The Role of Information Searching Proficiency in Shaping E-Resource Utilization among Graduate Students in Christian Universities: A Nairobi County Perspective

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Abstract

The global shift to virtual libraries and widespread e-learning in tertiary institutions has notably increased electronic resource adoption in university libraries and information centers. To optimize e-resources use, the proficiency to effectively search for information remains a crucial factor in facilitating the research, learning, and scholarly accomplishments of graduate students. However, empirical investigations indicate that e-resources continue to experience suboptimal utilization. This study examined how the proficiency to search for information impacted the utilization of e-resources by graduate students in Christian universities in Nairobi County. The descriptive survey research design was used. The target population comprised 843 graduate students and 8 librarians. A 20% sample was taken for graduate students, resulting in 168 graduate students being selected using a stratified and systematic technique. All librarians were purposively picked for this study. Data was collected through the administration of questionnaires and interviews. Qualitative data underwent thematic analysis and thematic presentation. The quantitative data, which was presented using tables, was analyzed using measures such as mean, frequencies, standard deviation, percentages, linear regression, and Pearson correlation. The findings indicated that graduate students demonstrated a high level of familiarity with search databases. Additionally, they exhibited considerable expertise in formulating search strategies and proficiently applying various search techniques. Furthermore, the findings revealed a positive association between searching for information and the utilization of e-resources. The results of the regression analysis confirmed that the proficiency to search for information significantly predicts 81.9% of the variation in the utilization of e-resources. The study concluded that the proficiency to search for information significantly shapes e-resource utilization among graduate students in Christian Universities. The study recommends prioritizing information retrieval training, enhancing the acquisition of e-resources, involving librarians in pedagogy, incorporating and evaluating Information Literacy (IL) courses into the curriculum, and facilitating academic and professional development.

1.0 Introduction

In the age of the pandemic, where normalcy was disrupted worldwide, tertiary education institutions sought to integrate innovative technologies to sustain their mandate of teaching, learning, and research. This integration led to the emergence of online learning, also known as e-learning. Academic libraries, which serve as hubs for information and knowledge within institutions, embraced the virtual environment by not only revamping their services and mandates but also adapting their policies to remain efficient in their operations (Abdillahi, 2020; Asif & Singh, 2020). Consequently, there was a stronger inclination towards acquiring e-resources over resources in print form in the era of virtual libraries that preceded the rise of e-learning. The influx and proliferation of e-resources can be attributed to the characteristics and advantages they offer over print media. These advantages include accessibility by multiple users from any location at any time, as well as the capacity to store vast amounts of information (Kenchakkanavar, 2014).

E-resources have taken on various formats since their inception, gradually advancing into more reliable, accessible and secure formats for the modern age. Pandit (2019) categorizes e-resources into two distinct types: online and offline e-resources. Online e-resources are accessible only through an internet connection, unlike offline resources. These resources are classified as either digital or digitized resources. Digital resources are originally created in a digital format, whereas digitized resources have been converted from their original format through digitization. In recent times, the evolution of e-resources has gravitated towards digital resources, incorporating innovative complexities and features that render the primal versions of e-resources (offline e-resources) obsolete. This transition is supported by the significant growth of library consortia, which strategically leverage their collective resources to acquire proprietary electronic resources and promote the development of open-access electronic resources. This trend is especially evident when comparing the adoption of these digital resources to the declining usage of physical formats like CD/DVDs. The primary beneficiaries of these digital resources are the digital natives, who constitute the predominant user group within modern library settings (Chadwell, 2011; Chanda, 2020).

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Globally, in developed countries like the USA, university libraries have redefined their collection management policies to accommodate digital e-resources in complement to the digitized ones. According to Mehta and Wang (2020), Bridgewater State University's library provides over 205

electronic databases in an array of multi-disciplinaries for its users, who are primarily registered for distance learning. The University library allocates a substantial portion of its budget in the acquisition of e-resources that are in form of films, e-books, videos on stream and proprietary databases. Moreover, the library offers a dynamic, interactive user-friendly webpage that provides access to e-resources beyond the geographic boundaries of the institution through the off-campus platform. In addition, the library has configured Google Scholar in a bid to enhance user access and discovery of subscribed e-resources including open access resources under a virtual commons. Nevertheless, Mehta and Wang (2020) report that users face challenges in locating the resources they need across the array of library search platforms.

The study of e-resources is essential not only in advanced nations but also in developing countries across the continent. Research conducted in India emphasizes the significance of e-resources as complementary to print media in tertiary education. Findings reveal that users utilize e-resources to study course materials, gain knowledge, stay updated with current information, and develop research papers (Jogan, 2015; Sateesh et al., 2015). Unlike in developed countries where off-campus access platforms are vibrant, the findings reveal that very few users in developing countries use e-resources from home.

Nonetheless, Sateesh et al. (2015) moot that there is high awareness of e-resources among the user clientele, with the majority of them being the younger generation. According to Jogan (2015), the choice of e-resources could be pertinent to their features that include saving time, being accessible from anywhere and not having to visit the library. Moreover, regional studies conducted in Africa show that users are highly aware of e-resources, understand their advantages, and recognize the integral role university libraries play in providing access to them (Adeniran, 2013; Agyapong et al., 2019). Nonetheless, findings reveal that among the most frequently used e-resources are the CD-ROM, an offline electronic resource that has since been overtaken by time. Other impediments that faced e-resources usage include inadequate access to internet, inadequate computers and inadequate IL skills.

The utilization of e-resources among graduate students in Christian Universities in Nairobi County, Kenya, was the subject of this paper. Christian Universities make up a sect of accredited private universities run by either religious institutions or groups. These universities serve not only Kenyan students but also a diverse range of nationalities. The selected Christian Universities for this study include African International University (AIU), Catholic University of Eastern Africa (CUEA), Daystar University and Kenya Methodist University (KeMU).

The selected universities being accredited Universities offer both undergraduate and graduate programs, and boast of automated modern library infrastructure with adept ICT technology that facilitates access to an array of e-resources. In addition, the University

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libraries are all KLISC members, which is the national consortium responsible for facilitating access to proprietary e-resources. In addition, through their institutional library web pages, users have access to a variety of other e-resources including grey literature on institutional repositories. Nevertheless, despite the infrastructure and access, statistics and reports derived from usage statistics confirm Amunga (2011) claim that e-resources remain underutilized. This research aims to address this gap.

Purpose of the Study

The aim of this research was to examine how the proficiency to search for information impacted graduate students utilization of e-resources in Christian universities in Nairobi County.

Hypothesis of the Study

H_0: The proficiency to search for information does not significantly affect the utilization of e-resources by graduate students in Christian universities in Nairobi County.

2.0 Materials and Methods

The study adopted a mixed method approach and employed a descriptive survey design which is ideal for collecting data with sufficient precision and allows analyses of data through descriptive statistical analyses. The target population was 843 graduate students and 8 library staff from the four Christian universities namely: CUEA, Daystar University, KeMU and AIU. A 20% sample of graduate students, totaling 168 participants, was taken.

This sampling percentage is supported by Singh (2017), who suggests that a range of 10% to 30% can be representative of the whole population. Additionally, all 8 librarians participated in the study. The graduate students were stratified into two groups: those pursuing a master's degree and those pursuing a doctorate degree. The selection process involved systematic sampling, where every fifth student was chosen after the first participant was randomly selected. As for the librarians, they were purposively selected to participate in this study.

Data was collected from graduate students through questionnaires that were sent via email. Interviewing was done for the librarians. Pretesting was conducted at Tangaza University College involving 38 participants to enhance the reliability of the instruments. Construct and content validity were also ascertained by IS experts. Further, internal consistency of data was assessed via Cronbach's Alpha. The quantitative data underwent a comprehensive descriptive statistical analysis, encompassing measures such as mean, frequencies, percentages, and standard deviation testing.

Moreover, to draw meaningful inferences, advanced inferential statistics were employed, incorporating correlation and linear regression analysis. Conversely, the qualitative data was subjected to transcription, followed by a rigorous coding process to categorize the information into distinct thematic clusters. These thematic clusters were then subjected to thorough analysis to derive valuable insights and

interpretations. Throughout the research process, strict adherence to ethical considerations was upheld, ensuring the protection of participants' rights, privacy, and confidentiality.

Table 1

Reliability Statistics

Variable	Cronbach's Alpha	N of Items
Search for information (X_1)	0.870	24

The results on Table 1 revealed a Cronbach's Alpha coefficient of 0.87. According to Mohajan (2017) a correlation coefficient above 0.7 indicates dependable data and is considered worthwhile, thus supporting the reliability of the data.

Response Rate

The study aimed at collecting data through 168 questionnaires and 8 interviews targeting graduate students and librarians respectively. Out of 168 questionnaires sent via email, only 126 were duly filled and reverted, resulting in a 75% response rate. Nevertheless, the researcher successfully conducted all 8 scheduled interviews with the librarians, achieving a 100% response rate. According to Mugenda and Mugenda (2019),

3.0 Results and Discussions

The internal consistency of the data was assessed using Cronbach's Alpha and the results are presented in Table 1.

a response rate of 60% can be deemed sufficient for conducting analysis and presenting findings.

Results for Searching for Information and Utilization of E-resources

This study examined how the proficiency to search for information impacted the utilization of e-resources among graduate students in Christian Universities in Nairobi County. The first part assessed graduate students knowledge of search databases using a 5-level Likert scale coded 1-5 whereby 1 represented "Very Poor", 2 denoted "Poor", 3 indicated "Moderately Agree, 4 stood for "Good" and 5 represented "Excellent". Table 2 outlines the results of the descriptive statistics.

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Table 2

Results on Knowledge of Search Databases

Knowledge of search databases (N = 126)	1	2	3	4	5	Mean	STD Dev
JSTOR	6 (4.8%)	11 (8.7%)	45 (35.7%)	39 (31%)	25 (19.8%)	3.52	1.056
SAGE	14 (11.1%)	4 (3.2%)	40 (31.7%)	38 (30.2%)	30 (23.8%)	3.52	1.211
Google Books	6 (4.8%)	10 (7.9%)	38 (30.2%)	41 (32.5%)	31 (24.6%)	3.64	1.084
Google Scholar	10 (7.9%)	9 (7.1%)	40 (31.7%)	31 (24.6%)	36 (28.6%)	3.59	1.202
ProQuest	6 (4.8%)	11 (8.7%)	33 (26.2%)	32 (25.4%)	44 (34.9%)	3.77	1.160
Institutional Repositories	4 (3.2%)	8 (6.3%)	39 (31%)	47 (37.3%)	28 (22.2%)	3.69	0.992
OPAC	8 (6.3%)	11 (8.7)	27 (21.4%)	36 (28.6%)	44 (34.9%)	3.77	1.201
DOAJ	10 (7.9%)	5 (4%)	35 (27.8%)	34 (27%)	42 (33.3%)	3.74	1.195
Aggregate mean						3.65	1.138

Table 2 shows that a significant proportion of respondents demonstrated great conversance with the diverse array of search databases, with an aggregate mean of 3.65 and standard deviation of 1.138. The respondents expressed having good knowledge of the following top 4 search databases: OPAC (80, 63.5%, m=3.77, SD=1.201); ProQuest (76, 60.3%, m=3.77, SD=1.160); DOAJ (76, 60.3%, m=3.74, SD-1.195); and institutional repositories (75, 59.5%, m=3.69, SD=0.992). This implied that graduate students possessed comprehensive and extensive knowledge of the databases available to them. In addition, having institutional repositories, DOAJ, Google Books and Google Scholar above JSTOR and SAGE databases confirms and supports Chanda (2020) assertion that there is high-level awareness of open access e-resources among students and research scholars. This further refutes Adeleke and Emeahara (2016) assertion that attributed low usage to lack of knowledge and awareness of e-resource databases.

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The second part examined the ability of graduate students to formulate a search strategy. A 5-level Likert scale coded 1-5 whereby 1 represented "Very Poor", 2

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denoted "Poor", 3 indicated "Moderately Agree, 4 stood for "Good" and 5 represented "Excellent" was used to rate graduate students agreement with the statements posed. The results are outlined in Table 3

Table 3

Results on Formulation of Strategy

Formulate search strategy (N = 126)	1	2	3	4	5	Mean	STD Dev
I can formulate a question for research	5 (4%)	8 (6.3%)	33 (26.2%)	36 (28.6%)	44 (34.9%)	3.84	1.098
I am capable of generating key concepts	5 (4%)	13 (10.3%)	34 (27%)	49 (38.9%)	25 (19.8%)	3.60	1.044
I can draft a logical search sequence	8 (6.3%)	7 (5.6%)	43 (34.1%)	44 (34.9%)	24 (19%)	3.55	1.063
I can derive related terms, synonyms, acronyms and alternative ways of ordering words	10 (7.9%)	4 (3.2%)	37 (29.4%)	23 (18.3%)	52 (41.3%)	3.82	1.235
I am capable of mapping my concepts into a strategy	13 (10.3%)	3 (2.4%)	39 (31%)	44 (34.9%)	27 (21.4%)	3.55	1.163
I can effectively execute a search query repeatedly	12 (9.5%)	4 (3.2%)	31 (24.6%)	48 (38.1%)	31 (24.6%)	3.65	1.168
Aggregate mean						3.67	1.129

Table 3 shows that a considerable proportion of the participants with an average score of 3.67 and a standard deviation of 1.123 expressed agreement with statements posed in regard to formulation of a search strategy. The top three statements that graduate students agreed with were: I can formulate a question for research (80, 63.5%, m=3.84, SD=1.098); I can derive related terms, synonyms, acronyms and alternative ways of ordering words (75, 59.6%, m=3.65, SD=1.235); and I can effectively execute a

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search strategy repeatedly (79, 62.7%, m=3.65, SD=1.168). This suggests that graduate students have the capability to proficiently create search strategies, as they possess the skills to formulate research questions, identify relevant terms or keywords, and execute search queries repeatedly and effectively. This observation aligns with the results of a study carried out by Adeleke and Emeahara (2016), which reported that 75.4% of the respondents rated

their ability to develop successful search strategies as high.

The third part assessed the searching techniques of graduate students via a 5-level Likert scale coded 1-5 whereby 1 represented "Very Poor", 2 denoted "Poor", 3 indicated "Moderately Agree, 4 stood for "Good" and 5 represented "Excellent". The searching techniques examined were as follows: Boolean operators, wildcard, truncation, keywords and phrase searching. The results are highlighted in Table

Table 4

Results on Searching Techniques

Searching techniques (N = 126)	1	2	3	4	5	Mean	STD Dev
Boolean operators	8 (6.3%)	8 (6.3%)	34 (27%)	35 (27.8%)	41 (32.5%)	3.74	1.167
Wildcard	8 (6.3%)	10 (7.9%)	32 (25.4%)	48 (38.1%)	28 (22.2%)	3.62	1.109
Truncation	10 (7.9%)	10 (7.9%)	23 (18.3%)	47 (37.3%)	36 (28.6%)	3.71	1.194
Keywords	7 (5.6%)	9 (7.1%)	31 (24.6%)	35 (27.8%)	44 (34.9%)	3.79	1.161
Phrase searching	8 (6.3%)	7 (5.6%)	36 (28.5%)	29 (23%)	46 (36.5%)	3.78	1.186
Aggregate mean						3.73	1.163

Table 4 shows that the participants possessed an aggregate mean of 3.73 and a standard deviation of 1.163, exhibiting great conversance with the searching techniques. The graduate students showed the most conversance with use of keywords (79, 62.7%, m=3.79, SD=1.161); followed by

phrase searching (75, 59.5%, m=3.78, SD=1.186); ensued by Boolean operators (76, 60.3%, m=3.74, SD=1.167); then truncation (83, 65.9%, m=3.71, SD=1.194); and wildcard (76, 60.3%, m=3.62, SD=1.109). This implied that graduate students were well-versed about the

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application of searching techniques like use of keywords, phrase searching, Boolean operators, truncation and wildcard. This confirms the assertion by Joshua (2014) that providing information retrieval training with a focus on search techniques is essential for equipping users with effective search competencies. Furthermore, it supports an assertion by Shoeb (2021) that familiarity with search techniques and strategies positively influences students' perception of research practices.

To triangulate the data, the systems librarians interviewed were asked to describe the abilities of graduate students to search for information. Systems librarian-02 noted *"Initially their abilities to search for information is poor thus the necessity for training at earlier stages of their academic work is vital."* Systems librarian-01 added *"The reference librarian in collaboration with the university librarian train graduate students on how to effectively search for e-resources."*

The University librarians' were interviewed and asked to give their views on the abilities of graduate students to search for information. University librarian-03 stated *"We have specialized trainings, ensuring every new cohort of PhD students has a session. We take them through skills to search for information. They get surprised when I*

teach them how to use google for academics." University librarian-02 added *"In order to improve their searching abilities effectively there's need to structure an examinable IL course, taught by librarians."*

These findings highlight the crucial role of information search skills for graduate students in effectively utilizing electronic resources. Graduate students engage in research writing for seminars and conferences, and possessing awareness of appropriate search databases, search competency formulation, and search techniques is integral to their academic and professional development. Thus, Shoeb's emphasis on the significance of search competencies for graduates, as a pivotal element in their capacity as researchers, is confirmed in this context (Shoeb, 2021).

Test for Hypothesis

This study was guided by a null hypothesis, denoted as H_0, which posited that the proficiency in information search does not have a significant impact on the utilization of e-resources in Christian Universities located in Nairobi. The researcher used the Pearson correlation measure to evaluate the connection and direction between the variables. The outcomes of this univariate correlation analysis are available in Table 5.

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Table 5

Correlation analysis between searching for information and utilization of e-resources

		E-resources Utilization
Utilization of E-resources	Pearson Correlation	1
	Sig. (2-tailed)	.000
	N	126
Searching for information proficiency	Pearson Correlation	.940**
	Sig. (2-tailed)	.000
	N	126

The results in Table 5 indicate r=.940** and a P value of 0.000. This implies there is a significant strong linear positive association between searching for information and utilization of e-resources. Consequently, We reject the null hypothesis and establish a noteworthy and positive correlation between the information search proficiency and the utilization of electronic resources among graduate students in Christian universities in
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Nairobi County. The positive correlation implies that an improvement in the ability to search for information leads to an increase in the use of e-resources by these students.

Moreover, an analysis of linear regression was done to assess the impact that proficiency to search for information has on the utilization of e-resources. Table 6, Table 7 and Table 8 present the results of the analysis

Table 6

Proficiency to search for information and utilization of e-resources: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
	.905ᵃ	.819	.818	.43336	1.671

From Table 6, it is evident that the proficiency to search for information accounts for 81.9% of the overall variance in the use of e-resources by graduate students. These findings support the revelations in Table 5 that indicate a positive and significant

association between the proficiency to search for information and utilization of e-resources. Moreover, the Durbin-Watson of 1.671 imply the absence of significant self-correlation in the residuals, indicating a favorable fit of the model to the data.

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Table 7

Proficiency to search for information and utilization of e-resources: Anova Model

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	105.597	1	105.597	562.286	.000b
	Residual	23.287	124	.188		
	Total	128.884	125			

The ANOVA model, as presented in Table 4.7, demonstrates a significant association between the predictor variables and the dependent variable, indicated by a high F-value of 562.286 with 4 degrees of freedom (df = N-1). The corresponding P value is less than 0.001, providing strong evidence of the model's validity at this level of significance. This suggests that the independent variable (proficiency to search for information) has a significant impact on the predictor variable (e-resources use/ utilization) among graduate students in Christian universities in Nairobi County.

Table 8

Regression model

Model		Unstandardized Coefficients		T	Sig.	Collinearity Statistics	
		B	Std. Error			Tolerance	VIF
1	(Constant)	.121	.156	.775	.440		
	Searching for information	.975	.041	23.713	.000	1.000	1.000

The regression model's coefficients representing the proficiency to search for information exhibit a VIF value of 1.000, suggesting the absence of any multicollinearity issue between the two variables. This indicates that the regression model was well-suited for data analysis and interpretations. When constructing the regression model, unstandardized B-coefficients were utilized instead of beta coefficients due to all items defining the proficiency to search for information having similar Likert scales. Additionally, it's worth noting that the constant value in the model was found to be statistically significant.

This study suggests that Christian universities, which provide graduate students with the necessary skillset for efficient information searching, will experience a rise in e-resources use. These revelations

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underscore the crucial importance of developing information search proficiency among graduate students to enhance their utilization of e-resources.

4.0 Conclusion

Based on the study's findings, a significant positive linear association exists between graduate students' search skills and their utilization of e-resources in faith-based universities in Nairobi County. The null hypothesis, indicating no connection between search skills and e-resource utilization, is rejected due to the strong positive coefficient of 0.940 and a low P-value of 0.000, indicating high statistical significance. Students with search competencies demonstrate improved access to and utilization of e-resources, which is crucial for their academic and research growth. The study suggests specialized training and an evaluated Information Literacy (IL) course to enhance students' search proficiencies, affirming the importance of information retrieval training with a focus on searching techniques. Furthermore, input from University librarians and systems librarians' underscores the significance of information searching skills for graduate research.

5.0 Recommendation

Christian universities in Nairobi County should prioritize investing in information retrieval training, focusing on searching techniques to provide graduate students with advanced searching competencies. This strategic investment will significantly enhance their proficiency in utilizing e-resources, as evidenced by the robust positive correlation between students' information search capabilities and their e-resource utilization. To accomplish this, the university administration should actively involve librarians in delivering specialized training, incorporating an evaluated Information Literacy (IL) course to further bolster students search competencies. This approach is crucial in facilitating their academic and professional development as researchers.

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