

Tangibility of digital institutional repository service provision to postgraduate students at universities in Meru County, Kenya

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¹Sophia Mjeni Tsenga*, ²Paul Maku Gichohi

¹<https://orcid.org/0009-0000-3853-572X>, ²<https://orcid.org/0000-0003-1593-4642>

^{1,2}Kenya Methodist University

ABSTRACT

Institutional repository services in libraries essentially determine the quality of the scholarly output of postgraduate students. Subsequently, this demands a multi-skilled workforce, facilities, and ICT infrastructure. Tangibility in this context is demonstrated when the staff in charge are decent, premises are neat, resources are easily retrievable and ICT technologies are available. Demonstration of tangibility usually heightens user attractiveness to a place. It may also be reinforced by a user experiencing satisfaction through an easily navigable institutional repository, visually attractive arrangement of the contents, and easily downloadable research materials. Nevertheless, incidences of users getting disinterested and losing patience with institutional repositories have continued to be reported. This paper assesses the tangibility of repository service provision to postgraduate students at universities in Meru County, Kenya. The study adopted a descriptive survey research design. The SERVQUAL model was also adopted to underpin the research. The sample population consisted of 91 students and 10 library heads of sections. Post-graduate students filled out questionnaires while the library heads of sections participated in the interviews. Purposive sampling was used to get librarians and simple random sampling for students. The findings of the study indicated that the tangibility of institutional repositories at universities in Meru County was moderate. To improve it, the respondents recommended the provision of policies guiding the security of information, the repository section being operational during working hours, providing a functional website as well as shelving and classification of information materials be done regularly. There was a need to acquire modern reading tables, student computers, and provision of resources in full texts, and upgrade the earlier version of the repository management system with the current one. The paper recommends the heads of libraries liaise with university management to support and finance the acquisition of new and refurbish existing facilities, technologies, infrastructure, and additional resources. It is also recommended that the directorate of research to revise the postgraduate policy to include all postgraduate levels' research in order to achieve inclusive service provision.

(Key words: tangibility, digital institutional repositories, service provision, university libraries, SERVQUAL model, postgraduate students)

I. INTRODUCTION

The quality of research for post graduate students is significantly impacted by the institutional repository services, hence the need for these services to be improved. This implies that careful consideration ought to be undertaken to ensure service responsiveness, timeliness, dependability, tangibility, reachability, usability, and reliability. Institutional repository services comprise of open access services rendered to a research organization or an institution of higher learning by information professionals (Nunda & Elia, 2019).

Repositories are advanced levels of interoperable archives that aim to ensure traceability, downloadable, accessibility, dissemination, preservation and full-text access to scholarly outputs (Karanja, 2017).

While developing institutional repositories, the services rendered are characterized by readily accessibility, timeliness, responsiveness, improved information findability, and easily navigable sites (OpenDOAR, 2018). Other critical drivers of satisfactory services are the presence of perceived usefulness, the attractiveness of the furniture within the sections, ICT technologies to enable

* Corresponding Author: tsengasophy@gmail.com

retrieval, neatness, and competency of repository staff, well-arranged resources, and ease of procedure for depositing and accessing resources (Fernández-Ramos & Barrionuevo, 2021). These parameters, communicate the necessity of tangibility, a marketing model dimension that this paper determined to explore.

The SERVQUAL model by Valarie, Parasuraman, and Berry in 1985 was developed to express how service quality can be measured (Podbrežnik, 2014). Its main agenda is to elaborate on how customers feel when interacting with one's products or services by giving their perceptions based on the resources' reliability, responsiveness, empathy, and assurance (Podbrežnik, 2014). The model has been tested and successfully applied in marketing, banking, telecommunication, airline catering, local government, hotels, hospitals, and education sectors (Daniel & Berinyuy, 2010; Vencataya et al., 2019). However, its applicability in improving service provision in institutional repositories has not been done. This paper presents part of the results of research that adopted this model to determine its applicability in digital institutional repository information services at universities in Meru County, Kenya.

Globally, service provision in university institutional repositories has greatly improved by ensuring tangibility. According to Saulus (2018), tangibles assimilate to the repository's physical environment constituting the facilities, equipment, communication materials, information resources, personnel's conduct, ethics, and dress code. Therefore, some of the aspects that have been put in place include adopting quality and best curating software, open access initiatives, good practices, user-friendly links and interfaces, modern technology, staff competencies, staff decency, attractive modern furniture, well-arranged resources, and lockable storage cabinets. Consequently, an easily navigable institutional repository website and visually attractive arrangement of the contents on the website express tangibility. Also, the good appearance and colouring of the repository page, well-organized downloadable documents, and easily accessible user guides express tangibility (Roy, 2021). In America, and the United Kingdom, Callicot et al. (2015) and Arlitsch and Grant (2018) clarified that human resources, fiscal resources, ICT technologies, infrastructure, and material resources are important enablers for improving service provision and rendering. Notwithstanding, Lagzian et al. (2015) have presented that institutional repository service delivery is demeaned by the inadequacy of technological infrastructure, navigable sites, incompetency of staff, staff grooming, inadequate information resources, furniture, and facilities.

Developing countries also appreciate the contribution of institutional repository services to student research. Despite this, institutional repository services, are dissatisfactory (Posigha & Eseivo, 2022). Some of the common challenges featured in the studies were difficulties in navigating and accessing the sites (Baada et al., 2020). Services are also let down by inadequate funding, insufficient staff, irregular electricity supply, outdated library materials, and lack of functional library resources (Salman et al., 2017). Some aspects of remedy introduced for example is, enacting open access policies, adopting creative common licenses, creating awareness, and alleviating customers' negative perceptions and funding (Posigha & Eseivo, 2022).

The extent at which repositories embrace technology was termed to influence service delivery among libraries. Khumalo and Baloyi (2018) reports featured this parameter explaining that the availability of websites, internet, social network platforms, finances, and human resources improved service delivery. Despite this, Khumalo and Baloyi (2018) found that available ICT infrastructures were not fully exploited, and henceforth online service delivery was limited. It was stressed that adopting ICTs in all sectors was important in fostering service provision.

Locally, according to Ratanya and Muthee (2018), mechanisms such as policies, awareness and funding, open-source software's, and information retrieval avenues for ensuring service provision are in place. Irrespective, unsatisfactory service provision in digital repositories persists. Mwiti (2017) critiques this likelihood as to lack of adequate managerial support, staff incompetence, limited awareness, and insufficient rendering of budget to support repository services. In the study of Achieng (2016), service provision in institutional repositories is particularly hampered by the quantity and quality of information resources, the sufficiency of physical infrastructure and facilities to support service provision. Noting the persistence of this problem, the SERVQUAL model was adopted to determine how tangibility of institutional repository services offered to postgraduate students could be improved.

Statement of the problem

Institutional repositories provide archival services for university scholarly output which is very useful to postgraduate students. To improve the quality of postgraduate research, students therefore require the services offered in these sections. This shows a need to invest in physical, hardware, software and human resources to ensure research outputs are perpetually available, downloadable, reachable, accessible and

usable. This is further ensured by professionalism, attractiveness of physical facilities and decency of furniture and information resources. It is further demonstrated when the staff in charge is decent in dressing, the office is neat, resources are well arranged, storage cabinets are well locked and computers and ICT technologies available. These usually communicate the tangibility of digital institutional repositories.

However, incidences of users getting disinterested and losing patience with institutional repositories have continued to be reported (Kakai, 2018). Besides, there have been numerous complaints about underutilization of repository services (Mwiti, 2017). Failure to provide enough, quality and attractive tangibles jeopardize repository user's satisfaction of their research and information needs. It also denies the university a chance to grow research-wise and find value in the investments channelled toward making repositories operational. Mwiti (2017) and Kakai (2018) investigated factors leading to the dismal utilization of academic repositories, the adoption of institutional repositories, and aspects of technology acceptance in repositories; hence, negating the linkage of tangibility of institutional repositories; including repositories being accessed via the library page at users' convenience without having to visit the library. This raised the need to investigate this particular aspect.

The study therefore had one objective: Examining the tangibility of institutional repository service provision at selected universities in Meru County, Kenya. The investigation aimed to answer the question: "*what is the level of tangibility of digital institutional repository services offered at selected universities in Meru County?*"

II. MATERIALS AND METHODS

The study took place in Meru County in Kenya, focusing on Meru and Kenya Methodist universities. It adopted a descriptive survey research design which best describes the postgraduate students' behaviors and perceptions on digital institutional repository service provision. The target population was 900 postgraduate students and 10 head of section librarians. Two universities participated in the research since they have their main campuses based in Meru County. Mt. Kenya University and Chuka University-Igembe Campus were outside the study scope as they are constituent branches of their main campuses; hence did not have the institutional repositories since the main IR service points are managed from main campuses. The choice for these universities lies in the premise of being leading institutions offering a variety of postgraduate programs and their active involvement in research publishing. In addition, the selected universities

have invested heavily in human, legal, technological, and infrastructural resources. These profound investments channelled towards the open access docket interested the study to assess the state of service provision among the institutional repository to inform parameters for realizing improvement. Ten (10) heads of section librarians and 91 postgraduate students were identified as key informants. Purposive sampling was used for library heads of sections while simple random technique for obtaining postgraduate students from the post-graduate diploma, master and PhD strata. Questionnaires were administered physically to the postgraduates' students, while librarians were interviewed accordingly. The research instruments were checked for content and construct validity, while reliability was measured by computing Cronbach's alpha value. Quantitative data collected from questionnaires was analysed using SPSS where mean and standard deviation were computed, and results were presented using tables. The qualitative data gathered from head of section librarians and the rest of the open-ended questions were thematically analysed and categorized into respective themes.

III. RESULTS AND DISCUSSION

Response Rate

This paper presents the results of data gathered from two categories of respondents, that is, the postgraduate students and head of section librarians. Out of 91 questionnaires distributed to students, 67 were correctly filled, hence accepted for analysis. This translates to 73.0% response rate. Out of the 10 head of section librarians that were scheduled for the interview sessions, 9 were available, making a 90.0% response rate. This led to an overall response rate of 75.2% and it was acceptable according to Stedman et al. (2019) and Mugenda and Mugenda (2003).

Demographic Information of Study Respondents

The research proceeded to establish the demographic details of the respondents. The mirrored characteristics were such as gender, educational qualification attained, and length of service. The findings on gender implied that females 34 (50.7%) were more than male 33 (49.3%) postgraduate students by a small margin. On the contrary, Achieng (2016) presented that in Nairobi University, postgraduate students were dominated by the male gender as compared to their female counterparts.

The results also noted that, 48(71.6%) students were pursuing their master's degrees; 10(14.9%) were doing postgraduate diploma, and only 9(13.4%) were pursuing doctorate degrees. Wangui (2018) also established that

two-thirds of the population comprised of master students and only about a quarter were PhD students. The different levels of postgraduate students helped tailor inclusive institutional services such as information resources to all categories of scholars. In addition, there was evidence of adequate experience of head of section librarians with the majority 4(44.4%) indicating they had worked between 5 and 10 years. Agreeable, Haylenchale (2020) reported related findings that, at Dilla University, most academic staff including librarians had accumulative working experience of between 6-10 years in their current points of service. Work experience possessed by the library head of sections was important in ascertaining the, experience, adequacy and reliability of information given on tangibility and institutional repository service provision in the respective institutions.

Results on Institutional Repository Service Provision

This was the dependent variable of the study. Several sentiments were presented to postgraduate students requiring them to rate their level of agreement on aspects of institutional repository service provision at universities in Meru County. The rating for each sentiment was coded in SPSS, where:

5 ⇒ VLE = very large extent,

4 ⇒ LE = large extent,

3 ⇒ ME = moderate extent,

2 ⇒ SE = small extent,

1 ⇒ VSE = very small extent.

The results were as indicated in Table 1 below.

Table 1: Digital institutional repository service provision

Statement on service delivery in institutional repositories (N=67)	VSE(1)	SE(2)	ME(3)	LE(4)	VLE(5)	Mean	Std. Deviation
Reliability aspects of the institutional repository services increase user satisfaction in our institution	1(1.5%)	1(1.5%)	9(13.45)	33(49.3%)	23(34.3)	4.13	.815
Responsiveness of institutional repository service increase user satisfaction in our institution	0	5(7.5%)	10(14.9%)	31(46.3%)	21(31.3%)	4.01	.879
Tangibility of institutional repository services increase user satisfaction in our institution	1(1.5%)	4(6.0%)	13(19.4%)	25(37.3%)	24(35.8%)	4.00	.969
Empathy of institutional repository service increase user satisfaction in our institution	1(1.5%)	4(6.0%)	12(17.9%)	25(37.3%)	25(37.3%)	4.03	.969
Assurance of institutional repository service increase user satisfaction in our institution	0	3(4.5%)	13(19.4%)	28(41.8%)	23(34.3%)	4.06	.851
There are adequate infrastructures, facilities and reading areas in of institutional repository service in our institution	4(6.0%)	31(46.3%)	20(29.9%)	8(11.9%)	4(6.0%)	2.66	.978
The institutional repository staff are polite, courteous and respectful	1(1.5%)	4(6.0%)	9(13.4%)	25(37.3%)	28(41.8%)	4.12	.962

<i>Statement on service delivery in institutional repositories (N=67)</i>	<i>VSE(1)</i>	<i>SE(2)</i>	<i>ME(3)</i>	<i>LE(4)</i>	<i>VLE(5)</i>	<i>Mean</i>	<i>Std. Deviation</i>
<i>The institutional repository services are accessible at all times</i>	1(1.5%)	6(9.0%)	36(53.7%)	15(22.4%)	9(13.4%)	3.37	.885
<i>Institutional repository services are essential in</i>	0	3(4.5%)	10(14.9%)	30(44.8%)	24(35.8%)	4.12	.826
<i>There is no sluggishness in service delivery at institutional repository services in our institution</i>	0	6(9.0%)	26(38.8%)	25(37.3%)	10(14.9%)	3.58	.855

The results displayed in Table 1, communicate that, there was a high agreement level on all indicators regarding SERVQUAL model dimensions on the determination of institutional repository services. Among the possible dimensions, it was informed by the tangibility of the university repositories (mean = 4.00; SD = .969). This inferred that, the tangibility of institutional repositories including staff conduct and promptness of services had a weighty impact on service provision. Other determinants were 'reliability', 'etiquette', 'politeness', 'courtesy', 'assurance', 'empathy' and 'responsiveness'. These results agreed with the report of Alam (2021) who presented findings that, tangibility and responsiveness were important facets for improving institutional repository services among university libraries.

The above findings were consistent with views gathered from head of section librarians during interview. From interview questions posed, obtained responses indicated the existence of possible drawbacks which hindered effective institutional repository services. These were: slow growth of repository collections, lack of enough financial allocation, inadequate modern technology, limited sensitization and awareness, open access issues, publishing of articles abstract other than full texts documents and limited literacy on customer handling. The findings are consistent with different results reported by Gathoni and Van der Walt (2019) and Trivedi and Bhatt (2019) which, demonstrate the role of courtesy by employees, attractiveness physical resources, meeting

user expectations, procuring modern technology and budgetary expansion to enrich effective repository service.

Results on tangibility of institutional repository service provision

To meet the objective of this article, the independent variable (tangibility) was assessed by presenting 12 statements based on the indicators of institutional repository tangibility. This was responded by the postgraduate students in a Likert scale. The rating for each sentiment was coded in SPSS, where:

5 ⇒ *VLE* = very large extent,

4 ⇒ *LE* = large extent,

3 ⇒ *ME* = moderate extent,

2 ⇒ *SE* = small extent,

1 ⇒ *VSE* = very small extent

Qualitative results were obtained from the head of section librarians who were interviewed. Postgraduate students' opinions were presented in Table 2 on the following page.

Table 2: Descriptive Results on Tangibility

Statements on tangibility (N=67)	VSE(1)	SE(2)	ME(3)	LE(4)	VLE(5)	Mean	Std. Deviation
<i>The repository section is equipped with modern useful equipment</i>	6(9.0%)	15(22.4%)	22(32.8%)	23(34.3%)	1(1.5%)	2.97	1.000
<i>The facilities available at the repository section are visually appealing</i>	0	10(14.9%)	29(43.3%)	26(38.8%)	2(3.0%)	3.30	.759
<i>The repository staff are appealing and neat in appearance</i>	1(1.5%)	4(6.0%)	21(31.3%)	18(26.9%)	23(34.3%)	3.87	1.013
<i>There are adequate information resources for academic purposes in the repository</i>	2(3.0%)	8(11.9%)	34(50.7%)	17(25.4%)	6(9.0%)	3.25	.893
<i>It is very easy to navigate the institutional repository web-site</i>	1(1.5%)	5(7.5%)	22(32.8%)	28(41.8%)	11(16.4%)	3.64	.900
<i>The content in the repository is well organized</i>	0	4(6.0%)	20(29.9%)	32(47.8%)	11(16.4%)	3.75	.804
<i>Documents in the repository are easily downloadable</i>	1(1.5%)	3(4.5%)	21(31.3%)	30(44.8%)	12(17.9%)	3.73	.863
<i>Physical documents in the repository section are well organized</i>	1(1.5%)	0	20(29.9%)	33(49.3%)	13(19.4%)	3.85	.783
<i>The physical facilities and reading areas in the repository are well arranged</i>	0	5(7.5%)	24(35.8%)	26(38.8%)	12(17.9%)	3.67	.860
<i>The repository section in the library has adequate facilities</i>	6(9.0%)	16(23.9%)	29(43.3%)	12(17.9%)	4(6.0%)	2.88	1.008
<i>Technological infrastructure is essential in achieving tangibility of repository services</i>	0	3(4.5%)	13(19.4%)	30(44.8%)	21(31.3%)	4.03	.834
<i>I do feel that I have benefited from the services that I receive at repository section</i>	2(3.0%)	3(4.5%)	24(35.8%)	25(37.3%)	13(19.4%)	3.66	.946

The results in Table 2 notes a high agreement to all aspects regarding tangibles. The high agreement level indicated postgraduate students understood the tangibility aspects posed to them and that were needful in ensuring satisfactory service provision. From the findings, it can

be observed that: staff are neat in appearance (mean = 3.87), printed information resources are well organized (mean = 3.85), electronic content is well organized (mean = 3.75), documents in the digital archive are downloadable (mean= 3.73) and section physical

facilities are well arranged (mean= 3.67). The findings guide that, making good efforts to build technological infrastructure, equipping sections with modern technology, easily navigable repository websites and adequacy of digital information resources can heighten the level of tangibility. The above observations were noted in the results of a study by Al Mahameed et al. (2021) and Ibrahim et al. (2022). Digby (2021) consented that, physical facilities, human resources, infrastructure, information resources, material and immaterial resources determined successful rendering of repository services.

The head of section librarians were asked during the interview, to highlight the measures undertaken by university libraries in equipping repository tangibles. The responses gotten themed: provision of policies guiding security of information, archived using space software, populated the repository with graduates' materials each year, repository section being operational on working hours, website is working, shelving and classification of repository information materials. The same was also noticed in Uganda, where Bandyopadhyay and Boyd-Byrnes (2016) echoed that, marketing strategies, policies, availability of adequate infrastructure and easy navigation of repository website promoted tangibility.

The attempts by librarians to equip repositories with tangibles have however suffered short of modern reading tables, non-attractive repository sections and limited modern furniture. Other shortcomings are lack of student computers, little scholarly output, unavailability of some items in full texts, exclusion of postgraduate diploma projects and older version of repository management system. When students and librarians were asked to suggest what need to be done to enhance tangibility, they suggested the refurbishing of the available reading tables. Other proposals were on repainting of repository sections, acquisition of modern furniture and dusting of shelved repository collections. Yet other respondents advised that the institutional repositories should publish more scholarly output, including full texts documents of the thesis and dissertations, include postgraduate diploma projects and upgrading of the repository management system to a higher version. The findings were consistent with the recommendations presented by Achieng (2016) on increment of library annual budget, to address quantity and quality of information resources, physical infrastructure and facilities for supporting service provision.

Correlations between tangibility and digital institutional repository service provision to postgraduate students

Table 3: Correlations between tangibility of digital institutional repository

		Y	X3
Y	Pearson Correlation	1	
	Sig. (2-tailed)		
	N	67	
X3	Pearson Correlation	.747 [†]	1
	Sig. (2-tailed)	.000	
	N	67	67

Table three communicates that tangibility aspect had a positive and statistically significant relationship with institutional repository ($r = .747$, $p = .000 < .05$). The findings imply that an improvement in tangibles result to a positive change in the institutional repository service provision. Therefore, a change in tangibles triggers a change in institutional repository services. A positive and significant relationship between tangibility of digital institutional repositories was also found in the study Alam (2021). The results also underpin the adoption of SERVQUAL model that, tangibles such as reading areas, computers, friendly user interfaces, downloadable repository resources, well-organized collections and modern physical equipment promotes service provision. Tangibles therefore, enable post-graduate students access the repository with ease hence improved institutional repository service provision.

IV. CONCLUSION

The study established that the state of tangibility in digital repositories at universities in Meru County was moderate. Although tangibles were moderate, they were statistically significant in influencing the institutional repository service provision at universities in Meru County. The levels of tangibility were expressed by attractive appearance of physical resources, adequate infrastructure, adequate information resources, neat staff, classified repository materials, materials being downloadable and adequacy of physical facilities. It was also noted that post-graduate diploma research projects were not uploaded in the institutional repositories.

[†] Correlation is significant at the 0.01 level (2-tailed)

V. RECOMMENDATIONS

The paper recommends the heads of libraries to liaise with university management to support and finance the acquisition of new and refurbishing of existing facilities, technologies, infrastructure, and support acquisition of additional resources. Also, the directorate of research to revise the postgraduate policy to include all postgraduate levels' (post-graduate diploma research projects) research in order to achieve inclusive service provision. The results have implications on university management financial support and a need to revamp repository infrastructure.

Implications of the findings

The applicability of SERVQUAL model adopted in the paper has been supported. Therefore, tangibility in institutional repositories is needful in order to improve service provision to post-graduate students. This has implication on the university management to support institutional repositories through technological, infrastructure, facilities and resources. The findings also have implications on revising the directorate of research polices.

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