

Accessibility of Electronic Information Services among University Students in Tanzania

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Abstract

In today's world, universities use electronic information services to ease service delivery. This study therefore examined access to electronic information services among students at Mzumbe University and Muhimbili University of Health and Allied Sciences, in Tanzania. The study employed a cross-sectional research design whereby data were collected using questionnaire and interview guides from students in the surveyed universities. Convenience sampling was used to select 152 students who participated in the study. The findings of the study indicate that several electronic information services are provided and accessed by students such as current awareness service, Public Access Catalogue service, announcement and advertisement service, hostel services, admission and registration services. Students were found to be satisfied with the provided electronic information services although in reality there was lack of enough awareness about the provided electronic information services. The study concludes that there are various electronic information services in both studied universities, which are provided to enhance access to information regarding various issues related to the activities in higher learning institutions. The study recommends that librarians and ICT staff in universities should be readily and willing to assist students in accessing the provided electronic information services.

Keywords: Services accessibility, electronic information, electronic information services, access to e-services.

Introduction

Recently, advancement in Information and Communication Technologies (ICT) has brought tremendous impact in accessing information which is an important aspect in teaching and learning activities (Asogwa et al., 2015). For that reason, universities incorporate and make use of technologies in enhancing provision and access to electronic information (Gakibayo et al., 2013). Depending on demand, universities provide various electronic information services to meet the needs of users (Kenchakkanavar, 2014). According to Aduku et al., (2017) electronic information services are defined as the digital interaction established by institutions to provide effective utilization of the offered services. The provision of such services is done through libraries and ICT units in respective universities, with the aid of the internet which allows easy access to a wide range of information sources including academic, finance, research and consultancy information (Gakibayo et al., 2013).

Thus, libraries and ICT units play an essential role in facilitating provision and access to electronic information services due to the embedded internet facilities for knowledge delivery as well as engagement programmes, the need for remote access to information which plays a central role in knowledge creation and technological innovation (Kenchakkanavar, 2014). Notably, Siddiquah and Salim (2017) add that electronic information services offer information providers with demand-driven information dissemination whereby interventions like new means of information discovery and delivery, reference models as well as demands

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for user and personnel education in the uses of the electronic resources and technologies are of much concern in universities, in particular.

In addition, Konappa (2014) reminds that efficient provision of electronic information services in universities is backed up with effective operationalization of the electronic document delivery systems which appear as an extension to various interoperability standards. For instance, electronic payment systems are integrated in universities to facilitate payment of tuition fees and fines and request for identity cards. These in turn enable efficient service delivery in consideration of privacy and security of financial resources (Salloum et al., 2019). In addition, electronic information payment systems which provide electronic information payment services in universities ought to be integrated with various cooperating information service provision systems including, but not limited to, academic information systems and bank systems so as to effectively offer electronic payment information services to both students and university administration (Moertini et al., 2011; Sritharan, 2018).

Other electronic information services provided in universities are electronic reference services by which librarians ensure that universities through their libraries and ICT units get in touch with users especially on remote interactions in the course of providing prompt information services as per information needs (Siddiquah & Salim, 2017). Accommodation services are also made accessible electronically at the universities. On a further note, Chandra et al. (2014) inform, that via libraries, and in cooperation with ICT units, electronic services including but not limited to e-books, dictionaries, e-journals, e-reports, e-magazines, e-newspapers, Blogs, Internet services, OPAC, Standards, Online Thesis/Dissertations and printing e-resources, are provided across the universities. Other electronic information services offered as pointed out by Siddiquah and Salim (2017) include e-commerce and e-governance services, e-registrations, and membership renewals which are thereof customized as per needs.

Therefore, universities have been striving to ensure that electronic information services are available and accessible to students and the entire community, to facilitate enrolment, payments, delivery of courses, access to learning resources, access to continuous assessments and exam results as well as circulation of resources in the library (Frankor & Akussah, 2012). However, the extent to which such electronic information services are accessible and the state of satisfaction among users in universities have not yet been realized. Many studies (Manda, 2005; Angello & Wema, 2010; Jabir & Katabalwa, 2016; Isibika & Kavishe, 2018) have focused on the provision and access of electronic resources and not on the electronic information services; and therefore establishing uncertainties on the extent to which EIS are being provided and accessed by students in Tanzania's higher learning institutions, in which the surveyed universities are not excluded. With such concern, this study used Mzumbe University (MU) and Muhimbili University of Health and Allied Sciences (MUHAS) to determine the degree of accessibility and satisfaction with electronic information services provided by such universities. Specifically, this study addressed the following research questions:

- RQ1. To what extent are electronic information services accessed and used by university students?
- RQ2. To what extent are university students satisfied with the electronic information services provided?
- RQ3. What are the challenges faced by university students in accessing electronic information services?

Literature Review

Students' Access and Use of Electronic Information Services in Universities

Universities are considered knowledge hubs, so they should ensure that the community has access to information through various electronic-based services for efficiency purposes. The main target group of the universities in the access to electronic information services is the students. These are required to make use of such services for learning purposes and for effective compliance with the prescribed information needs. Hence, scholars have noted a rising trend in the access to electronic information services particularly by students in universities, who have been interacting with various electronic information services in their respective universities for various purposes including but not limited to getting informed of ongoing issues, compliance purposes as well as knowledge acquisition (Madhusudhan, 2010). According to Lwoga (2014), there are reliable platforms for enhancing access to electronic information services in the universities. The extent to which electronic information services are accessed by students in the universities is attributable to mastery skills that students have towards exploitation of ICTs. This is also influenced by level of education, gender, age and income of particular students (Deng, 2010; Zhang et al., 2011). Furthermore, Apuke and Iyendo (2018) also indicate other influencing agents towards access to electronic information services in the universities such as quality of the electronic information services on offer, which has an impact towards accessibility of the respective services. Advancement in information and communication technologies has also been a cornerstone for influencing access and use of electronic information services among students in universities; ease of access motivates students' access to the provided services (Deng, 2010). Sujatha and Murthy (2008) assert that training influences students' access to electronic information services whereby significant use of these services in universities is mainly for teaching, learning and research purposes.

A study by Sejane (2017) about access to and use of electronic information resources in the academic libraries of the Lesotho Library Consortium revealed that the types of electronic information services provided included Online Public Access Catalogue (OPAC), e-resources (books and journals), electronic mail services as well as electronic reference services. Collectively, an important observation made is that access to electronic information services has been of tremendous output in which scholarly communication has been improved through publications done across universities.

Types of Electronic Information Services Offered in Universities

Universities as part of higher learning institutions through libraries and ICT departments provide electronic information services that cater for the anticipated needs of their communities including students, who in most cases, are the core users (Collins, 2014). The underlined needs that are associated with communities in higher learning institutions could be categorized into teaching and learning, research as well as consultancy services. These require relevant electronic information services to serve their purposes. Observation made by The electronic reference services and electronic document delivery services as part of information services are useful in respective setting as they assist in providing prompt access to needed information by the same community and such services need not be limited in terms of physical access. In the same light, a study by Cotter et al. (2005) concerning electronic collection management and electronic information services, found that a number of electronic information services offered online include e-commerce and e-governance services as well as various organizational database management needs (including e-registrations, membership renewals) which universities adopt and customize according to their needs. These services have been customized to university settings where students and university management can

interact in admitting, registering as well as proper management of records of the related activities for reference purposes. Cotter et al. (2005) acknowledge that electronic information services create a new set of demands for information providers where services such as reference models, new means for information discovery and delivery, and demands for user and personnel education in the uses of the electronic resources and technologies are of much concern, particularly in universities. With such concern, it is obvious that electronic information services provided in universities should focus on the core activities being undertaken, to assist in providing quality services as always required by users.

Students' Satisfaction with Electronic Information Services Accessed in Universities

Since customers are always after quality services, institutions have been striving to improve applications and methods used for the purpose of efficient service delivery to enhance users' satisfaction (Xu, & Du, 2018; Alshamayleh et al., 2015). Among the forefront institutions in enhancing users' satisfaction are universities, which have invested a lot in online service provision (Kim-Soon et al., 2014). Students' satisfaction with electronic information services has been an important concern across universities in response to quality service provision requirements. It should be understood that users' satisfaction is an important tool for evaluating the quality of electronic information services provided by institutions, including universities and therefore being an important gateway for provision and access of electronic information services for enhancing satisfaction. However, students' satisfaction with provided electronic information services is not easily achieved in most of the universities as for satisfaction to prevail, users' perceptions regarding provided electronic information services must be higher than the expectations. Gunasekera (2010) revealed that in universities, the level of students' satisfaction with provided electronic information services varies between undergraduate and postgraduate students due to their specific needs in response to their academic undertakings. Satisfaction is defined as a combined perception outcome in which a user expresses through evaluation as well as psychological reaction provided as per consumed experience of the service or product from transaction's affective and cognitive assessment processes (Wei et al., 2017; Jameel et al., 2021). Descriptively, Asogwa et al. (2014) asserted that students' satisfaction with electronic information services has to incorporate a comprehensive and viable instrumental factor essential for measuring not only reactions that users have towards the service but also reasons why particular users employed such approach. In that stance, universities' assessment of users' satisfaction with electronic information services can therefore be used as a performance measurement criterion in which with installed and effective operation of information and communication systems, users become satisfied with the provided services (Aduku et al., 2017).

Challenges on the Accessibility of Electronic Information Services

Though universities have made tremendous effort in ensuring that electronic information services are available and accessible to the target community, there are a number of challenges facing students in accessing such services. However, most of these challenges faced are as per specific electronic information service provided with few appearing as crosscut. For example, based on electronic information resource service in universities through the libraries, users including students are challenged with lack of awareness of the available learning resources and inadequate searching skills which could allow them to have effective access to particular resources (Msagati, 2014). Similarly, lack of readiness of the universities to enter into digital services including electronic information services particularly for the information resources have also been affecting access to such services by the community members including students (Apuke & Iyendo, 2018). Various scholars (Manda, 2005; Kinengyere, 2007; Manda & Nawe, 2008; Lwoga, 2014), in Tanzania, reported on lack of information literacy skills among university students, limited access points, low bandwidth

and recurrent power outages as common electronic information services accessibility challenges.

Theoretical Framework Underpinning of the Study: Information Provision and Usage Model

Based on the study projected output, Mtega’s (2012) Information Provision and Usage Model is appropriate for this study, as it portrays the access to information and satisfaction as key drivers of the study.

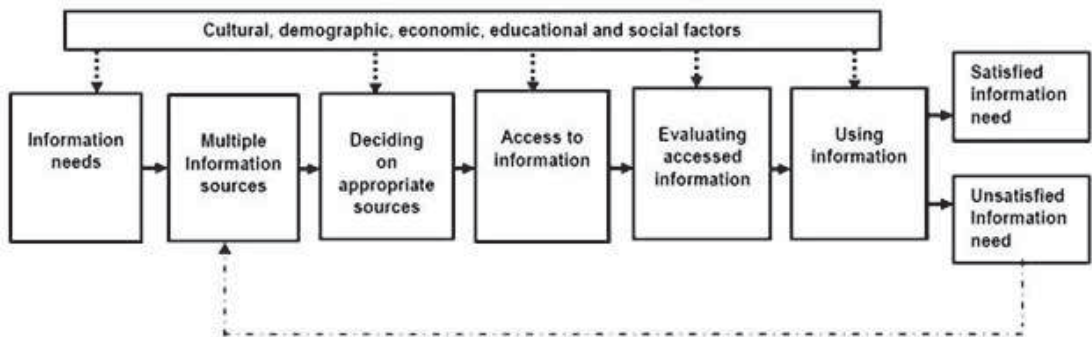


Figure 1: Information Provision and Usage Model

Source: Mtega (2012)

The model shows that for information to be used there must be a need of such information. After the need has been identified, proper sources of information are selected by respective users so as to access information. Prior to using accessed information obtained from the sources selected, such information is evaluated by the seeker to be sure that the information is trustworthy and credible for its intended purpose, and therefore it is utilized as a response to particular needs. However, this study was only interested with access to information and the satisfied information need which directly impacts this study.

Methodology

This study adopted a cross-sectional survey method to collect data from two universities: Mzumbe University (MU) and Muhimbili University of Health and Allied Sciences (MUHAS). The instruments used was structured questionnaires for the survey and interview guides for qualitative data. Convenience sampling was used to select 152 undergraduate and postgraduate students who were conveniently available during the study. The two Universities have been selected as they are public institutions in Tanzania that offer a variety of electronic information services to the students and the general public as well and therefore it was easy to get the relevant data for the study. Purposive sampling was used to select eight ICT and library staff, who were interviewed as key informants.

Results

Socio-demographic Characteristics of the Respondents

It was useful to consider the socio-demographic characteristics of the respondents. These included information about their gender, age, and study level. Access to electronic information services is sometimes influenced by academic year, gender and age of the respondents. Indeed, some academic disciplines such as computer studies have a higher inclination towards using such technologies than other disciplines.

Table 1 shows that there were 70 (46%) male respondents and 82 (54%) female respondents. Furthermore, findings show that the majority 59 (39%) were between 20-25 years while the least 6 (4%) respondents were in the age category of 41-45 years. In addition, the findings show that 95 (63%) respondents were pursuing postgraduate studies while 56 (37%) respondents were pursuing undergraduate studies.

Table 1: Demographic Information

Variable	Category	N	%
Gender	Male	70	46.1
	Female	82	53.9
Ages	20-25 years	59	38.8
	26-30 years	26	17.1
	31-35 years	26	17.1
	36-40 years	17	11.2
	41-45 years	6	3.9
	46-50 years	7	4.6
Education Level	Postgraduate	95	62.5
	Undergraduate	56	36.8

Table 1 indicates that both genders and various age categories participated in the study. Furthermore, both undergraduate and postgraduate students from both universities participated. In general, the demographic profile of the respondents show that they were representative, and qualified for the study.

Electronic Information Services Provided

Respondents were asked to indicate the type of electronic information services provided in their respective university. Findings show that 101(68.2%) respondents identified electronic reference as one of the electronic information services provided in both universities; 112 (75.7%) respondents identified electronic librarian service as one of the electronic information services provided in both universities; 97 (65.5%) respondents identified electronic mail as one of the electronic information services provided in both Universities; 98 (66.2%) respondents identified electronic research service as one of the electronic information services provided in the surveyed universities; 82 (55.4%) respondents identified electronic information literacy as one of the electronic information services provided, 75 (50.7%) respondents identified electronic current awareness services as one of the electronic information services provided. In both Universities, 50 (33.8%) respondents identified electronic selective dissemination of information as one of the electronic information services provided, as indicated in Table 2.

Table 2: Electronic Information Services Provided

EIS Provided	N	%
Electronic reference services	101	68.2
Electronic librarian services	112	75.7
Electronic mails services	97	65.5
Electronic research services	98	66.2
Electronic information literacy services	82	55.4
Electronic current awareness services	75	50.7
Electronic selective dissemination services	50	33.8
Electronic help desk services	85	57.4
E-resources (books and journals)	101	68.2

Online Public Access Catalogue	85	57.4
Announcements	99	66.9
Hostels services	28	18.9
Admission and registration services to students	102	68.9
Document Delivery Services	58	39.2
E-Bulletin	58	39.2
Ask A services	38	25.7

The findings reveal that there are several electronic information services provided in the surveyed universities. One of the provided services is electronic librarian service. Baro et al. (2013) in a study, *E-library services: Challenges and training needs of librarians in Nigeria*, revealed that electronic services for librarians cut across a number of services and therefore librarians need to have adequate skills that would enable them to interact with electronic facilities for easy service provision. In the act of implementing the service, students get help from librarians electronically before or without being physically at the library.

Electronic research service was also included as one of the services provided. In a study, *E-Service Quality in Higher Education and Frequency of Use of the Service*, Muneja and Abung (2012) asserted that electronic research services form an important part of the components of the quality of provision of electronic services in higher education institutions, thus there must be workable infrastructure to effect the service. The provision of this service could be due to the academic requirements that universities require undergraduate or postgraduate students to submit a research report/thesis/dissertation for an award of one of the aforementioned qualifications. Considering the valued importance of these services in higher learning institutions, libraries have established institutional repositories to enhance access to research reports as well as theses/dissertations produced by the community of respective universities. In addition, one library staff had this to say:

We do provide electronic research services in which research reports and dissertations done by our students are digitized and placed in the university's repository; these can be accessed by anyone who is connected to the internet. (Library Staff, University A, June, 2021).

The findings show that electronic research services are provided and therefore foster access to information among students and the whole academic community. E-resource provision was another electronic information service provided in the surveyed universities. The service caters for provision of access to electronic scholarly information attached to journals as well as books which support teaching and learning activities. Both universities provide access to electronic resources through the Consortium of Tanzania Universities and Research Libraries (COTUL) and therefore ensure access to electronic resources service throughout.

Extent of Accessibility of Electronic Information Services

Respondents were asked to indicate the extent to which electronic information services are provided in their universities. Findings show that students mostly access students' admission and registration services (69.8%), followed by e-resources service (67.1%), e-reference services (63.2%), e-librarian service (63.8%) and e-research services (61.2), while a significant number of students accessed OPAC (62.1), and e-current awareness services (51.4%). It was further noted that 33.6% did not access hostel services, 26.3% did not access E-selective dissemination services, and 19.1% did not access e-librarians, OPAC services. Further details are available in Table 3.

Table 3: Accessibility of Electronic Information Services

Service	Accessed		Undecided		Somewhat Accessed	
	N	%	N	%	N	%
E-reference	96	63.2	27	17.8	29	19.1
E-librarian	97	63.8	25	16.4	30	19.7
E-mails	83	55.2	48	31.6	20	13.2
E-research services	93	61.2	33	21.7	26	17.1
E-information literacy	74	48.7	50	32.9	28	18.5
E-current awareness services	78	51.4	44	28.9	30	19.7
E-selective dissemination services	51	33.6	61	40.1	40	26.3
E-help desk services	67	44.1	37	24.3	48	31.6
E-resources	102	67.1	27	17.8	23	15.2
OPAC	95	62.5	27	17.8	30	19.7
Announcements and advertisements	86	56.6	29	19.1	37	24.4
Hostels services	43	36.8	45	29.6	51	33.6
Admission and registration services to students	106	69.8	26	17.1	20	13.2

Findings reveal that admission and registration service is vastly provided in the surveyed universities. The findings are consistent with findings from the Tanzania Commission for Universities (TCU) which reports that admission and registration of students in universities in Tanzania is done via an online admission system. Access to electronic resource services also signifies the teaching and learning activities undertaken in the universities. The variance of the obtained findings could be due to various challenges facing access to electronic resources at the respective universities.

Frequency of Access and Use of Electronic Information Services

Respondents were asked to indicate how frequently they accessed and used electronic information services in their respective universities. Findings indicate that 127 (83.6%) declared to access and use electronic information services everyday while the least 2 (1.3%) informed that they occasionally accessed the service (See Table 4).

Table 4: Frequency of Access and Use of EIS

Frequency	N	%
Everyday	127	83.6
Twice a week	12	7.9
Once in a week	3	2.0
Twice a month	2	1.3
Occasionally	8	5.3
Never	-	-
Total	152	100

Frequency of access and use of EIS in the surveyed universities show that students across both universities access and use electronic information services daily. This could be the result of the learning needs surrounding students and therefore they are forced to have access to such services. As alluded to by Lwoga (2014) university students in Tanzania have, to some

extent, been provided with platforms for offering electronic information services which help them to access information which has an impact on learning activities. Therefore, these services are considered as a means of simplifying learning activities among students, that is why they are being accessed on a daily basis.

Accessibility and use of EIS among Gender

A cross tabulation was taken between gender and accessibility of electronic information services in the surveyed universities. The findings are presented in Table 5.

Table 5: Accessibility and Use of EIS by Gender

Accessibility and use	Male		Female	
	N	%	N	%
Everyday	61	40.1	66	43.4
Twice a week	4	2.6	8	5.9
Once a week	1	0.7	2	1.3
Twice a month	1	0.7	1	0.7
Occasionally	3	2	5	2.6

The findings provided in Table 5 show that both genders access and use electronic information services provided in the surveyed universities. This implies that there is no gender barrier as far as accessibility and use of electronic information services provided in the universities is concerned. Findings are consistent with the findings by Oyeniyi (2013) who found out that gender has no statistically significant effect on the usage of electronic services. Therefore, accessibility to electronic information services was almost equal between male and female students. Findings are in line with the conceptual framework which presents gender as an influencing variable which could either influence positively or negatively. The correlation of the study findings and the conceptual framework indicate that gender negatively influences accessibility and use of electronic information services as both male and female respondent had almost daily access to and use of electronic information services and none was directly affected with gender, in the accessing electronic information services.

Facilities Used to Access Electronic Information Services

Respondents were asked to indicate the kind of ICT facilities they use to access electronic information services at their respective universities. Findings show that smartphones are the most frequently used facility 130(86.7%) to access electronic information services across the two universities, followed by laptops 110(73.3%), then desktop computers 61(40.7%) as shown in Table 6.

Table 6: Facilities Used to Access Electronic Information Services

Facilities	N	%
Desktop computer	61	40.7
Laptops	110	73.3
Smartphones	130	86.7
Tablets	41	27.3

The findings show that the smartphone is the most frequently used ICT facility in accessing electronic information services. This was also what Ramadhan (2018) and Mungwabi (2019) found out. Compared to other facilities, the smartphone market has been rapidly growing and

therefore attracting users including university students to buy and use them for various purposes (Chukwuere et al., 2017).

Satisfaction with Electronic Information Services Accessed

Respondents were asked to indicate how they were satisfied with the electronic information services provided. Findings indicate that 79.1% were satisfied with e-references services provided in the surveyed universities, 71.1% were satisfied with admission and registration of students services, 59.2% were satisfied with electronic mail services, followed by 69.1% respondents who were satisfied with electronic research services. However, a significant 28.9% and 28.6% were dissatisfied with e-hostel and ‘Ask’ services provided in the surveyed universities. Details are available in Table 7.

Table 7: Satisfaction with Electronic Information Services Accessed

E- information services	Satisfied		Neutral		Dissatisfied	
	N	%	N	%	FN	%
E-reference	105	79.1	29	19.1	18	11.8
E-librarian	95	62.4	37	24.3	20	13.2
E-mails	90	59.2	40	26.3	22	14.5
E-research services	105	69.1	35	23	12	7.9
E-information literacy	81	53.3	52	34.2	19	12.5
E-current awareness services	86	57	42	27.8	23	15.2
E-selective dissemination services	69	45.4	52	34.2	31	20.4
E-help desk services	77	50.7	44	28.9	31	20.4
E-resources (books and journals)	98	64.4	38	25	16	10.5
OPAC	99	65.2	34	22.4	19	12.5
Announcements and advertisements	89	58.5	38	25	25	16.5
Hostels services	65	42.7	43	28.3	44	28.9
Admission and registration services to students	108	71.1	30	19.7	14	9.2
Document Delivery Services	57	37.5	69	45.4	26	17.2
E-Bulletins	54	35.5	65	42.8	33	20.7
Ask A Services	42	45.5	56	36.8	42	28.6

Findings indicate that students were most satisfied with electronic references services which are provided in the respective universities. However, during the interview, one of the ICT staff had this to say:

We do conduct research to graduate students on how they are satisfied with electronic information services provided and the feedback has assisted us to improve the provision of electronic information services that meet their needs and hence raise the degree of satisfaction with electronic information services on offer (Librarian, University B, June, 2021).

According to Younus and Nadeem (2021), users are satisfied with electronic reference services on offer, which support easy access to the needed information. Conversely, a study by Wema (2018) found that library users prefer face-to-face interaction with reference librarians. The difference marked with these findings shows that reference services are needed but the extent to which users may opt for physical or electronic ones is determined differently as per requirements and easiness that users are seeking.

Level of Satisfaction with Electronic Information Services

Ascertaining the level to which students were satisfied with electronic information services in their respective universities was an important concern in this study (See Figure 2).

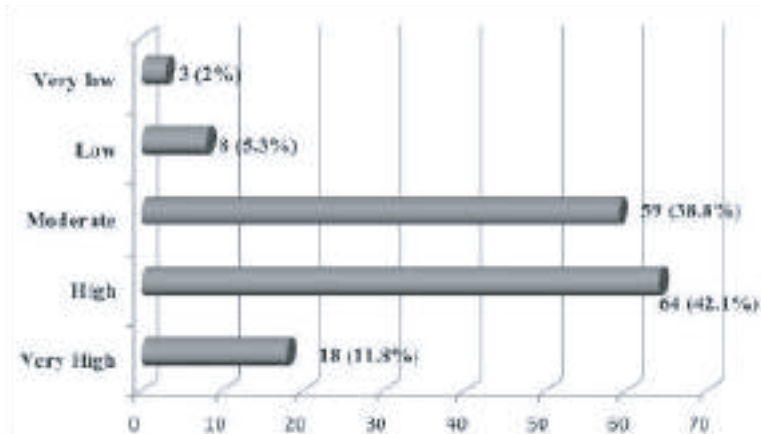


Figure 2: Level of Satisfaction with EIS

This study established that, generally, students are satisfied with accessed electronic information services in their respective universities. On a similar note, Asogwa et al. (2014), Waiganjo (2021), and Aduku et al. (2017) also established that despite some shortcomings, satisfaction with electronic information services is normally attained. One of the essential drivers for such satisfaction could be ease of access (Amarasekara, & Marasinghe, 2020).

Challenges in Accessing Electronic Information Services

Respondents were requested to mention challenges they encountered in accessing electronic information resources. The findings show that a significant number of respondents (61.8%) indicated that lack of awareness on the EIS was a challenge to them, while 54.1% mentioned inadequate support from the management. It was further noted that lack of interest among ICT personnel and librarians is a challenge especially in assisting students to access e - information services. Although lack of readiness by the universities to provide electronic information services was revealed as a challenge by 45.1% of the respondents, other respondents (21.7%) did not think this was a challenge to them. Details are provided in Table 8.

Table 8: Challenges in Accessing Electronic Information Service

Challenge	Agree		Neutral		Disagree	
	N	%	N	%	N	%
Lack of awareness of electronic information services	94	61.8	31	20.4	27	17.7
lack of information literacy skills	72	47.4	51	33.6	29	19.1
lack of readiness of the Universities for electronic information services	67	45.1	52	34.2	33	21.7
Inadequate support from the management	67	54.1	50	32.9	35	23
Lack of time among librarians	77	50.6	44	28.9	31	20.4
Lack of interest among ICT personnel and librarians	76	50	43	28.3	33	21.8
Limited access points	85	55.9	46	30.3	21	13.9
Low bandwidth	77	50.6	49	32.2	26	17.1
Recurrent power outages	68	44.8	51	33.6	33	21.7

It was established that lack of awareness of the available electronic information services was the biggest challenge among students in the surveyed universities. In a similar context, Msagati (2014) also found that lack of awareness of the provided electronic information services in universities was the most prominent factor affecting access to electronic information services to the targeted users. The findings could have an impact on the access to electronic information services because being unaware of such services makes it difficult to interact with such services for facilitating learning activities.

Furthermore, interviewed library staff disclosed the means they used to inform students about the available electronic information services. One staff member had this to say:

We usually publicize information about the electronic services that we offer to students through various means, including the notice board where students often visit and therefore they get alerted on the provided services and how they can access them (Librarian, University B, June, 2021).

Another staff said:

Our university website and related databases are used to inform students about the available electronic information services at the university but the question is whether or not students make effective use of these sites for timely access to study materials (ICT Staff, University A, June, 2021).

On the whole, findings show that despite efforts made by the universities to inform students on the electronic information services provided, students still lack awareness on such services and therefore more insightful approach is need to enhance awareness of available electronic information resources in the respective universities. Abubakar (2010) observes that if a library user is not aware of the provided electronic information services cannot have ease of access and therefore affecting the access and use of electronic information services.

Limited access points were mentioned by respondents as another challenge facing the provision and access to electronic information services. The services are being accessed from one point, and therefore do not provide optional means of access. Findings are similar to what scholars from Tanzania (Manda, 2005; Manda and Nawe, 2008; and Mungwabi, 2019)) observed that various factors including limited access point affect provision and access to electronic information services. Other named factors include low bandwidth and recurrent power outages.

Conclusion

Accessibility of electronic information services among university students has been a matter of concern to date. For that reason, universities incorporate and make use of technologies in enhancing provision and access to electronic information. The provision of such services is done through libraries and ICT units in respective universities, with the aid of the internet which allows easy access to a wide range of information sources. Such accessibility, among other connectivity aspects, need to be revealed in the extent of service provision, users' satisfaction and minimizing the obstacles towards access to such services. Furthermore, Universities need to establish the usefulness of the EIS available and accessed by students. However, supporting infrastructure for provision and access to EIS may also vary from institution to institutions. In general, students in the surveyed universities have access to respective electronic information services, satisfied with such services and encounter a number of challenges which ought to be addressed for efficient access to EIS. Thus, universities need to create awareness to users with strategic information skills for accessing

EIS, to facilitate and encourage its students to make an effort to access and use the available EIS, thereby promoting intention to use the available electronic information services.

Recommendations

Universities should re-structure and implement the means to which they inform users about the available electronic information services in their respective universities. Universities should conduct regular information literacy training sessions to students on how the services could be effectively reached to enhance independent interaction with various facilities in browsing and retrieving needed information. Furthermore, librarians and ICT staff should be readily available and willing to assist students in accessing the available electronic information services so that such services can be effectively utilized to enhance efficiency in operation. Furthermore, universities should be well equipped in terms of information infrastructure to allow efficiency in the access and provision of electronic information services.

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