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## The Satisfaction Level of Students with Disabilities with Library and Information Services

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### Abstract

The study aimed to examine the level of satisfaction of students with disabilities with library and information services in Saudi universities. The descriptive survey approach was used. The study sample consisted of 35 students with disabilities enrolled in Imam Muhammad bin Saud Islamic University in the Kingdom of Saudi Arabia. A questionnaire was used to collect the data of the study. The results showed a number of information services and special environmental facilities available within the university central library, the frequencies, and percentages of their use by students with disabilities. They were ordered according to the students' responses: book borrowing service, book return service, audiobooks, large print, and Braille book services. Also, it was revealed that the degree of satisfaction of students with disabilities with the library services provided to them was high. In addition, the physical environmental facilities of the library from the point of view of students with disabilities were the availability of a personal and designated place to study such as computer spaces and chairs suitable for students' needs. The signs (directions) related to disability in the library and their compatibility with the needs of students with disabilities and the availability of tools and technologies to meet their needs in the library without the help of others were rated poor.

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### Introduction

The number of high school graduates as well as admissions in universities is increasing steadily. Also, there is an increase in the number of students with disabilities. Given the urgent need for students with disabilities for the availability of information services, one of the most important sources of knowledge, it is necessary to recognize the extent of the beneficiaries' satisfaction of university students with disabilities with the services and office facilities provided therein. Also, it is of importance to know the reality of the central library in terms of the quality of services provided for this category and its suitability to the requirements of students with disabilities. The central library is concerned with providing knowledge to the beneficiaries at the right time, in the right form, and through the right person. It should be taken into account that the role of libraries in the recent period is focused on spreading knowledge through the Internet, and library services are being provided in digital

form (Al-Zuhaimi, 2012).

With the development of legislation related to the disabled and their application in reality, the number of students with disabilities in universities has increased, in order to achieve their ambition to complete their studies like their non-disabled peers. There are distinguished efforts to improve the quality of services provided to students enrolled in university. The availability of appropriate services provided great opportunities for students to be able to achieve success and academic excellence, which is one of their most important goals (Al-Khashrami, 2011). Statistics indicate that the number of university students with disabilities who complete their studies for the academic year 2021/2022 has reached 160 male and female students with physical, health, visual, and hearing disabilities, who are registered in the Special Needs Services Center (Special Needs Services Center, 2020).

The special requirements of students with disabilities call for the availability of services and facilities without which they may not be able to achieve success at university. University libraries are a cultural and educational means that can contribute to serving students with disabilities by offering library and information services in a special way and capabilities that meet their desired needs according to the students' type of disability (Johari, 2010). The interest in information services and environmental facilities for people with disabilities began in the 1960s by Robert S. Bray. He published a paper in the annual Bulletin of the American Association of Visually Impaired Workers entitled 'Library Services for the Blind'. On the Arab level, Hussein Abdul-Shafi presented a paper entitled 'Library Service for the Visually Impaired' in 1971. After that, scientific publishing increased in the nineties in the field of library services with new trends with the availability of the Internet and electronic texts for people with disabilities (Aseel, 2005). It is necessary to work on facilitating the flow of office services for people with disabilities in all possible channels and to go beyond their traditional nature and allow the organization of information containers to include all means, software, equipment, and various devices through which it is easy to access the minds of those people. The first success of the library lies in the continued frequency of beneficiaries. Achieving this requires providing a library specialist and rehabilitating him professionally, socially, culturally, and psychologically in order to benefit students and leave a firm imprint in their souls that pushes them to enter the library frequently again and again (Mujahid, 2017).

Providing information services for people with disabilities is an assistant and complementary part of their scientific, educational, cultural, and human formation. Hence, it is one of the ways and methods that work to bridge the disability gap and overcome the difficulties and challenges they face. Therefore, some justifications make the provision of information services and environmental facilities in the university library for people with disabilities an urgent necessity. First, individuals with disabilities have the right to be treated to the same degree and status as other beneficiaries. Second, the principle of equal opportunities is achieved by providing equal access for individuals with disabilities to all information sources and services that benefit others. Third, human resources for individuals with disabilities are developed by upgrading their cultural, educational, and mental capabilities, and then alleviating the impact of disability. Fourth, individuals with disabilities have informational and educational needs, just like those without disabilities. Finally, the principle of total integration of individuals with disabilities is achieved in the university community (Aseel, 2005; Johari, 2010).

The stage of education at the university level for students with disabilities is an important educational stage, especially if the qualifications and capabilities are available to enable them to join this important stage of study (Al-Zaboun & Al-Hadidi, 2014; Al-Zuhaimi, 2012; Mosab, 2016). Universities provide services, supports, and facilities per the type and degree of the student's disability (Ericson & Lawrin, 2016). According to the theoretical literature, the common disabilities in universities are those students with disabilities who can adapt to the university situation, the academic requirements, and their willingness to adapt to the university teaching system including lectures, projects, experiments, and activities. Among the most prominent categories that can be integrated into universities: visual impairment, hearing disability, physical and health disabilities, learning difficulties, hyperactivity and attention deficit, behavioral and emotional disorders, and brain injuries (Al-Samadi, 2020; Al-Miqdad & Al-Qatawneh, 2018; Brinckerhoff, McGuir, & Shaw, 2002). The visually impaired category is considered one of the most groups that have obtained academic studies and published research concerning information services and environmental facilities in both university and public libraries (Sadiq, 2017).

The educational literature lacks a comprehensive and inclusive study of all the categories of disability due to the nature of the information needs that is unique to this research. The International Federation of Libraries Archives and Information has explicitly stated the idea of a universal library and access to university library services that include different groups of people with disabilities (Sadiq, 2017). It is necessary to provide an appropriate environment and work on removing obstacles that limit the movement of students with disabilities naturally within the library, and not only ramps and elevators as manifestations of environmental facilities for students with disabilities.

Also, there should be work on making available specialized units. They provide services and information and training and guidance resources for the optimal use of assistive technology tools and various information containers. They can be printed materials in Braille, audiobooks, and sources provided with sign language translation and others. This claim is supported by the findings of Joint and Beaton's (2005) study, which emphasized the importance of providing and developing informational services and resources for library visitors with disabilities, each according to the disability to which he belongs in line with their needs from those sources. Especially, services for students with disabilities are not among the priorities of the plans prepared in academic libraries. Given that their low numbers make the administrations in these libraries not pay attention to them and not play the role required to meet their needs for services and information resources (Abo-Tayeh, et al., 2017).

The problem of the physical location, the building, or the place from which information services originate is what has been known through the ages as the library. It is the place where every educated or formally educated person imagines that he will find a haven, useful information, and specialized books to find various solutions to the problems he may encounter. The problem of the site or the library in its physical sense lies in the material cost needed to design and build a library, no matter how the area or building is small. The material cost exhausts material resources and does not maintain the budget that allows the provision of specialized information services and specialized information according to the needs of the beneficiary (Sadiq, 2017).

The physical equipment of libraries contributes to social interaction, developing self-confidence, breaking the psychological barrier, and increasing the educational process for ordinary students and people with disabilities. So, the individual can use the library's automated system without the help of others (Al-Najjar & Abbas, 2018). From this point of view, it is possible to explore the depths of the technological development currently taking place in open information networks and adapt it to serve people with disabilities, especially application software, known as Apps, which is an abbreviation of the word applications (Sadiq, 2017). Global attention is currently directed to the use of modern technology including tools and programs in libraries, to increase, enhance, or improve the functional capabilities of individuals (Al-Zboon & Al-Hadidi, 2013).

## **Information and Modern Technology Services**

When you look at the technologies, tools, and modern devices that university students with disabilities need and the necessity of providing them on the electronic library website, this facilitates the provision of information services for people with disabilities to increase learning opportunities and gain independence. Also, there will be an increase in their ability to move, control the environment around them, invest in its capabilities and communicate technology with information technology (Johari, 2010). The following are the most prominent technologies, tools, devices, and modern programs that suit every disability.

### **Visual Impairment (Blind and Visually Impaired)**

General Maps, clear and colored, on bases and stands, with screen, sensors, and speakers showing the features of the library.

**Software and Applications:** One of the latest technologies in the field of library services for the visually impaired is the digital audiobook, Digital Accessible Information System DAISY. It is in the form of a talking digital book or a written audiobook. It serves people with visual or physical disabilities or learning difficulties (DAISY, 2004). As for the **screen reader**, it converts electronic files into audio files that the student can hear whenever he wants. Some of the screen readers are the Job Access with Speech (JAWS) program, the HALL program, the Virgo program, and the Ibsar program (Al-Eid & Al-Shaya, 2015). **Writing processing programs** convert written texts into spoken texts with natural human voices, including Natural Rader, Nuance TALKS, and mobile use with ease. **The text on the computer screen can be enlarged** 16 times the normal size, such as the ZOOM text program, the SUPERNOVA program, and the RUBY program. The Braille display technology displays what is on the screen into characters in Braille, which can be linked with a screen reader. It also acts as a data output unit by translating and outputting the data in the form of matrix dots in Braille. **A portable notebook with an electronic line**, a Brailnote-M Power device, a laptop computer with an electronic line for the visually impaired, processes texts written and stored, surfs the Internet and browses e-mail through Braille or listens to it through a loudspeaker, in addition to some other missions (Al-Eid & Al-Shaya, 2015).

**Braille Printing:** it prints any text written and saved in txt or doc. format through special printers that convert text from normal language to Braille. Braille Wave is linked to a computer and displays everything that appears

on the screen to convert it into Braille. Also, Braille Sense U2 Mini creates and reads files in different languages. In addition, there are the Arabic and English pronunciation machine and the Pac Mate BX Series device for reading electronic books and using the Internet (Cylke, et al., 2007).

### **Hearing Impairment (Deaf and Hard of Hearing)**

One of the most important ways to attract the attention of deaf students and their interest in learning to read is the use of multimedia in displaying educational content. For example, Cued Speech Converts written texts from a computer in txt format or doc. E-books to hand with the face drawings to form audio clips, words, and sentences. There are also special instructions for people with hearing disabilities in the form of video clips in sign language and writing the audio explanation in the user's language below the video clip, as well as activating audio files with an auxiliary text that includes the content of the audio file (Mazib, 2013).

**Hearing Aids-Modulated Vibration Transmitters:** They provide the acoustic environment necessary to understand and perceive speech well. For example, **the magnetic field tape** translates sound into electrical signals, amplifies those signals, passes them by a tape, and sends them to the vicinity of it in the form of electromagnetic energy. Also, **the FM device** helps to hear sounds clearly and make more use of the hearing aids they use. In addition, **Ultraviolet light** is a device that translates sound into electrical signals and transmits them to the receiver in the earpiece worn by the individual through invisible ultraviolet light waves (Al-Eid & Al-Shaya, 2015).

**Physical and Health Disabilities:** there are alternative input devices, including Trackball. It is an inverted mouse that the learner rotates the ball directly with the fingers. The **joystick** is a direct alternative to the mouse and can be held by the mouth. A **Touch screen** is a transparent screen that is sensitive to touch, and the student can use the computer and deal with files and lists easily. The **Pictured replacement keyboard** is designed in the form of modified or adjustable capital letters to be large and clear panels, and the keys for that panel are in the form of large letters. The input panel parts can also be separated to suit the user's hand and capabilities. **Paper page-turning devices** benefit individuals who cannot move their hands completely or partially (Al-Zuhaimi, 2012).

### **International Associations and Institutions that Provide Library And Information Services**

Because of the importance of the topic of library and information services, some international associations and institutions have emerged that are concerned about providing information services in the library for people with disabilities:

-**American Library Association, Global Library:** A global Internet designed in a digital way to access information resources in an easy-to-use way in which visually impaired people around the world cooperate.

-**International Federation of Library Associations (IFLA): Print Disability.** This division encourages cooperation in the field of library services for people with visual disabilities, learning difficulties, and

others (Al-Zboon & Al-Hadidi, 2013).

- Also, there is the **National Library for the Visually Impaired and Physically Disabled (NLS)** of the US Library of Congress and the World Wide Web Consortium (W3c), a consortium of three scientific institutes headed by MIT.

-**Bobby's Testimony for Websites** is an organization that analyzes a web page to ensure that its contents can be read by a screen-reader and if the site passes this test, the owner of the site is given a logo indicating the ability to read the contents of the site through screen reader programs (Babaker, 2014). In the case of planning to establish a center within the library to serve beneficiaries with disabilities, the Library of Congress standards can be guided. The American Library Association has prepared Standards for Library Services for the Blind and Physically Handicapped.

Johari's (2010) study aimed to reveal the reality of information services for people with special needs of students with visual disabilities at King Abdulaziz University in terms of the extent of their usefulness, the quality of their performance, and the development of proposals to improve the quality of the performance of the information services provided to them. The study methodology used was case study, observation, field visit, and interview, and the quality of service performance scale, and the perception/expectations scale were also used. The study methodology used a case study, observation, field visit, and interview. The quality of service performance scale and the perception/expectations scale were also used. The study was applied to 23 students with visual impairment. The results indicated the reluctance of female students to visit the university library. That 56% of the participants considered the location of the library information services center, the location of the building, and the furniture to be inappropriate.

The study by Al-Zboon and Al-Hadidi (2013) aimed at assessing the reality of library services provided to persons with visual disabilities in Jordan. The sample consisted of 32 libraries belonging to public and private universities and public libraries. Through the international standards scale for library services provided to people with visual impairment, the scale consisted of six criteria for 56 indicators. The results of the study indicated that the level of library services was low according to the international standards.

Babiker (2014) presented a study that aimed at unveiling the role of university libraries in providing information services to people with special needs at the University of Gezira, Sudan. The sample was composed of 50 students with visual, motor, and hearing disabilities. The descriptive approach and a questionnaire were used. The results indicated that the structural and technical aspects of libraries at the university were not suitable for people with disabilities. Also, there was a lack in equipment, assistive devices, and information containers to obtain information. In addition, the librarians have less experience. They are not trained to deal with this category, which, in turn, is reflected on the students by not acquiring the skill of obtaining the library service. There were no special divisions for people with special needs at the University of Gezira. Computers were not modified to suit people with disabilities, and the technologies and equipment were lacking in the university libraries.

A study in Armenia on digital services for beneficiaries with disabilities in the National Library was carried out

by Khachartan (2014) through reviewing the literature and interviewing students with disabilities who have visual, hearing, or movement disabilities and visit the library regularly to benefit from the library's services. Also, the librarians were interviewed. The phone and Google Talk were to interview the participants. The sample was purposive and consisted of 10 individuals. The results indicated the lack of services and facilities for using the Internet for students with disabilities due to the lack of government support, facilities and assistive technology tools, and the absence of qualified employees. All this leads to the reluctance of students with disabilities to visit the library and causes barriers to access information.

The study of Udofia et al. (2016) aimed to examine the extent of the impact of the Internet, e-mail, and social sites on the educational process and information literacy among students with speech and hearing disorders in Nigerian academic libraries. A questionnaire was administered to the study sample consisting of 33 students in four academic institutes in Nigerian universities: Iyo University, Kalaba, Akwa Ibom State, and Cross River State of Sciences. The results of the study concluded the importance of the Internet, e-mail, and social networking sites in literacy in the cognitive domain of students with speech and hearing disorders in academic libraries.

Phukubje and Ngoepe (2017) assessed the appropriateness and accessibility of library services for people with disabilities at the University of Limpopo in South Africa. The domains of the study included knowing the services provided to students with disabilities, assessing the actual access to the library, the study materials available to students with disabilities, and assessing the appropriateness of library services provided to students with disabilities. The study questionnaire was applied electronically to 92 blind and visually impaired students. It is a list issued by the International Federation of Library Associations and Institutions. In this study, open questions were used as a primary tool for collecting information, and an interview with the person in charge of the library dealt with the extent to which the buildings, materials and available programs are utilized. It targeted everything related to this regard, whether internally or externally (such as doors that open automatically, stairs and illustrations, and elevator buttons prepared for access by wheelchair users, and rack access). The results of the study showed the ease of use of library services by students with disabilities. 49% of the study sample stated that they had easy access to materials in the library. 16% of the participants indicated their ability to use the library facilities without asking for help from the person in charge in the library compared with 76% who mentioned their need for the help of the administrator in the library. Only 7% indicated that they did not always need the assistance of the person in charge of the library.

Al-Mkaneen and Abo-Tayeh (2019) explored the reality of environmental facilities for students with disabilities for the services of the Hashemite University library, using a questionnaire and interviews. The results showed a high level of access for students with disabilities to library services in terms of human resources, public safety measures, information resources, library building, interior design, and finally, support technology. It also showed that the most categories of disability that the university library targets to provide services to were the visually impaired students, while the least categories of disability targeted by the library services belonged to students with visual disabilities.



## **Statement of the Study**

The university that has students with disabilities works to provide education and training opportunities for them within the university's general program. This provides them with education and training in a manner that takes into account their needs and thus creates in themselves the motivation to learn. Therefore, every student, regardless of the degree and type of his disability, enjoys the support, assistance, and acceptance of the university community (Al-Tramsi, 2001; Dewa, 2018). The field of education for people with disabilities has witnessed clear interest and great support, especially in the university education stage.

The university student needs educational, medical, social, economic, and service facilities during the study years to help him face environmental problems and challenges. This makes the student with disabilities feel psychologically and financially comfortable, increases his self-confidence, and becomes self-reliant to obtain services that meet his needs related to library and information services. Libraries must facilitate the access of students with disabilities to sources of knowledge that enable them to develop their professional, academic, and cultural capabilities and improve their level of educational performance. They also enable them to integrate into university educational, cultural, and social life and become an independent and active member. The educational institution must work to achieve equal opportunities and equality among all students (Yahya & Arafa, 2015).

By looking at the special facilities provided to students with disabilities at Prince Sultan Library at Imam Muhammad bin Saud University, there is a noticeable reluctance by these students to visit the library and make use of its equipment and sources due to the apparent lack of these facilities. To make sure of this, it is necessary to study the reality in order to find out those needs and to inform the decision-makers of the need to provide these facilities, especially which the percentage of disability in any society is close to 10% (Johari, 2010). The size of disability in the world reaches about 650 million people, according to the Disabled World study (2013) under the title 'Disability Statistics: Facts & Statistics on Disability & Disability Issues' (Sadiq, 2017, p. 5). Accordingly, there is an increase in the number of students with disabilities admitted to the university. In the light of the foregoing, the problem of the current study was determined by the following research questions:

1. What are the services, information, and environmental facilities of the central library from the point of view of students with disabilities?
2. What is the satisfaction of students with disabilities with the information services and environmental facilities at Prince Sultan University Library?
3. What are the obstacles and challenges that prevent the provision of information services in the central library from the point of view of students with disabilities?
4. What are the suggestions offered by the current study to develop accessibility to library services for students with disabilities?

## **Objectives of the Study**

The current study aimed to shed the light on the information services and environmental facilities provided by the central library of Imam Muhammad bin Saud Islamic University and the extent of students' satisfaction with

these services. The sub-objectives can be specified as follows:

- 1- Identifying the services, information and environmental facilities provided to students with disabilities in the university central library.
- 2- Identifying the students' satisfaction with the information services and environmental facilities provided by the central library.
- 3- Determining the obstacles and challenges facing students with disabilities in obtaining library and information services.

### **Significance of the Study**

This study is one of the recent studies that deal with the viewpoint of university students with disabilities towards the reality of the library services provided to them. It also highlights the difficulties that limit the provision of library services to students with disabilities. The significance of the study also appears in spreading a culture of awareness among university administration and library employees of the importance of providing library and information services to individuals with disabilities, which is an integral part of the university library services program.

In addition, the study provides data for researchers, interested people, and decision-makers to improve the services available to students with disabilities at Imam Muhammad bin Saud Islamic University. Further, it helps in opening more research in this field. Moreover, the study works on developing and finding scientific solutions and activating library services for university students with disabilities. Accordingly, the significance of this study was formed in exploring the library services and facilities provided and the most prominent difficulties faced by people with disabilities, their topics or locations, and their relationship to library services.

### **Delimitations of the Study**

A questionnaire about information and library services and facilities for university students with disabilities was applied in the central library of Imam Muhammad bin Saud Islamic University in terms of building, paths, signs, and office technologies for people with disabilities on a sample of (35) students with both physical and motor disabilities and visual impairment students. Most of them are male students, distributed in the colleges of Education, Economics, Fundamentals of Religion, Sharia, Da'wa, and Media. None of the hearing-impaired students responded during the first semester of 2021/2022.

### **Terms of the Study**

*Students with Disabilities:* They are the students registered in the faculties of the university in its various stages with disabilities for the categories (visual, motor, hearing impaired, and any other disabilities classified by the Center for Special Needs within the university).

*Services and facilities in the university library:* All the facilities that the library provides to its visitors, including

trained human cadres, adapting the library building, paths and signs, tools, equipment, and modern technology that facilitate individuals' access to information sources.

*Information services:* They include computers (smart devices), software and cloud applications, modern communication and communication systems, and digital content (Sadiq, 2017).

*Central Library:* The Prince Sultan Library for Science and Knowledge (Central Library), which was established in 1951. The library is located in the middle of the university colleges. The building consists of 4 floors, with the specifications of modern academic library buildings. Fifty 2 employees work in the library. The library includes books, references, periodicals, hardware, software, and electronic services. It provides services and information and adopts the Dewey system for classifying and organizing information containers.

## Method

The current study adopted the survey descriptive research methodology and the statistical method in analyzing the results of the field study and extracting the results of the study using frequencies, means, and percentages for data collection. Also, the analysis of variance was used to identify the statistical significance of the differences between the sample participants.

## Population and Sample of the Study

The study population represents all university students with disabilities (160) who are enrolled in Imam Muhammad bin Saud Islamic University for the academic year 2021/2022. The study sample consisted of (35) university students with disabilities registered for the academic year 2019/2020, noting that all members of the sample are males with visual impairments, physical and health disabilities, and hard of hearing who study at the university and receive library services during their studies.

Table 1. The Sample of the Study, Number and Percentage

Group	Disability				College			Study level			
	Physical disability	Visual disability	Education	Economics	Sharia	Fundamentals of Religion	Da'wa & Media	2 <sup>nd</sup> year	3 <sup>rd</sup> year	4 <sup>th</sup> year	Graduate studies
N	20	15	5	5	10	5	10	5	10	15	5
Percentage	%57	%43	%14.3	%14.3	%28.5	%14.3	%28.5	%14.3	%28.5	%43	%14.3

### **Instrument of the Study and Data Collection**

To achieve the objective of the current study and answer the research questions, the following procedures were taken:

- The University of Waterloo instrument was chosen to collect data and information from university students with disabilities (Library Survey for Persons with Disabilities (2004) to collect the data from the study sample with modifications of its statements to suit the context and time.
- The instrument was translated and Arabized. Then, it was modified to conform to the local context of the Imam Muhammad bin Saud Islamic University Central Library and presented to specialists in Arabic and English to ensure the integrity of the translation and Arabization.
- The instrument was presented to ten experts with expertise and competence to judge the suitability of the statements and the extent to which they measure the objectives, and to verify the validity of the instrument. They were also asked to judge the statements of the instrument.
- Copies of the instrument were retrieved from the experts, and the necessary modifications were made by deleting some statements, modifying, and adding other statements based on the opinions and observation of the majority of experts. So, the instrument received its final version.
- The approval of the Center for People with Special Needs to implement the study was obtained by a letter of facilitation from the Deanship of Scientific Research.
- The instrument was applied through an electronic link.
- After completing the application of the scale, the data collected from the study sample were unloaded and statistical analysis was conducted using the Statistical Package for Social Sciences (SPSS) program, to conduct a descriptive analysis and answer the study questions.

The instrument included two parts. The first part included general questions for collecting demographic information such as gender (male, female), study stage (bachelor, postgraduate), study level (preparatory programs, first year, second year, third year, fourth year, other), college (Education, Social Sciences, Economics, Arabic Language, Fundamentals of Religion, Da'wa and Media), diagnosis (hearing impairment, physical and health, visual, other), degree of disability (simple, medium, severe). The second part consisted of the questionnaire's statements (42) in the form of multiple-choice questions that measure the student's satisfaction with the facilities and services in the library and open questions about proposals for developing library services for students with disabilities. The 42 statements are divided into 5 dimensions: the reality of the physical environment (11 statements), satisfaction with library services (3 statements), access to library resources (3 statements), challenges and obstacles (11 statements), and proposals for developing services (11 statements).

### **Validity of the Instrument**

To verify the validity of the study instrument, it was presented in its initial version, accompanied by the procedural definitions of its dimensions, to a group of 15 experts specialized in special education and psychology, from the specialized faculty members. They were asked to express their observations and opinions

about the extent to which the statements are consistent, the degree to which they represent the dimension, and the extent to which they achieve the objectives. Also, they were to check the accuracy of the statements, the clarity of the language and scientific wording of the statements, the extent to which the statements are appropriate to what they are set for, the extent to which the statements belong to their field, and the extent to which the statements are appropriate to the local context. Based on the experts' observations and suggestions, the necessary amendments were made to the questionnaire, items that did not reach an agreement by 90% were taken away. Seven statements were deleted from the questionnaire due to their inappropriateness, or the difficulty of understanding the statement. Accordingly, the questionnaire in its final version consisted of 42 statements distributed over five dimensions.

### **Reliability of the Instrument**

To verify the reliability of the study instrument, the instrument was applied to a sample from outside the study sample (15) students, and after two weeks, the instrument was re-applied on the same sample, who were given serial numbers from (1-15). The Pearson correlation coefficient was extracted between the two applications. Regarding the closed questionnaire statements, the reliability coefficient was (0.89), an appropriate and high value for the research.

### **Application Procedures and Statistical Processing**

The study instrument was administered electronically using Google Forms, to the study sample. A brief explanation was provided about the instrument and how to respond to it with an emphasis on the need to fill in the data on the demographic variables for the first part of the questionnaire. The data collection process took about a week from the first semester of 2021/2022. Because of the difficulty of applying the instrument, the study was limited to male students and from the bachelor's level only on a sample of (35) students. The data were emptied and analyzed by the (SPSS) program, and the results were extracted according to the study variables. As for the statistical methods that were used to judge the results of the study, they included calculating the means and the standard deviations of the responses of the study sample to the questionnaire statements.

### **Results and Discussion**

Through the previous presentation of the theoretical framework, study literature, and statistical analysis, the following results were revealed:

#### **Results of the First Research Question: What are the services, information, and environmental facilities of the central library from the point of view of students with disabilities?**

To answer this question, the frequencies and percentages of library services used by students with disabilities were extracted as shown in Table 2.

Table 2. The Number and Percentages of Library Services by Students with Disabilities

N	Service	Frequency	Percentage
1	Book borrowing service	18	%51.4
2	Book return service	15	%42.9
3	Study space in the internet lab	0	0
4	Individual library search assistance service	0	0
5	Availability of adapted appropriate hardware and software	0	0
6	Book borrowing service for a period	0	0
7	Electronic services	0	0
8	Library printing service	0	0
9	Audiobooks, large print and Braille book services	12	%34.3
10	Provision of scientific articles in the library	0	0
11	Other	3	%8.6

Table 2 shows the information services and special environmental facilities available within the university central library, the frequencies, and percentages of their use by students with disabilities. They are ordered according to the students' responses: book borrowing service, book return service, audiobooks, large print, and Braille book services, and other services. That the services that were given zero is because the students did not respond to those services.

There is no doubt that university students with disabilities enjoy the respect and special status of the university community in general and the library administration in particular. The central library is characterized by the fact that it is in the middle of the university's colleges. It consists of four floors and has a special hall for people with disabilities. It provides computers for them. It is also characterized by the librarians' interest to provide assistance without relying on a list or waiting for a financial return and meet any proposal for students through the box for suggestions. This helps students with disabilities have easy access and make them accustomed to visiting the library to help them rely on themselves and know the corridors and overcome the obstacles they face. Thus, the student benefits from the various services he receives.

**The Second Research Question: What is the satisfaction of students with disabilities with the information services and environmental facilities at Prince Sultan University Library?**

The means and standard deviations of the questionnaire items related to the satisfaction of students with disabilities with the library services provided on a three-Likert scale were extracted. The degree of satisfaction was determined according to the mean as follows: (1 -1.66: poor), (1.67 - 2.32: medium), (2.33 - 3.00: high).

Table 3 shows that the degree of satisfaction of students with disabilities with the library services provided to them was generally high on the items “library borrowing service for students with disabilities” and “cooperation of information staff”. This result agrees with the study of Phukubje and Ngoepe (2017), which indicated that 7% of participants did not always need the help of the person in charge of the library. However, this result does not accord with that of Babiker’s (2014), which indicated that librarians were inexperienced and untrained to deal with this category of students, as well as that of khachartan’s (2014), which pointed out to the lack of qualified trained staff. This can be explained by an improvement in the level of service quality, which will have a positive impact on the beneficiaries. It is also necessary to provide this service to students with disabilities, considering that they have an inherent right in these libraries, just like their peers.

Table 3. Means and Standard Deviations of Students' Responses about their Satisfaction with the Library Services Provided to Them

N	Statement	Means	Standard deviation	Level
1	Borrowing service in the library for students with disabilities	2.29	.710	Medium
2	Information staff provide facilities for students with disabilities	2.29	.890	Medium
3	Holding training courses for students with disabilities on the use of the library	2.71	.710	High
	Total	2.43	.690	High

***The Viewpoint of Students with Disabilities towards the Physical Environmental Facilities in the Library***

The frequencies and percentages of the study participants’ responses were extracted for the special physical environmental facilities of the library from the point of view of students with disabilities, and Table 4 shows that:

Table 4. Frequencies and Percentages of the Study Participants’ Point of View towards the Physical Environmental Facilities in the Library

N	Statement	Yes		No	
		Frequency	Percentage	Frequency	Percentage
1	Are the signs (directions) for your disability in the library compatible with your needs?	10	%28.6	25	%71.4
2	Is the personal and study space such as computer places, and chairs suitable for your needs?	20	%57.1	15	%42.9
3	Are the tools and technologies that meet your needs in the library available without the help of others?	5	%14.3	30	%85.7

Table 4 shows that the physical environmental facilities of the library from the point of view of students with disabilities were the availability of a personal and designated place to study such as computer places and chairs suitable for students' needs. As for the signs (directions) related to disability in the library and their compatibility with the needs of students with disabilities, as well as the availability of tools and technologies to meet their needs in the library without the help of others were weak.

The results of the study also indicated a deficiency in the library services used for students with disabilities such as the study space within the Internet lab and individual assistance service in searching the library. The availability of appropriate hardware and software that have been adapted, borrowing service for a period, electronic services, and printing service in the library were insufficient. This result is consistent with Babiker's (2014) study, which indicated the lack of equipment, aids, and information containers to obtain information. Also, computers were not modified to suit people with disabilities, and there were no technologies and equipment in university libraries. This result agrees with that of Khachartan's (2014), which indicated the lack of Internet services for students with disabilities, and a lack of facilities and assistive technology tools. Therefore, beneficiaries with disabilities needed to follow up on scientific developments around them, especially technical ones, which are programs and devices available in the market and easy to provide for them. A clear difference is noted between the services provided in the library in general and the services provided to students with disabilities. The service for students with disabilities is obtained with the help of the librarian or an accompanying person while the non-disabled student can obtain the service easily and with simple help from the library staff by pointing to the location of the source of the information he is looking for.

The means and standard deviations of the library's physical environmental facilities were extracted from the viewpoint of students with disabilities. The degree of satisfaction was determined on a binary scale (yes, no) based on the mean (0.0 - less than 0.50) dissatisfied, (0.50 - 1.00) satisfied. Table 5 shows the results.

Table 5. Means and Standard Deviations of the Library's Physical Environmental Facilities from their Point of View

N	Statement	N	Means	Standard Deviation	Level
1	Are the signs (directions) for your disability in the library compatible with your needs?	35	.29	.458	Dissatisfied
2	Is the personal and study space such as computer places, and chairs suitable for your needs?	35	.57	.502	satisfied
3	Are the tools and technologies that meet your needs in the library available without the help of others?	35	.14	.355	Dissatisfied
	Total	35	.33	.362	Dissatisfied



Table 5 shows that students with disabilities were not satisfied with the physical and environmental facilities of the library. This result is in line with all previous studies except for the study of Phukubje and Ngoepe (2017), which indicated the ease of use of library services by students with disabilities, and Al-Mkaneen and Abo-Tayeh's (2019) study, which revealed a high level of access by students with disabilities to library services at Hashemite University. The dissatisfaction of students with disabilities with the provided services and facilities may be explained by the significant deficiency of the provision of these services. This requires the necessity of providing these services and facilities to change them in the desired direction and to raise the level of service, which will have a positive impact on students.

**The Third Research Question: What are the obstacles and challenges that prevent the provision of information services in the central library from the point of view of students with disabilities?**

The frequencies and percentages of obstacles to providing library, information, and technical services from the point of view of students with disabilities were extracted from their viewpoint. Table 6 depicts the results.

Table 6. Frequencies and Percentages of Obstacles to Providing Library, Information, and Technical Services from their Point of View

N	Service	Frequency	Percentage
1	Main entrances	12	%34.2
2	Main exits	7	%20
3	Corridors	6	%17.1
4	Toilets	17	%48.6
5	Elevators	8	%22.9
6	Photocopiers	5	%14.3
7	Information	7	%20
8	Borrowing place	0	0
9	Internal door	0	0
10	Lights	0	0
11	Other	6	%17.1

Table 6 shows that the most obstacles to providing office, information, and technical services and environmental facilities were toilets, elevators, main entrances and exits, corridors, and photocopiers. This result differs from the study of Al-Mkaneen and Abo-Tayeh (2019), which indicated that the level of access in the Hashemite Library was high in terms of interior design and safety procedures. The result is also in line with that of Phukubje and Ngoepe (2017), which indicated the ease of use by library visitors with disabilities of materials in the library. Accordingly, this can be explained by the fact that the library building is spacious and comfortable, provides psychological comfort, and has big corridors. However, it requires that some modifications be made to suit students with disabilities such as providing them with private toilets, special paths, and signs (directions).

So, students with disabilities can benefit from the library and perform the services required of them related to the courses they study.

**The Fourth Research Question: What are the suggestions offered by the current study to develop accessibility to library services for students with disabilities?**

This question was presented to the study sample through open answers, and their answers focused on the following observations in Table 7:

Table 7. Proposals and Answers of the Study Sample to Develop Access to Library Services and Alternatives to

Adapt the Provided Technology			
N	Access to library resources	Answers of with visually impaired disability	Answers of Answers for students with physical and health disabilities
1	In the case of using the library catalog, what do you suggest to make it easier for you?	-Computers must have audio reading -I have not experienced due to the incompatibility of the computer with the screen reader for students with visual impairments. -Written in Braille	-Make it like King Fahd National Library -Providing devices more clearly in searching for books
2	In the case of a book supply service, what do you suggest to make it more accessible to you?	-They must be printed in Braille and enlarged. -They must be audible. -They be must be written in Braille	-Providing an application on the mobile to inquire about the required books, available or loaned. This saves time and effort for people with disabilities -Arranging books and placing more than one copy of each book.
3	In the case of providing electronic journals /periodicals/ newspapers services, what do you suggest to make them more accessible to you?	-They can be used by the screen reader or be enlarged or the visually impaired. – audible - written in Braille	Putting newspapers, magazines, etc., brief, useful, and summarized, without details that alienate the student from reading, and distributed freely. They must be put prominently for the students to see.
4	If you want to use electronic database indices, what is your suggestion to make them more accessible to you?	Equipment must be adapted for people with disabilities. –They must be compatible with the screen reader. –They must be available in in Braille	-Developing the database software and make it clearer.

N	Access to library resources	Answers of with visually impaired disability	Answers of Answers for students with physical and health disabilities
5	If you want to use manuscript and rare book sources, what do you suggest to make them more accessible to you?	-To have someone to read. -To have a special library for the visually impaired.	
6	Please specify any other resources you use frequently in the library, what do you suggest to make it more accessible to you?	-Using modern technology, - everything must be audible, - Providing a Braille printer at a reasonable price so that we can benefit from the library and dispense with facilities and feel equal with sighted students.	
N	Alternative to technological adaptation		
7	Did you encounter problems in accessing the electronic or online library resources from the designated places in the library?	Lack of support technology	
8	How can the provision of electronic services through electronic devices be made easy from your point of view?	-With a screen reader -Providing two corridor for the curricula	
9	What types of disability-adapted hardware and software would you like to have in the library?	Screen reader and Braille sense Braille printer - Braille device	
10	What are your suggestions to develop the use of the library?	Using modern technology to provide books to beneficiaries with visual impairments	
11	Are there any additional suggestions you would like to make? Your ideas matter to us.	There should be guidelines to help students with disabilities in the library.	Providing access to books and journals for students with disabilities, by giving them money so that they can buy what they read.

In the previous table, the students' responses are divided into two parts: the responses of students with visual

disabilities, and the responses of students with physical and health disabilities. Accordingly, it has been noted that there were some notes and suggestions worthy of attention and the need to take them into consideration because they reflect the students' point of view through their experiences with the main university library. Accordingly, it is necessary to establish specialized training programs to qualify workers in the field of information technology and libraries, develop their capabilities, and provide them with basic skills for dealing with students with disabilities such as sign language or Braille and other special skills with these different cases. They will help raise the level of services provided to them.

This study was conducted in cooperation with the Center of Services for Students with Special Needs at Imam Muhammad bin Saud University and the Central Library. It aimed at revealing the reality of library services provided to students with disabilities. With the assistance in assessing the library and feedback on the facilities, resources, and services in the library, the findings will help explore the potential new directions for making libraries useful and more accessible.

## **Recommendations**

In the light of the findings of the study, the following recommendations can be suggested:

- The expansion of the technology resource hall in the library for university students with disabilities to enable them to benefit from its collections to continue their academic achievement.
- The necessity of modifying and harmonizing all university library facilities, and overcoming the obstacles facing students with disabilities such as halls, corridors, elevators, signs, and toilets that are commensurate with their disabilities.
- Providing the needs of information services from the technological side, especially for students with disabilities in the university library.
- Increasing the expertise of library staff by organizing training courses on how to provide appropriate assistance to students with disabilities.
- The necessity of benefiting from the experiences of different university libraries to exchange experiences as well as materials to achieve maximum benefit and quality in supporting students with disabilities.
- Conducting more future studies targeting other variables such as librarians and employees, and gender.
- The application of Universal Design in Library Accessibility facilitates access for students with disabilities to all library facilities.
- Serving other categories of students with disabilities such as mobility impairment, hearing disability, etc. because they are targeted categories for their services also at the university.

## **Conclusion**

The most frequently used library services for students with disabilities were book borrowing, book return service, audio, printed files in large letters, and Braille book services. The degree of satisfaction of students with disabilities with the library services provided was high. The most special environmental facilities for the library

from the point of view of students with disabilities are the availability of a personal and designated place to study such as computer places and chairs suitable for students' needs. The poor compatibility of signs (directions) for disabilities in the library with their needs and the poor availability of tools and technologies in offices inside the library exist. The deficiency in the library services used for students with disabilities such as the study space within the Internet lab, the individual assistance service in searching the library, the availability of appropriate hardware and software that have been adapted, the borrowing service for a period, electronic services, and the printing service in the library. The dissatisfaction of students with disabilities with the special environmental facilities of the library from their point of view is determined. The most obstacles to providing library, information, and technical services and environmental and physical facilities from the perspective of students with disabilities were toilets, elevators, main entrances and exits, corridors, and photocopiers.

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