Empowering lifelong learning : application of digital literacy skills among postgraduate students at Margaret Thatcher Library, Moi University

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ABSTRACT

Postgraduate students have lot of workload, which makes them to search for information in electronic resource databases. However, they require digital literacy skills to ensure they can access educational resources online effectively, supporting lifelong learning and research. Existing literature indicates that many users in Kenyan university libraries do not fully utilize electronic resources due to an inadequacy of digital literacy skills. Although electronic resources in libraries are globally acknowledged for aiding research, challenges persist due to technological advancements, necessitating digital literacy skills for effective searching, retrieval and utilization. The objective of the study was to investigate the level and application of digital literacy skills of postgraduate students in facilitating adequate usage of electronic resources. A mixed-method approach was adopted taking on survey design and utilizing concurrent parallel design when interpreting and deriving conclusions. Quantitative data was collected from postgraduate students and qualitative data from library staff. The sample consisted of 118 postgraduate students randomly sampled from 150 postgraduate students and 5 librarians out of 7 were purposively sampled. Qualitative data was analysed using content analysis while quantitative data was analysed using frequency distribution and cross tabulation methods. Tables, charts, graphs and thematic discussions were used to present the data. The key findings of the study revealed that postgraduate students possess different levels of digital literacy skills, majority of postgraduates and librarian's digital literacy skills were inadequate; majority of the respondents stated that ICT facilities were inadequate. The study concludes that the digital literacy skills of postgraduate students and librarians are inadequate and this limits the utilization of electronic resources. The study recommends librarians to offer regular digital literacy and electronic resources training to improve the level of digital literacy skills of postgraduate students, increase and improve on ICT facilities at Moi University Library.

*(**Key words**: digital literacy skills; electronic resources; information technology communications; lifelong learning; training.)*

I. INTRODUCTION

Digital literacy significantly supports lifelong learning by enabling students and lecturers to adapt to technological advancements, access a wealth of online educational resources, and engage in self-directed learning (Ordu 2024). It empowers learners to pursue online learning, research, and other digital content, enhancing their ability to continue learning beyond traditional educational settings. Consequently, every postgraduate student who intends to be an effective user of electronic resources and benefit from their searches must possess strong information literacy skills (Ugwulebo & Okuonghae, 2021).

Bawden and Robinson (2019) state that digital literacy is the ability to access, use, and evaluate digital information effectively, efficiently, and ethically, as well as to create and communicate using digital technologies. Digital literacy skills are vital skills that lecturers should acquire to function effectively the digital literacy. This will however make the educators to be active users of digital technologies that will enable them to fit into the digital era. Therefore, the emphasis of this study was to investigate the application of digital literacy skills among postgraduate students on the use of electronic resources for lifelong learning and research at Margaret Thatcher Library, to suggest measures for improvement that will in turn be inculcated into the learning environment in Moi University.

Yo (2021) defines digital literacy as the availability of knowledge and skills necessary for students' safe and effective use of digital technologies and Internet resources for their academic purposes. In the context of postgraduate students' electronic resources competencies, Antoninis and Montoya (2018) defined digital literacy skills as involving browsing skills, searching and filtering data skills, information and digital content creation skills, evaluating digital content, managing data, communication, and collaboration when it is presented through computers and supports postgraduate students to solve the broadest range of tasks associated with the use of electronic resources for lifelong learning and research work.

UNESCO (2018) expands on these components by highlighting core skills required for digital literacy as being the ability to search, navigate digital environments, effectively communicate, and collaborate using various digital tools. In essence, digital literacy constitutes a broad range of abilities that enable individuals to efficiently use electronic resources for academic, professional, and personal purposes. It supports postgraduate students in solving a wide array of tasks related to digital technology, including lifelong learning, research, communication, and content creation (UNESCO, 2018).

Various ongoing initiatives worldwide have been established to support digital literacy programs in institutions of higher learning to facilitate access to electronic resources by academicians and students. With the advent of new technology globally, most countries have adopted digital literacy projects intending to enhance the students' digital literacy skills in a learning institution. (Laanpere, 2019). Digital literacy skills among postgraduate students exhibit notable disparities between developed and developing countries, largely influenced by varying levels of technological infrastructure and educational resources.

In developed countries, postgraduate students typically benefit from widespread access to advanced digital devices and high-speed internet both on and off campus. Institutions of higher learning in these regions often integrate digital tools extensively into their teaching methods, supported by robust digital literacy programs that cover research methodologies, data analysis, and information literacy Udoh et al. (2020). Moreover, government initiatives and institutional policies prioritize digital literacy skills development, facilitating lifelong learning through continuous professional development opportunities and research support.

 In contrast, postgraduate students in developing countries encounter challenges such as limited access to reliable internet and up-to-date technology, which can hinder their digital literacy advancement for lifelong learning and research. However, efforts are underway in these regions to bridge the digital divide through capacity-building programs, partnerships with international organizations, and policies promoting the use of open educational resources (Ogolla, 2018). These measures aim to empower lifelong learning and research among postgraduate students.

Background of the study

Moi University, established in 1984, is a top-ranked public university in Kenya. It offers undergraduate and postgraduate programs and has significantly embraced ICT in financial services, library information management systems, and student accommodation. The university has improved internet and intranet connectivity on all campuses. With fifteen teaching schools and a student population of over 30,000, Moi University is committed to providing quality education.

Moi University Margaret Thatcher Library is entrusted with providing digital literacy skills to library users. Margaret Thatcher Library (MTL) is a modern, state-of-the-art library providing high-quality services to university students, academic staff, and researchers. It aims to support scientific research, quality teaching, and community service by building a qualitative collection of printed and non-printed information resources. MTL has invested in electronic resources subscriptions, information literacy education programs, digital literacy training, and a technology-based environment. With over 28 databases, MTL operates fully automated using an open-source web-based library management system called KOHA.

Digital literacy is necessary for postgraduate students to effectively use electronic resources provided by the university library. With the advancement of digital technology, postgraduates with digital literacy skills now have access to various online tools such as electronic resources, online learning platforms and digital libraries to enhance their academic experience and contribute to research. However, the majority of postgraduate students have inadequate digital literacy skills necessary to utilize electronic resources successfully, despite the fact that they are more readily available and crucial for academic achievement (Wendo, 2018; Sakwa, 2014).

This diminishes the potential benefits and payback, considering the huge investment made in the subscription of electronic resources, training, and acquisition of computer-based technologies at MTL (Moi University Library Annual Report, 2023). This is further

complicated by inadequate digital literacy skills, inadequate ICT infrastructure, limited awareness, and a lack of advocacy for the benefits of electronic resources (Abubakar & Chollom, 2017). To address this gap, it is crucial to equip postgraduate students with the necessary digital literacy skills through targeted digital literacy training programs. Enhancing these skills will enable students to effectively access and use electronic resources, thereby maximizing their academic potential and contributing to their overall success.

This article therefore is set to investigate the level and application of digital literacy skills among the postgraduate students in facilitating adequate usage of electronic resources for lifelong learning and research. Specifically, that study analyses the level and adequacy of digital literacy skills among postgraduate students and library staff. The study further investigated the adequacy and application of ICTs in facilitating access and use of electronic resources for lifelong learning and research at Moi University.

Theoretical framework

The study was underpinned by the Model of Student Digital Literacies by Beetham and Sharpe (2011).

The model explains how students in institutions of higher learning can optimally use ICTs and apply their digital literacy skills to access and utilize electronic resources that would enhance their quality of lifelong learning and Improve their research work. The model comprises four levels representing the critical digital literacy skills that a learner (herein postgraduate students) should have to effectively access electronic resources for lifelong learning and research. The model not only distinguishes between the four levels of digital literacies namely: access, skills, practices, and attributes but also articulates how they relate in a hierarchy.

At access level, the postgraduate students would be expected to demonstrate an ability to use various relevant technologies, resources, and services to access and use electronic resources. At the skills level, the students are expected to have developed essential technical, information, and communication skills necessary to access and use e-resources for lifelong learning and research. At the practices level, the students should demonstrate the ability to make informed choices about tools and strategies to use in response to individual and situational information needs. This study upholds Beetham's and Sharpe's recognition that learners (herein postgraduate students) need functional access, skills, practices, and attributes to effectively use technology (herein the digital platform and electronic resources).

The 21st century is characterized by significant technological advancements, transforming individuals' lives. Alqudah and Muradkhanli (2021) explained that the emergence of the Internet and other electronic sources of information have led to a shift from traditional methods of searching, retrieving, sharing, and disseminating information, to the use of digital methods, which depend on the use of devices and tools that are managed digitally. Therefore, postgraduate students are expected to be digitally literate, a necessity of the digital society, to effectively navigate and use electronic resources for various academic activities.

Echoing the same sentiments, Yo (2021) emphasize that postgraduate students who will effectively use electronic resources for their study, research, and other academic work must be critical and skilled users of online information resources. Electronic resources offer enormous opportunities for postgraduate students and continually exert pressure on the institutions of higher learning and their libraries to subscribe to vast databases and online resources. However, it is pertinent for postgraduate students to be digitally literate to effectively use the available resources.

Tella and Mutula (2008) explains that, students with higher computer literacy are inclined to use the computer to access and make use of various electronic resources such as online databases and research articles more readily. It, therefore, follows that only students with adequate digital literacy skills are likely to effectively use ICTs to access, retrieve, and use electronic resources (Ankrah & Atuase, 2018). Without these skills, students may struggle to fully utilize the resources available to them.

Mugera (2019) views the adequacy of information resources and ICTs facilities and skills as of paramount importance if a library is to truly serve, meet, and even exceed its users' needs and requirements. ICT infrastructure and digital literacy skills training are recognized as preceding the acquisition and provision of electronic resources since they lay the basis by which electronic resources are availed, accessed, retrieved, and utilized. It is therefore reasonable to assume that the availability of basic facilities such as enough computers, reliable internet connectivity, and ICT infrastructures inspire library users such as postgraduate students to acquire digital literacy skills for identification, selection, retrieval, access, and utilization of electronic resources.

II. METHODOLOGY

A mixed method approach was adopted in survey design. Quantitative data was collected from postgraduate students through questionnaires and qualitative data was collected from library staff through interviews. The sample size consisted of 157 respondents, including 7 library staff and 150 students. The sample consisted of 118 postgraduate students randomly sampled from 150 postgraduate students and 5 library staff purposively sampled.

A pilot study was carried out at Strathmore University Library to prevent contamination, which would occur if the same participants in the main study were included in the pilot. Questionnaires were administered to (15) postgraduate students and interview schedules to (5) library staff. The library was selected for a pilot since it subscribes to electronic resource databases, has acquired modern computer-based technologies and has a section offering digital literacy training. Qualitative data were analysed using content analysis while quantitative data were analysed using frequency distribution and cross-tabulation methods. Tables, charts, graphs, and thematic discussions were used to present data.

III. RESULTS AND DISCUSSION[1]

Out of 150 sampled postgraduate students, 118 completed and returned the questionnaires giving a 78.7% response rate, while 5 out of 7 key informants were interviewed, representing 71 % of the response rate.

Table 1: Summary of Response Rate Respondent N=157, n=123

Category	*Sample Size (N)*	*Response Rate (n)*	*Response Rate (n%)*
Postgraduates (Questionnaires)	*150*	*118*	*78.7*
Key Informants (Interviews)	*7*	*5*	*71*
Total	*157*	*123*	*75.3*

Demographic characteristics of respondents

The findings revealed that 63 (53.4%) of the postgraduate students were male while the rest 55 (46.4%) were female. It was further noted that 115 (97.5%) of the respondents were master's students, whereas 3(2.5%) were undertaking a Ph.D. program.

Level of digital literacy skills of postgraduate students and library staff

The findings generally revealed that respondents had different levels of digital literacy skills resulting in unequal access to and use of electronic resources. This was supported by 17 (14.4%) of the postgraduate students who agreed that their level of digital literacy skills was basic, while 88 (74.6%) rated their level of digital literacy skills as being intermediate and 13 (11.0%) agreed to have an advanced level of digital literacy skills as shown in figure 1 on the following page.

Findings from interviews revealed that the System librarian had advanced digital literacy skills. At the same time, the University Librarian, Deputy University Librarian and Reference Librarian rated themselves as having moderate skills and the Senior Library Assistant self-rated at basic level of digital literacy skills. This shows that most library staff had moderate digital literacy skills. A possible explanation for these results is that postgraduate students and library staff have different levels of digital literacy skills. This may imply that their ability to use ICTS to search, retrieve and use electronic resources may not be utilized as expected and supposed to be.

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[1] **Data Source:** *field data, 2023 (tables 1&2, figures 1&2)*

Figure 1: Level of digital literacy skills of postgraduate students
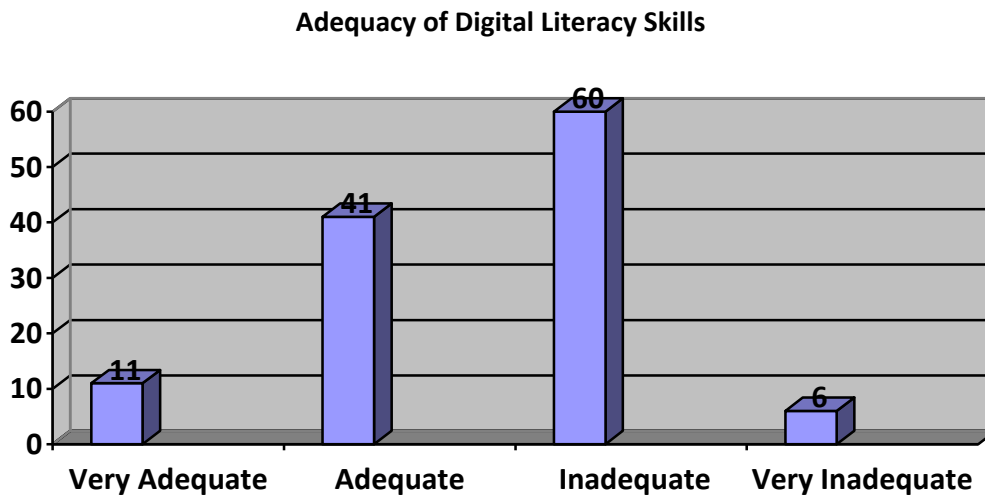
Level of Digital Literacy Skills
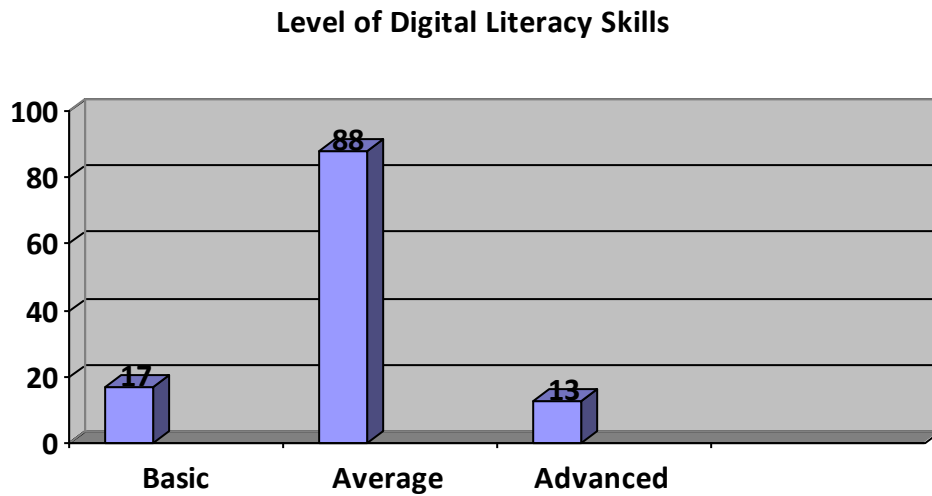
The findings seem to concur with a study done by Somers (2015) on the Use of Electronic Resources by Postgraduate Students and Academics at the Graduate School of Business and Leadership, University of KwaZulu-Natal, that found most postgraduate students and staff rated their levels of skills as intermediate resulting in inadequate and unequal utilization of electronic resources

Adequacy of Digital Literacy Skills

The study sought to find out how the postgraduate students rated their adequacy of digital literacy skills on usage of electronic resources as shown in figure 2.

Figure 2: Adequacy of Digital Literacy Skills (n=118)

Adequacy of Digital Literacy Skills

In this respect, the study revealed that most of the postgraduate students 60 (50.9%), felt that their digital literacy skills were inadequate and therefore limit their utilization of electronic resources. This may imply that their ability to search, retrieve and use electronic resources may be less utilized for scholarly and research work thus diminishing the potential, benefits and opportunities offered by electronic resources to postgraduate students.

Of the 6 (5.1%) postgraduate students who had very inadequate digital literacy skills to access and use electronic resources, the study revealed that the absence of general computer skills, difficulties using software interface as well as difficulty in developing a search strategy were part of the challenges, they were facing in their quest to use ICTs to access electronic resources. Such challenges have robbed most university students at all levels of academia the great opportunities to utilize digital literacy skills in accessing and using electronic resources revealing a gap in postgraduate students' skills, which could influence or cause low utilization, ineffective, and inefficient usage of electronic resources.

On the adequacy of digital literacy skills of library staff to assist users in accessing and using electronic resources, one University Librarian (UL) pointed out that:

> *"… inadequacy of digital literacy skills of library staff especially the library assistants limits access and utilization of electronic resources. This implies that their ability to search, retrieve, and use ICTs and electronic resources may not be maximally utilized for scholarly and research work as they are supposed to be. This situation meant a dire need for adequate digital literacy and electronic resource training programmes to up skills and reskills library staff to assist library users improve on the skills necessary to utilize online resources …"*

Abubakar and Chollom (2017) in their study titled relationship between user education, computer literacy and information and communication technology accessibility and use of electronic resources by postgraduate students in Nigerian Universities' libraries' that reveal that postgraduate students with adequate digital literacy skills may use the library environment with computers, ICTs and electronic resources at ease, while those with inadequate digital literacy skills may find it challenging to utilize electronic resources

Application of ICT and digital literacy skills in facilitating access and use of electronic resources

The application of ICT and digital literacy skills in access and use of electronic resources holds the most significant promise in teaching, learning, and research by digitally literate and skilled students and teaching staff. The findings seems to suggest that postgraduate students agreed to the fact that application of ICTs and digital literacy skills to a large extent facilitate adequate access and use of electronic resources, enhanced online searching, retrieval and discovery of information, online communication and learning opportunities, remote access to electronic resources, downloading and saving of online information by postgraduate students and would assist them in carrying out their academic task with ease.

All the key informants, 5 (100%), collectively stated that the use of ICTs and application of digital literacy skills supports and provides access to electronic resources to postgraduate students in writing articles, assignments, thesis writing and research work, online searching, retrieval, online communication and learning. Based on the results, it is clear that with availability of ICT facilities in MTL, postgraduate students who are digitally literate could find it easy to apply and utilize ICTs to search access and use electronic resources to satisfy their information needs.

This is in agreement with the assertions by Omosekejimi et al., (2018) in a study titled "ICT and digital literacy skills: a mechanism for efficient teaching in Nigerian Colleges of Education" which revealed that the majority of the respondents agreed with the fact that the use of ICT and application of digital literacy skills in teaching and learning has been reported to a very large extent facilitates adequate access to use of electronic resources to students at an institution of higher learning and resulted in many learning benefits

Adequacy of the available ICT facilities in the library

The study sought to determine the adequacy of the available ICT facilities in supporting the acquisition of digital literacy skills necessary for accessing and using electronic resources as shown in Table 2 on the following page.

Table 2: Adequacy of the available ICT facilities and electronic resources subscribed by library (n=118)

Adequacy of ICT facilities	Frequency	Percentage (%)
Very adequate	9	7.6
Adequate	37	31.4
Inadequate	54	45.8
Very inadequate	18	15.2
Total	118	100

The results revealed that 54(45.8%) of the respondents stated that the ICT facilities were inadequate, while 37(31.4%) felt that they were adequate, followed by 18(15.2%) who indicated that they were very inadequate, and finally 9(7.6%) of postgraduate students stated that the ICT facilities were very adequate.

The overall findings show that most respondents stated that ICT facilities were inadequate, resulting in unequal access and limited access to and utilization of electronic resources. These findings are in tandem with the findings from the interviews with the University Librarian and Systems Librarian, pointing out that ICT facilities in Moi University Library were inadequate and not enough for usage by all the users considering the growing population of students every academic year. Mugera (2019) noted that availability of ICT facilities in Kenya University Libraries reveal that ICTs facilities are not adequate in number for effective digital library operation and further asserted that their insufficient number and unavailability of some ICT facilities, such as the Internet, teleconferencing, digital scanners, and online information sources are the main problem and hindrances facing the use of digital literacy skills in universities libraries and Colleges in Kenya.

IV. CONCLUSION

The study found that postgraduate students at MTL have inadequate digital literacy skills, limiting their access to electronic resources for lifelong learning and research. Despite the belief that ICTs and digital literacy facilitate adequate utilization of electronic resources, the study found that ICT facilities were inadequate for usage by all the users resulting in unequal access and limited utilization of electronic resources.

The findings of this study can serve as a benchmark for assessing the effectiveness of the current level of students, lecturers, and library staff digital literacy skills in the usage of ICT facilities to adequately utilize electronic resources and initiatives, allowing librarians to evaluate and improve their programs over time. These findings may also highlight the necessity of enhancing digital literacy training programs policy to better address the needs identified among library staff and postgraduates. Librarians should use these findings to refine existing training initiatives. Librarians need to subscribe to current electronic resource databases and invest in new technologies or enhance existing resources to better meet the needs of postgraduate students. The findings also underscore the importance of continuous professional development for librarians to stay current with emerging digital tools and trends, enabling them to provide relevant support to library users and significantly enhancing their support for effective use of electronic resources for lifelong learning and research.

V. RECOMMENDATION

The study recommend that Universities should integrate comprehensive digital literacy programs into the postgraduate curricula and develop course modules tailored to equip students with essential digital literacy skills for academic and research activities. Adequate financial resources should be allocated to libraries to facilitating the development and implementation of training programs focused on digital literacy enhancement. Moreover, the ICT Department should prioritize improvement and upgrading of ICT infrastructure. Finally, the library should spearhead advocacy campaigns to increase awareness and usage of electronic resources. This effort includes conducting outreach programs and information sessions to inform students and lecturers about the electronic resources available to support their lifelong learning and research.

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