



# Readiness in Establishing Digital Library Services in Tanzanian Higher Learning Institutions

Mgendu Ngulugulu Mathew<sup>1</sup>, Godlove Barikiel Matemba<sup>2</sup>

Social and Business Studies, Gender and Development Departments

Tengeru Institute of Community Development (TICD)-Arusha, Tanzania

## Abstract

The increase of student enrolment in Higher Learning Institutions (HLIs) in Tanzania resulted in a lack of library space, scarcity of library resources, and a shortage of librarian staff. HLI academic libraries are now converting their academic libraries from analogue to digital to meet scarcity of library services. The study looked into readiness of HLIs in establishing digital libraries and utilising Digital Library Services (DLS). Kilimanjaro Christian Medical University College (KCMUCo) and Arusha Technical College (ATC) were purposive selected to conduct this study. A total population of 205 were obtained from the study areas resulted the sample size of 115 people. The research design employed was mixed method where both Quantitative and Qualitative methods were used. The open ended and interview questions were used to collect Qualitative data and were analysed thematically using Atlas.ti software. On the other hand, the Quantitative data were collected through Likert Scale questions and were analysed descriptively as well as inferential using the Statistical Package of Social Science (SPSS). The results findings revealed that, there is significant difference on the mean scores in utilisation of DLS between government and private HLIs, with government HLIs scoring higher than Private HLIs. Furthermore, there were no significant difference on the mean scores for government and private HLIs in e-resources services usage. On the other hand, the results indicated the adequacy in evaluating higher learning institutions' readiness to establish DLS. The study concluded that, the implementation of digital library in HLIs libraries is important for enhancing and improving digital library service utilization.

**Keywords:** *Digital Library, Digital Library Service, Higher Learning Institutions*

## 1. Introduction

Digital library services readiness (DLSR) refers to a country's capacity and state of preparedness to participate in providing DLS in the world. This implies that, the state of maturity is commonly measured by the country's Information and Communications Technology (ICT) infrastructure and the ability of its government and citizens to use positively ICT for sustainable development (Yaqin *et al.*, 2022). (Lai, 2017) narrated the technological readiness as people's tendency to hold and use new technologies for achieving goals in home life and at work. This technological readiness is also absorbed by majority of HLIs in Tanzania due to scarcity of various library services in their academic libraries as results of higher students' enrolments every year. This made some of them to convert their academic libraries from analogy to digital purposely to meet the needs required by their users (Mubofu & Chaula, 2021).

Similarly, special libraries are changing dramatically by incorporating new technology into all aspects of their operations, from print to e-environment. including the replacement of printed library card catalogues with computerized Online Public Access Catalog (OPAC) systems, the availability of numerous e-databases, e-journals, information resources, information literacy, and online services for users (Alicmas and Ramos, 2019). As affirmed by Eje (2020), the Digital Library Service (DLS) provides access to a portion or the entirety of its collections, such as plain texts, images, graphs, audio/video materials, and other library items that have been electronically converted via the internet and World Wide Web. In addition, Digital Library (DL) allow users to store information materials in a computer system that can be accessed at any time and

from any location, whereas traditional libraries store information materials on printed paper that can be organized manually and used until the user touches it with their hands (Ngamba, 2021a).

Regarding, the digital library services readiness in HLIs, Keshavarz and Noorafrooz (2020) stated that the proportions of network programs and services, human resources, electronic infrastructures, and network enablers had the standard relevance to establishment of electronic libraries. Therefore, Electronic readiness, skills, and knowledge on ICT device usage were critical for both service providers and users of libraries (Eje, 2020). In Tanzania, traditional libraries that provided information through printed resources existed for many years, but in recent years, there has been a shift from traditional libraries to digital libraries (Ngamba, 2021b). In addition, the effort to promote ICT usage in HLIs in Tanzania especially in academic libraries which were done by government of Tanzania is still slow, this is due to variety of problems including absence of enough financial resources, unstable electric power, low literacy among potential users, limited technical expertise to support and maintain ICT infrastructure, poor telecommunication, and a lack of computers (Mubofu and Chaula, 2021). Furthermore, Vaca (2018) stated that “ for a successful DLS (e-library) implementation necessitates an understanding of the user's technology literacy, ICT device availability, accessibility of DLS, availability of strategies, plan, policies and guidelines as well as the relationship on information sharing among HLIs”

## 2. Problem statement

The academic libraries of HLIs in Tanzania are the information centers and majority of them are in transition of transforming their library services from analogy to digital library services purposely to provide quality, accurate, reliable, and relevant academic information to users through online services. This was due to an increase in the number of students enrolled in HLIs every year, which resulted in an increase in numbers of library users. Therefore, to meet this demand, it is necessary to expand library resources such as librarians, seating areas, and library materials, as well as ICT infrastructure so that users can be assured of access to academic materials at any time and from any location (Li et al., 2019). Thus, for a better provision of library services, HLIs academic libraries should have sufficient number of expert staffs trained to provide quality library services (Masenya and Ngulube, 2020). Nevertheless, the HLIs would not be able to provide enough library services to the users

Despite of Tanzania's advancements on the use of ICT and transformation academic libraries from analogy to digital, the country is still lagging behind in the establishment of digital libraries and the use of digital library services. (Ngamba, 2021a). Furthermore, the experience of current HLIs academic libraries in Tanzania which are providing digital library services are faced some of challenges (Ngamba and Casmir, 2021). This can be attributed to the scarcity of different resources needed for the creation of digital libraries and their use. Consequently, Tanzania continues to be neglected, especially in HLILs. (Pessa, 2019)

## 3.0 The Review of the Literature (RoL)

### 3.1 The Extent of Skills/Knowledge of Staff and Students

This involves utilisation of DLs in various HLIs academic libraries in the world. These include utilisation of DL by students at Tamale University in Ghana, the study was conducted by (Dukper et al., 2019). Therefore, this study provides very useful information on the use of DL; however, it was conducted outside of Tanzania, so its findings cannot be generalized. The goal was to raise awareness about the use of DL among Tanzanian HLIs. Furthermore, the extent of skills for staff and students is enquired in preparation of library digitisation procedure. (Udem, 2020) pointed out the required procedures needed for digitalisation of academic libraries include policy enactment, policy approval, planning, budgeting and monitoring, acquisition of appropriate technology adoption of administrative decisions, sensitization, psychological preparation and retraining of staff, legal/copyright issues. These procedures will be useful for Tanzanian HLILs during the digitisation process. In addition, (Israel & Nsibirwa, 2019) pointed out the required skills needed for staff and students in managing electronic resources and services. These include tool literacy, critical literacy, social-structural literacy, emerging technology literacy, and publishing literacy skills.

### 3.2 Evaluations on HLILs Readiness in Establishing DLS

(Masenya & Ngulube, 2020; Purcell, 2016) showed the physical resources are one of the indicators that are used in evaluation of HLI academic libraries readiness in establishing DLS which contains the collections of electronic information that can be searched and retrieved. Also is centre of every teaching, learning or research whereby users can get a lot of information. Furthermore, skills, knowledge and competences of students, librarians and academic staff were pointed by (Okeji et al., 2020) as one of the indicators used to

evaluate the HLI academic libraries readiness in established DLS and can be measured in five points Likert scale “very high”, “high”, “moderate” and “low”. Furthermore, they rated knowledge and competencies as “highly competent” and “competent”, as well as “neutral”, “good” and “not good”. In addition, (Gamboa, 2019) pointed out that, financial resource as also an indicator used to evaluate the HLI readiness in terms of cost of migration from one medium to another, the cost acquisition of ICT equipment, cost of staff and students on use of DLS.

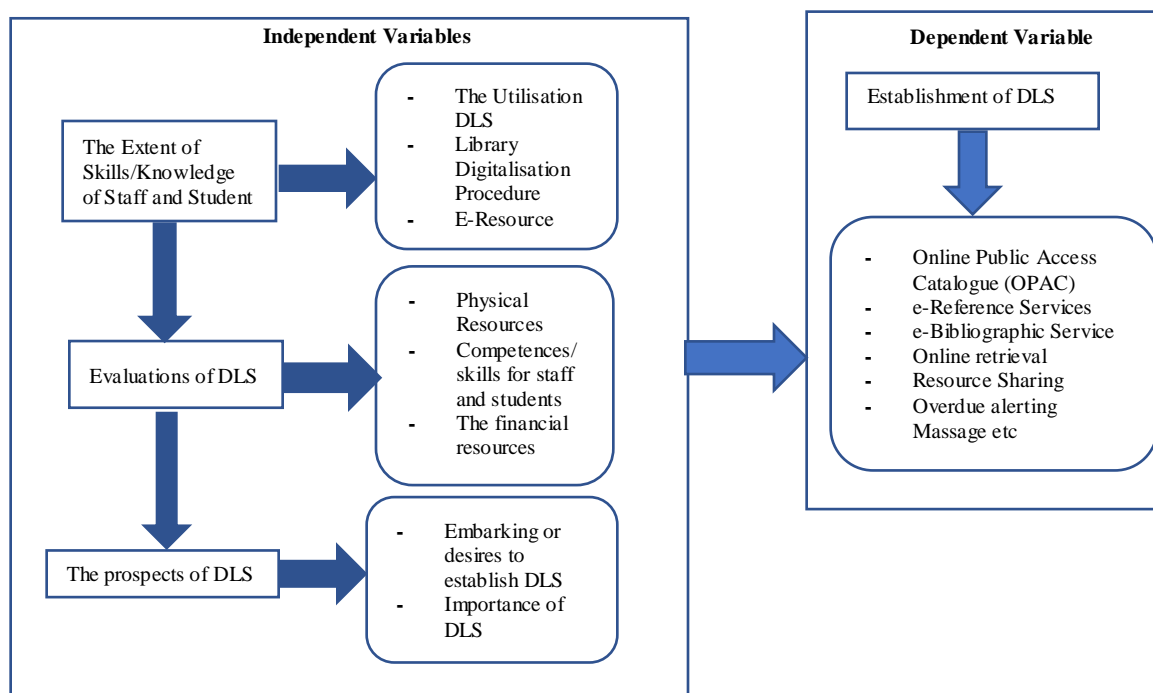
(Lata & Kumar, 2020; Subba & Das, 2019) narrated that, HLIs readiness can be evaluated through the availability of updated and modern ICT Facilities and Network Infrastructure in terms of establishing DLS. Presence or lack of sufficient software, hardware, appropriate constructed network infrastructure such as LAN and strong internet bandwidth (Lata & Kumar, 2020; Subba & Das, 2019) employed them to perform evaluation of HLIs readiness in establishing DLS in Agriculture Universities in North Indian and Darjeeling District in India.

### 3.3 Embarking or desires to establish DLS and its importance

Regarding desires to establish DLS and its importance, Khan (2021) on his study stated that, “there has been tremendous development in recent years regarding the concept of digital libraries, the largest online platform of knowledge that can be stored and retrieved via online networks”. He went on and continued to say that, this has overcome geographical barriers by providing a diverse range of academic, research, and cultural resources with multimedia effects that can be accessed globally via distributed networks. The study also highlighted information on digital library projects being carried out in various countries.

### 3.4 The DLS Conceptual Model

The DLS conceptual model was designed and used to assess the degree of Tanzanian HLILs readiness on establishment of digital library service



**Figure 1: The conceptual Framework**

Regarding on the DLS conceptual model (Fig.1), a study described its constituents how do they work. The first independent variable in this model is the level of knowledge of staff and students on the digitisation procedures, utilisation of DLS and e-resource towards the establishment of DLS. Furthermore, the independent variable is about the evaluations of DLS which involve the physical resources, librarian and ICT staff competencies and financial resources towards the establishment of DLS as dependent Variable. Finally, the third independent variable is The prospects of DLS in terms of embarkation or desires, as well as the importance of DLS establishment towards dependent variables, establishment of DLS. The establishment of DLS will provide the following services in HLIs include: Online Public Access Catalogue (OPAC), e-Reference Services, e-Bibliographic Service, Online retrieval, Resource Sharing, Overdue Alerting Message etc.



## 4.0 The Research Methodology

### 4.1 Study Approach and Research Design

The research approach of this study was pragmatism that was used to confirm the findings of one phase with the findings of another (Kaushik & Walsh, 2019). This philosophy combined both Qualitative (QUAL) and Quantitative (QUAN) approaches to create a Mixed Method Research (MMR), which utilised the strengths of one and balance out the weaknesses of the other and close study gaps (Adam, 2020). The MMR called the convergent parallel research design where data were collected simultaneously during the same research phase and data were analysed using different techniques and the areas of convergence or divergence between the qualitative and quantitative results were combined and interpreted.

### 4.2 The Area of Study

The study was conducted in Arusha and Kilimanjaro regions at Arusha Technical College (ATC) and Kilimanjaro Christian Medical University College (KCMUCo). These HLIs were selected because ATC is one among Public HLIs in Tanzania and KCMUCo is one of the among Private HLIs in Tanzania, both of them are new emerging players digitalisation of library resources and services, promote and actively pushing on the use of DLS to library's users (Mwilongo et al., 2020).

### 4.3 Population and Sampling Techniques

The target population of this study are library registered students, library academic staff as they are the primary beneficiaries on efforts to improve interaction with and use of DLS to meet academic needs. Therefore, the total population were 152 for library registered students and 21 from Faculty dean, Head of department of information studies, Library ICT staff and Librarians from ATC and KCMUCo. In addition, by using the Taro Yamane (1967) sample size formula and according to Memon *et al.* (2020) said that, "If your population is under 100, you should really survey everyone and 100 is the minimal sample size needed to obtain any form of significant results". Therefore, the sample size were 115 library registered students and 21 from Faculty dean, Head of Department (HoD) of information studies, Library ICT staff and Librarians.

In addition, the study employed non-probability purposive sampling technique to select 1 Faculty Dean each from ATC and KCMUCo who have the expertise necessary for managing DLS, including the administrators of the digitalization projects and 1 HoD of information studies each from ATC and KCMUCo who possessed expertise and abilities pertinent to DLS management. Also, the study selected 3 Library ICT staff from ATC and 2 Library ICT staff from KCMUCo who possessed expertise in ICT and digitalization-related technical matters. Furthermore, the study employed non-probability purposive sampling technique to select 7 librarians from ATC and 5 Librarians from KCMUCo who possessed expertise and abilities in DLS delivery. Therefore, the study employed them to collect QUAL data through interview. On the other hand, the study employed probability simple random sampling technique to select 115 library registered students, 65 from ATC and 50 from KCMUCo who were the main users of DLS. Therefore, the study employed them to collect QUAN data from questionnaires designed in Likert Scale format.

### 4.4 Data Collection Methods and Instruments

The study employed the survey questionnaires and interview as method of data collection. To gather QUAN data, the study employed questionnaires as tools of data collections of questions designed in Likert scale format. On the other hand, the study employed interview questions designed in open-ended format to gather QUAL data.

### 4.5 Data Processing and Analysis

Since the study employed mixed method convergent parallel research design. Therefore, QUAN data were analysed descriptively and inferential and the Statistical Products for Service Solutions (SPSS) was employed to analyse them while the QUAL data were subjected to thematic analysis and Atlas.TI was employed to analyse them.

The following scales assisted the researcher in interpreting statistical findings on extent of readiness on the establishment of DLS

Scale	Mean Range	Extent of Skills/Knowledge	The of Extent Adequacy	The Extent of Agreement	Readiness Status
5	4.50-5.00	Excellent Ability	Very Sufficient	Strong Agree	100% Ready
4	3.50-4.49	Very Good Ability	Sufficient	Agree	Almost 75% Ready
3	2.50-3.49	Good Ability	Moderately Sufficient	Moderate	Almost 50% Ready
2	1.50-2.49	Poor Ability	Insufficient	Disagree	Not Ready, 25%
1	1.00-1.49	Very Poor Ability	Very Insufficient	Strong Disagree	Not Ready, 00%

## 5.0 Study Findings (Quantitative Analysis)

### 5.1 The Extent of Skills of Staff and Students on.....

#### 5.1.1 Utilization DLS (UDLS)

Since the Significant Value (Sig.) from Levene’s Test for Equality of Variances is (0.021), which is less than 0.05 since, the equal variances NOT assumed was used. Additionally, the Sig.(2-tailed) Value is (0.025), which is also less than 0.05, so the NULL Hypothesis (H<sub>0</sub>) is rejected. This was the outcome of an independent Sample t-test which was conducted to compare the utilization of DLS for Public and Private HLIs. Therefore, there was a significant differences ( $t(20.54) = 2.42, P = 0.025$ ) in the score with mean score for Public HLIs (Plc)-(M = 18.08, SD = 2.22) was being higher than Private HLIs (Pvt)-(M = 15.60, SD = 3.58). The magnitude of the differences in the means (Mean difference = 2.48, 95% CI: 0.34 to 4.62) was significant. Hence, H<sub>1</sub> was supported as depicted in table 2 below.

H<sub>1</sub>: There is a significant difference on means between Plc and Pvt HLIs on **Utilisation of DLS** HLIs

H<sub>0</sub>: There is NO significant difference on means between Plc and Pvt HLIs on **Utilisation of DLS** HLIs

Table 2: Utilisation of DLS between Public and Private Higher Learning Institutions

Levene’s Test for Equality of Variances					t-test for Equality of Means			95% Confidence interval of the Difference				
	Mean	SD	F	Sig.	t	df	Sig.(2-tailed)	Mean Difference	Std Error Difference	Lower	Upper	
DV	Plc	18.08	0.22	5.76	0.021	2.42	20.54	0.25	2.48	1.03	0.34	4.62
	Pvt	15.06	3.58									

Source: Research findings, 2024

#### 5.1.2 Library Digitization Procedure (LDP)

Furthermore, regarding Library Digitalization Procedures (LDP) in Public and Private in HLILs. The Significant Value (Sig.) from Levene’s Test for Equality of Variances is (0.008), which is less than 0.05; since, the equal variances NOT assumed was used. Additionally, the Sig.(2-tailed) Value is (0.00), which is less than 0.05, so the NULL Hypothesis (H<sub>0</sub>) is rejected.

This was the outcome of an independent Sample t-test which was conducted to compare the Library Digitization Procedure for Plc and Pvt. There were significant differences ( $t(19.51) = 6.71, P = 0.00$ ) in the score with mean score for Plc-(M = 18.40, SD = 1.78) was being higher than Pvt-(M = 12.47, SD = 3.14). The magnitude of the differences in the means (Mean difference = 5.93, 95% CI: 4.09 to 7.78) was significant. Hence, H<sub>1</sub> was supported. As depicted in Table 2 below

H<sub>1</sub>: There is a significant difference on means between Plc and Pvt HLIs on **Library Digitization Procedure**

H<sub>0</sub>: There is NO significant difference on means between Plc and Pvt HLIs on **Library Digitization Procedure**

Table 3: Library Digitization Procedure between Public and Private Higher Learning Institutions

Levene’s Test for Equality of Variances					t-test for Equality of Means			95% Confidence interval of the Difference				
	Mean	SD	F	Sig.	t	df	Sig.(2-tailed)	Mean Difference	Std Error Difference	Lower	Upper	
DV	Plc	18.40	1.78	7.85	0.008	6.71	19.51	0.00	5.93	0.88	4.09	7.78
	Pvt	12.47	3.14									

Source: Research findings, 2024

#### 5.1.3 e-Resource Service (eRS)

Finally, regarding e-Resource Service (eRS) provided by Plc and Pvt, Significant Value (Sig.) from Levene’s Test for Equality of Variances is (0.122), which is greater than 0.05; the equal variances assumed was used. Additionally, the Sig.(2-tailed) Value is (0.12), which is also greater than 0.05, so the NULL Hypothesis (H<sub>0</sub>) is accepted. This was the outcome of an independent Sample t-test which was conducted to

compare the e-Resource Service for Plc and Pvt. Therefore, there was NO Significant Differences ( $t(38.00) = 11.39, P = 0.00$ ) in score for Plc-( $M = 18.89, SD = 1.85$ ) and Pvt-( $M = 17.93, SD = 2.55$ ). The magnitude of the differences in the means (Mean difference = 7.95 95% CI: 6.53 to 9.36) was very small. Hence,  $H_1$  was not supported.

$H_1$ : There is a significant difference on means between Plc and Pvt HLIs on e-Resource Service

$H_0$ : There is NO significant difference on means between Plc and Pvt HLIs on e-Resource Service

Table 4: Electronic Resource Service between Public and Private Higher Learning Institutions

	Levene's Test for Equality of Variances				t	df	Sig.(2-tailed)	t-test for Equality of Means		95% Confidence interval of the Difference	
	Mean	SD	F	Sig.				Mean Difference	Std Error Difference	Lower	Upper
Plc	18.89	1.85	7.85	0.12	11.39	38.00	0.00	7.95	0.69	6.53	9.36
Pvt	17.93	2.55									

Source: Research findings, 2024

## 5.2 Evaluations on HLILs Readiness in establishing DLS

### 5.2.1 The Physical Resources

Regarding the physical resources in establishing DLS, the respondents rated the overall physical resources with weighted mean of 3.60 as adequate which is 75% ready in establishing of DLS. In addition, the most adequate with 75% ready was found on availability of ICT facilities including server, computer and scanner with mean of 4.27 required for digitalisation of library resources and services for establishing the DLS. The study rated the availability of sufficient library space to accommodate the ICT facilities for digitalisation project as adequate with 75% ready with mean of 4.25. Furthermore, the presence of modern library building, designed to handle network infrastructure for digitalisation project was rated by study as inadequate with 25% not ready in establishment of DLS with mean of 2.25. For the readiness and acceptance of library users on the incoming and use of DLS, the study rated it as moderate with 50% ready in establishment of DLS with mean of 3.08. Finally, the study rated adequate 75% ready in establishment DLS on the benefits expected in establishment DLS to the users with mean 4.25.

Therefore, the results of the study findings showed that, the majority of the staff they rated needs of physical resources as adequate this implied that, the presence of the physical resources toward the establishment of DLS to ATC and KCMUCo is acceptable. This is depicted in table 5 below

The report of commission of Research Information Network and Consortium of Research Libraries (2007) stated that "Physical resources are important parts of the library; the library should be conveniently located and accessible for future digital library". Moreover, the report continued and stated that "physical resources should include convenient opening hours, a place for quite individual study and the provision of modern information technology equipment to access digital resources".

Table 5: Description of Mean in Establishing DLS in Terms of Physical Resources

No.	Statements	Staff (N=40)	
		Mean	Status
1.	The availability of ICT facilities for digitalisation Library Services (LS)	4.27	A
2.	The availability of sufficient library space to accommodate the ICT facilities for digitalisation project	4.15	A
3.	The presence of modern library building, designed to handle network infrastructure for digitalisation project	2.25	I
4.	The readiness and acceptance of library users on the incoming and use of DLS	3.08	MA
5.	The benefits expected in establishment DLS to the users	4.25	A
		<b>Weighted Mean</b>	<b>3.60</b>
<b>Distribution</b> 5: 4.50-5.00: Very Adequate (VA), 100% Ready      2: 1.50-2.49: Inadequate (I) 25%, Not Ready 4: 3.50-4.49: Adequate (A), 75% Ready                              1: 1.00-1.49: Very Inadequate (VI), Not Ready, 00% 3: 2.50-3.49: Moderate Adequate (MA), 50% Ready			

Source: Research findings, 2024

### 5.2.2 The extent of skills/knowledge of staff and students in establishment of DLS

Regarding the extent of skills/knowledge of students and staff in establishment of DLS the findings of the study showed that, the skills/knowledge expected from the staff (Librarians and academic staff) and students for establishing DLS they rated them as good ability (GA), 50% with mean of 3.11 that is nearly to only 50% ready prepared to establish and use the expected DLS. This implied that, the staff (librarians and academic staff) and students are not yet prepared in terms of the skills/knowledge expected from them on establishing and utilizing the expected DLS. In addition, staff they rated the ability to search for e-resources in various databases from expected DLS as very good with 75% while students they rated it as poor with



25% with mean of 4.15 and 2.35 respectively. That means, staff have higher skills/knowledge on accessing e-resources as compared to students.

Furthermore, Staff have the Very Good Ability to use electronic storage devices including CDs/VCDs, and DVDs with Mean of 3.95, whereas students have Poor Ability to use CDs/VCDs, and DVDs of mean of 2.16. This means that students still require assistance in developing skills on the use electronic storage devices, despite the fact that DLS provides access to e-resources via the internet as well as storage devices. In addition, the knowledge on how to use DL technology to deliver the DLS, staff they rated it as Very Good Ability with Mean of 3.90 which is higher as compared to students who they rated it as Poor Ability with Mean of 2.39. Therefore, these findings are comparable to that of Marrison's study (2012) stated that, “far from being rendered obsolete by the pace of technology, librarian’s skills are now more relevant and necessary than ever before”

**Table 6: Descriptions of Mean on SK of Students and Staff**

N o.	Statements	Staff (N=40)		Students (N=115)		Total (N=155)	
		Mean	Status	Mean	Status	Mean	Status
1.	The expected ability of staff to deliver DLS through DL technology	3.90	VGA	2.39	PA	<b>3.15</b>	<b>GA</b>
2.	The expected ability of students and staff to search various e-resources from DLS databases	4.15	VGA	2.35	PA	<b>3.25</b>	<b>GA</b>
3.	The expected ability of students and staff to use electronic storage devices to access e-resources	3.95	VGA	2.16	PA	<b>3.06</b>	<b>GA</b>
4.	The ability of staff and students to use DL technology to deliver the expected DLS	3.87	VGA	2.04	PA	<b>2.96</b>	<b>GA</b>
<b>Group Mean</b>		<b>3.97</b>	<b>VGA</b>	<b>2.24</b>	<b>PA</b>	<b>3.11</b>	<b>GA</b>
<b>Distribution:</b> 5: 4.50-5.00: Excellent Ability (EA), 100% Ready    2: 1.50-2.49: Poor Ability (PA) 25%, Not Ready 4: 3.50-4.49: Very Good Ability (VGA), 75% Ready    1: 1.00-1.49: Very Poor Ability (VPA), Not Ready, 00% 3: 2.50-3.49: Good Ability (GA), 50% Ready							

Source: Research findings, 2024

### 5.2.3 The Extent of Financial Resources (FR) in Establishing DLS

Regarding the extent FR in establishing DLS, table 7 showed that staff including librarians and academic staff from Public HLIs Agreed that, the planned budget of the expected establishment of DLS were from own sources collections, government grants, and donations from friends and international organisation and other countries with mean of 3.18 while for staff from Private HLIs they disagreed on the planned budget of the expected establishment of DLS from own sources collections, government grants, and donations from friends and international organisation and other countries with mean of 2.28. This implies that, for the Private HLIs budgetary for the establishment of DLS is derived from own resources collection rather than grants and donations from international organisation and other countries. Leelavathi (n.d.) conducted a similar study and recommended that "budgetary resources be gradually increased to strengthen digital resources in libraries."

On other hand, staff agreed with mean of 3.43 on the expected establishing DLS on the planned budget for incoming DLS with mean of 3.43 also they agree planned budget for capacity building for librarians, academic staff and students on the institute budgets for the growth and development of librarians' and academic staff's skills and competencies. This means that the staff agreed upon institutes allots a budget for incoming DLS as well as skill and competency development in developing and utilization of DLS. These findings are similar to that of the study conducted by (Lamba, 2022)

**Table 7: Description of Mean on FR in Establishing DLS**

No.	Statements	Staff (N=40)	
		Mean	Status
1.	Own sources collections, Government Grants, and Donations (Public HLIs)	3.18	A
2.	Own sources collections, Grants, and Donations (Private HLIs)	2.28	D
3.	The planned budget for incoming DLS	3.43	A
4.	Planned budget for capacity building for librarians, academic staff and students	3.65	A
<b>Weighted Mean</b>		<b>3.14</b>	<b>MA</b>
<b>Distribution:</b> 5:4.50-5.00: Strong Agree (SA), 100% Ready    2:1.50-2.49: Disagree (D) 25%, Not Ready 4:3.50-4.49: Agree (A), 75% Ready    1:1.00-1.49: Strong Disagree (SD), Not Ready, 00% 3:2.50-3.49: Moderate (M), 50% Ready			

Source: Research findings, 2024

## 5.3 The forecast of DLS in terms of.....

### 5.3.1 Embarking and the Importance of establishing and utilizing of DLS

As shown in table 8, two groups (staff and students) evaluated the forecast of DLS in terms of the importance of establishing and utilizing DLS on the same level as important, with staff and students group weighted mean 3.21 and 2.80, respectively. In addition, staff they rated services that provided by DLS on Online Public Access Catalogue (OPAC) as important with higher mean of 3.48. Furthermore, they rated the important of DLS with formal, informal and professional learning mission that allow people to become a single entity as well as to provide e-reference services to users, the mean scored for both were 3.43. In Addition, they discovered that DLS provide services on overdue alerting messages, allow easy file and resource sharing among HLILs, support downloading, publishing of academic resources, allow instant accessibility of academic resources, make it easy for librarians to provide effective DLS services to users, and finally allow access to academic e-resources in digital form, which they rated important with mean scores of 3.33, 3.13, 3.10, 3.00, 2.93, 2.87 respectively.

On the other hand, students they rated the "importance" in establishing and utilizing DLS in providing e-reference services to users with a mean score of 3.14 higher than other mean scores, such as: formal, informal, and professional learning missions that allow people to become a single entity and easy sharing of resources and digital files among HLILs with the same mean of 3.10. Furthermore, they rated "important" on establishment and utilization of DLS in providing service through Online Public Access Catalogue (OPAC), providing service to users on overdue alerting message as well as on allowing instant accessibility of academic electronic resources with mean scores of 3.06, 3.05 and 3.04 respectively. Additional, respondents rated "important" on establishment and use of DLS in allowing access to academic e-resources in digital form, support for downloading and publishing academic resources, the ability of librarians to provide users with an effective DLS, and providing service on resource sharing among HLILs, with mean scores of 3.01, 2.99, 2.92, 2.84, and 2.83, respectively.

**Table 8: Embarking and the Importance of Establishing DLS**

No.	Statements	Staff (N=40)		Students (N=115)		Total (N=155)	
		Mean	Status	Mean	Status	Mean	Status
1.	DLS allow accessibility of academic e-resources in digital form	2.87	I	3.11	I	<b>2.99</b>	<b>I</b>
2.	DLS allow instant accessibility of academic electronic resources	3.10	I	2.99	I	<b>3.05</b>	<b>I</b>
3.	DLS allow easy resources and digital files sharing among HLILs	3.33	I	2.87	I	<b>3.10</b>	<b>I</b>
4.	The ability of librarians to provide users with an effective DLS	2.93	I	2.75	I	<b>2.84</b>	<b>I</b>
5.	DLS provide formal, informal and professional learning mission so as to become a single entity	3.43	I	2.76	I	<b>3.10</b>	<b>I</b>
6.	DLS supports, downloading, publishing of academic resources	3.13	I	2.70	I	<b>2.92</b>	<b>I</b>
7.	DLS provide service on Online Public Access Catalogue (OPAC)	3.48	I	2.64	I	<b>3.06</b>	<b>I</b>
8.	DLS provide e-Reference Services	3.43	I	2.84	I	<b>3.14</b>	<b>I</b>
9.	DLS provide service on Resource Sharing among HLILs	3.00	I	2.66	I	<b>2.83</b>	<b>I</b>
10.	DLS provide service on overdue alerting Massage	3.40	I	2.68	I	<b>3.04</b>	<b>I</b>
<b>Group Weighted Mean</b>		<b>3.21</b>	<b>I</b>	<b>2.80</b>	<b>I</b>	<b>3.01</b>	<b>I</b>
<b>Distrib:</b> 5: 4.50-5.00: Most Important (MI), 100% - Great Extent of Agreement; 3: 2.50-3.49: Important (I) 50% - Not Agree 4: 3.50-4.49: Very Important (VI), 75% - Moderate Extent of Agreement 2: 1.50-2.49: Slightly Important (SI) 25% - Moderate Extent of Disagreement 1: 1.00-1.49: Less Important (LI) 00.00% - Great Extent of Disagreement							

**Source:** Research findings, 2022

## 6.0 Study Findings (Qualitative Analysis)

### 6.1 Interview

In this section, the interview was conducted to Library and Academic Staff in order to provide views on readiness of higher learning institutions in establishment DLS. Their viewpoint was summarized below:

In response to questions about the extent of skills/knowledge, the interviewees at KCMUCo they stated that: *"The Public and Private Higher Learning Institutions they differ in readiness on digitalisation of academic library projects as well as on the utilisation of DLS"*

On the other hand, through evaluations of DLS, the interviewees from ATC stated that,



"It is specifically necessary to evaluate the physical resources, staff and librarian competencies, and human resource competency before establishing DLS in a Higher Learning Institution academic library. "

Finally, regarding embarking and the importance of establishing and utilizing of DLS, interviewees from both KCMUCo and ATC they stated that;

"The establishment of DLS will help higher learning institution academic libraries to provide formal, informal and professional learning mission as a single entity as well as will it will allow instant accessibility of academic electronic resources remotely"

## 7. Conclusion

Regarding on the result's findings the following conclusions were made

- 7.1 There is a significant difference in utilization DLS between Government and Private HLIs, with GI-(M = 18.08, SD = 2.22) scoring higher than PI-(M = 15.60, SD = 3.58). As a result, there is a need, particularly on the part of PI, to improve respondents' knowledge of the digitization process as well as the use of DLS. However, there were NO Significant in scores for GI-(M = 18.89, SD = 1.85) and PI-(M = 17.93, SD = 2.55) in e-resources services.
- 7.2 Respondents indicated adequacy in evaluating HLILs' readiness to establish DLS. As a result, physical resources, the extent of skills/knowledge, library e-collection, ICT facilities, and network infrastructure are not yet ready. As a result, upgrading the necessary resources is still required.
- 7.3 Almost all respondents saw the importance of implementing DL in HLILs as part of enhancing and improving DLS utilization.

## 8. Acknowledgment

We sincerely thank all of the people and organizations that have generously supported and collaborated with us in order to complete this journal. We express our gratitude to Dr. J. Iwata and Dr. G. Matto for their valuable contributions, guidance, and expert insights that significantly enriched the content and scholarly depth of this article. Their unwavering commitment to advancing knowledge in the field has been instrumental in shaping the direction of our research.

We would also want to express our sincere gratitude to ATC and KCMUCo for their invaluable institutional support, which enabled the research process and guaranteed the work's academic rigor. The accomplishment of this research has been made possible by the financial support provided by TICD. We value their dedication to supporting creative research endeavors and acknowledge their interest in our work.

## References

- Adam, A. M. (2020). Sample Size Determination in Survey Research. *Journal of Scientific Research and Reports, June*, 90–97. <https://doi.org/10.9734/jsrr/2020/v26i530263>
- Alicmas, V. W., & Ramos, B. V. (2019). The readiness of a state college for the establishment of a digital library. *Library Philosophy and Practice, 2015*.
- Dukper, K. B., Sakibu, B., & Arthur, B. (2019). Awareness and utilization of electronic library resources by students of Tamale Technical University, Ghana. *Library Philosophy and Practice, 2019*(November).
- Eje, O. C. (2020). *Transforming Library and Information Services Delivery Using Innovation Technologies*.
- Gamboa, A. (2019). *Library Management in Digital Age*. Excelic Press LLC. <https://books.google.co.tz/books?id=3McUxAEACAAJ>
- Israel, O., & Nsibirwa, D. Z. (2019). Information Literacy Skills in using Electronic Information Resources. *Library Philosophy & Practice, November*, 1–17.
- Kaushik, V., & Walsh, C. A. (2019). Pragmatism as a Research Paradigm and Its Implications for Social Work Research. *Social Sciences, 8*(9), 1–17.
- Keshavarz, H., & Noorafrooz, A. H. (2020). Dimensions of E-Readiness in University Libraries: Identification and Prioritization Using AHP Technique. *Libri, 7*(4), 319–333. <https://doi.org/10.1515/libri-2020-0028>
- Lai, P. (2017). The Literature Review of Technology Adoption Models and Theories for the Novelty Technology. *Journal of Information Systems and Technology Management, 14*(1), 21–38. <https://doi.org/10.4301/s1807-17752017000100002>
- Lata, N., & Kumar, S. . (2020). Impact of ICT on Learning Activities of User by Academic Library Services:

- Li, S., Hao, Z., Ding, L., & Xu, X. (2019). Research on the application of information technology of Big Data in Chinese digital library. *Library Management*, 40(8/9), 518–531. <https://doi.org/10.1108/LM-04-2019-0021>
- Masenya, T. M., & Ngulube, P. (2020). Factors that influence digital preservation sustainability in academic libraries in South Africa. *The South African Journal of Libraries and Information Science*, 86(2007), 52–63. <https://doi.org/10.7553/86-1-1860>
- Mubofu, C., & Chaula, S. (2021). *Information Resource Sharing in Academic Libraries : Tanzanian Context DigitalCommons @ University of Nebraska - Lincoln Information Resource Sharing in Academic Libraries : Tanzanian Context*. January.
- Mwilongo, K. J., Luambano, I., & Lwehabura, M. J. F. (2020). Collection development practices in academic libraries in Tanzania. *Journal of Librarianship and Information Science*, 52(4), 1152–1168. <https://doi.org/https://doi.org/10.1177/0961000620907961>
- Ngamba, E. (2021a). *Assesing the Degree of E- Readness in the Transformation from Traditional Library to Digital Library in Higher Learning Institutions Tanzania*. College of Business Education.
- Ngamba, E. (2021b). *Assessing the Degree of E- Readiness in the Transformation from Traditional Library to Digital Library in Higher Learning Institutions Tanzania*. College of Business Education (CBE).
- Ngamba, E. S., & Casmir, R. O. (2021). The Second Business and Economic Development Conference (BEDC, 2021), Held on 16th - 17th November, 2021 in Dodoma, Tanzania. *E-Readiness of Library Services' Providers and Users towards Digital Library Services in Academic Institutions Tanzania*, 135–148.
- Okeji, C. C., Tralagba, E. C., & Obi, I. C. (2020). An investigation of the digital literacy skills and knowledge-based competencies among librarians working in university libraries in Nigeria. *Global Knowledge, Memory and Communication*, 69(4–5), 311–330. <https://doi.org/10.1108/GKMC-05-2019-0054>
- Pessa, J. C. (2019). Marketing and Promotion of E-journal in Academic Libraries in Tanzania. *American Journal of Information Science and Technology*, 3(1), 10. <https://doi.org/10.11648/j.ajist.20190301.12>
- Purcell, A. D. (2016). Digital Library Programs for Libraries and Archives : Developing, Managing, and Sustaining Unique Digital Collections. *Journal of Chemical Information and Modeling*, 53(9), 1689–1699.
- Subba, S., & Das, S. K. (2019). ICT infrastructure in college libraries of Darjeeling District of West Bengal, India: A Survey. *International Journal of Research in Social Sciences*, 9(1).
- Udem, O. K. (2020). Digitization of Library Resources in University Libraries A Practical Approach , Challenges and Prospects. *Madonna University Journal of Research in Library and Information Science*, 3(2), 36–47. [https://www.researchgate.net/publication/334960700\\_Digitization\\_of\\_Library\\_Resources\\_in\\_Univer\\_sity\\_Libraries\\_A\\_Practical\\_Approach\\_Challenges\\_and\\_Prospects/references](https://www.researchgate.net/publication/334960700_Digitization_of_Library_Resources_in_Univer_sity_Libraries_A_Practical_Approach_Challenges_and_Prospects/references)
- Vaca, S. (2018). Refining Theories of Change. *Journal of MultiDisciplinary Evaluation*, 14(30), 64–87.
- Yaqin, M. A., Nurul, U., & Probolinggo, J. (2022). Strategy of Library Development towards Digital Library. *Khatulistiwa*, 2(2), 52–69.