الجنس

ذكر

أنثى

شكراً لتعاونكم

أشكر مشاركتكم معنا في هذا الاستبيان