



**A STUDY ON THE EFFECTS OF STUDENTS INFORMATION
RETRIEVAL SKILLS ON SCHOLARLY INFORMATION
MANAGEMENT AMONG POST GRADUATE STUDENTS
IN KIAMBU COUNTY, KENYA**

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Abstract:

With the rapid growth of information, the ability of students to be information literate has become critically important. However students information retrieval skills required for scholarly information management are still wanting as most papers written by postgraduate learners contain irrelevant information that are not related to their study topics. This study investigated the effects of students' information retrieval skills on scholarly information management among post graduate students in Kiambu County Kenya. The study adopted information management theory as it showed that information literacy practices influence scholarly information management. A mixed methodology with concurrent triangulation design was used to conduct the research as it allowed the researcher to collect and analyse qualitative and quantitative data concurrently. Generalization was made based on findings generated from the collected data. The study had a target of 2451 which included 40 librarians, 40 supervisors, and 249 postgraduate students. The study participants were selected through purposive and simple random procedures. The sample population included 245 postgraduate students from 4 selected Universities and 4 library staff from each of the selected universities. Data was collected using self-administered questionnaires for students and interview schedule for librarians. Pilot testing ensured certainty of instruments, the retest method helped estimate reliability ($r=0.70$) to ensure that data gathered were accurate and reliable and the instruments were validated by seeking constant guidance of the supervisor. To achieve all the study objectives, both qualitative and quantitative data were gathered and analyzed to generate descriptive, inferential as well as qualitatively. Quantitative data collected was analyzed using SPSS version 21. Both descriptive and

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inferential statistics were used in analyzing quantitative data while thematic analysis was used to analyze qualitative data. The analyzed quantitative data were presented using Tables. The study findings indicated that postgraduate students' information retrieval skills normally had positive effects on the students' scholarly information management. The results further revealed that there exists a statistical significant relationship between the independent variables and the dependent variable investigated.

Keywords: information literacy retrieval skills and scholarly information management

1. Introduction

Taylor and Procter (2005) define information seeking/retrieval as the ability to efficiently scan literature using manual or computerized methods, in order to identify a set of useful articles and books. According to Ikoja-Odongo and Ocholla (2004), seeking and or retrieving information is the process where an individual goes about searching for information, which is a process that requires the information seeker to apply personal knowledge, skill or personal information infrastructure to solve a problem. Aina, in Nkomo, Ocholla and Jacobs (2011), suggests that information seeking skills depends on user education, access to a library, and the length of time devoted to seeking information by the user.

Tackie and Adams (2007) revealed that literature on information seeking skills acknowledges that mechanisms related to information seeking are different from everyday information seeking. Ossai (2011) studied how law students utilize information resources in the law library. She submits that most of the law students claim to heavily use library resources in the course of their academic programs. But the result of Ossai's study reveals that most of the law students have difficulty in locating and identifying suitable library information sources for case law, legislation and journal articles. Ossai submits that 'law' students should be assisted to frequently utilize library facilities. Khan and Bhatti (2011) studied the information seeking behaviour of legal practitioners. The survey reveals that most of the respondents claim that ICT made their information seeking process easier, while a few of the respondents rate their information retrieval skill as poor.

Thanuskodi (2009) studied the information seeking skills of the law faculty at Central Law College, Salem. The study reveals that the respondents use ICT-based library sources and facilities less frequently compared with printed sources, which might be due to a lack of awareness about their availability, improper selection of materials, or unfamiliarity with the products. Based on a Web survey of undergraduate students, Dilevko and Gottlieb (2002) found students normally began their information search process by using electronic resources; however, printed resources were essential resources for their tasks. About one third of the undergraduates preferred to use print journals to e-journals. Kim and Sin (2007) presented similar results: Web search engines, Web sites, books, online databases and journals, OPACs, friends/family members,

printed journals, reference materials, and librarians were the information sources that undergraduates selected based on their frequency of use.

Tuhnmwire and Okello-Obura (2010) assert that law sections in Nigerian 'public' university libraries subscribe to various law databases for legal research. Some of the databases include: Lexis-Nexis, Westlaw, Legalpedia, Compulaw and Ebscohost, law journals, law reports, and others text resources. The users of law libraries (i.e. law lecturers, students and legal practitioners) agree that the availability of databases in libraries has made their research work easier and more interesting. Monitoring and evaluation of the electronic resources available in academic institutions in Kenya showed a deplorable state of affairs. Many universities did not have functioning electronic information resources. Instances of high student populations outstripping the supply of the availed resources were equally cited. This exposed the students to highly constrained facilities and failure to have optimum access of the required scholarly information (Ratanya, 2013). It inhibited the capacity to effectively carry out research and accomplish the essence of post graduate programs which is contributing to the body of knowledge in the disciplines students are undertaking studies. It is against this background that the study assessed the effects of students' information retrieval skills on scholarly information management among post graduate students in Kenya.

1.2 Statement of the Problem

Information retrieval skills are perhaps the most important information literacy practice required for scholarly information management amongst postgraduate learners around the world. However, supervisors have struggled with passing students thesis or project papers since time immemorial since these learners end up using materials that are not relevant to their chosen topics at all. This shows that these learners are still unable to retrieve information that they need to write a professional paper that can pass scholarly scrutiny. The current study addressed this by assessing the effects of students' information retrieval skills on scholarly information management among postgraduate students in Kenya.

1.3 Purpose of the Study

The purpose of this study was to conduct a study on the effects of students' information retrieval skills on scholarly information management among post graduate students in Kenya.

1.4 Objectives of the Study

To determine how students information retrieval skills affects scholarly information management among postgraduate students.

1.5 Research Hypothesis

H01: There is no relationship between student's information retrieval skills and scholarly information management among postgraduate students.

1.6 Significance of the Study

Findings of this study are beneficial for postgraduate learners as it highlights their strengths and weaknesses in regards to information retrieval skills and SIM hence may enable them to find ways of improving these skills. Education stakeholders will be able to use the findings to upgrade their curriculum on scholarly management among postgraduate learners giving special attention to information retrieval skills.

2. Literature Review

2.1 Scholarly Information Management

Information literacy is arguably an important skill required by students to have a solid grounding in information problem solving, which is the application of information literacy skills (Partnership for 21st century skills, 2009). Students in the Arabian Gulf region and the world over are faced with temptations to plagiarize wittingly or unwittingly due to the multitude of free and easily available electronic sources of information. Rather than developing independent learning skills and academic integrity, students sometimes opt to use companies seeking to make quick money from the inexperienced by offering readymade essays for purchase. Lancaster and Clarke (2009) report that some students contract or outsource work through social networking sites, and have friends or fellow students do the work in the form of contract cheating. Studies have confirmed that academic dishonesty is a serious challenge facing institutions in the region, and working in English as a second language is often cited as a contributing factor to students' plagiarizing (Menai, 2012).

McCabe et al. (2008) in their study on academic honesty in Lebanon found that most students admitted to participating in academic dishonesty as they plagiarize in one form or another. McCabe's (2009) study of three federal institutions of higher learning in the UAE reported that about 40 percent of students consider cutting and pasting information from the Internet either as not academic dishonesty or as minor cheating (Gulf News 2008). A study by Reza-Khan reported in Gulf News (2012) also found the majority of students plagiarize that is 78% admitted to involvement in some form of e-cheating, using electronic resources or the Internet, be it in classroom or outside classroom. Previous studies report widely varying percentages of cheating prevalence (Ercegovac & Richardson, 2004; Lathrop & Foss, 2000).

Another survey of college student attitudes towards Internet plagiarism reveal that nearly 90 percent (of 698 students at nine universities) agree that copying and pasting text from Internet or traditional sources without proper citation is wrong, but close to 25 percent admit having used Internet sources in this manner anyway (Scanlon & Neumann, 2002). This same study found that students perceived their peers to be guilty of copying and pasting text from Internet sources at a much higher rate (almost 88 percent). In a 2005 survey of undergraduate students at Penn State, 28 percent of respondents reported their belief that plagiarism occurs in many courses, while 14 percent said they knew at least one person who had plagiarized a paper (Penn State Information Technology Services, 2005).

2.2 Student Information Retrieval Skills and Scholarly Information Management

Information is regularly sought differently by different individuals and institutions of higher learning, learners show different behaviors in their search for information need for their academics. Earp, (2008) observes that currently, many students begin their research process through the Internet. They further note that the contemporary student search for information on the Internet employing the search techniques of the recreational browser rather than the serious inquirer. Brennan et al. (2002) in their study adopted a qualitative focus in order to explore the habits of early adopters of electronic journals at the University of Illinois at Chicago. Their results showed that academicians visited the library less often and read more on the Internet than in the print era across a broader number of journals. The study also showed that most participants reported using generic databases while a few relied on smaller discipline-specific databases. Similarly, Davis (2004) reached a similar conclusion as he found that, although the most of the information referrals in students works came from established tools such as library catalogues, library e-journal lists and bibliographic databases most of them originated from generic web searches, mainly Google.

Nicholas, Huntington and Watkinson, (2005a) in their study characterized the behavior of most users as that of individuals who either obtain what they want or leave after a brief visit. They also found a very little use of added-value functionalities such as search engine, profiling, email requests for articles and pop-ups (Nicholas et al., 2006a). Another analysis of journal usage on Ohio LINK by Nicholas et al. (2006b) showed that there was an immense popularity of the search engine among users compared with alphabetic or subject lists of journals. Nicholas, Huntington and Jamali, (2007) further revealed that academicians widely accepted e-resources as a means of identifying relevant literature. Further research by Nicholas et al. (2008) showed a great deal of varieties among scholars in their full-text viewing habits where a large proportion of views were highly cursory in nature, and articles were considered for very short times.

Reviewing literature on electronic journal users' behavior, Rowlands, (2007) observed that scientists read more and more primary journal materials from a wider range of sources, but they spent less time per article reading and used fewer specialist secondary services. They also note that among University student writing their thesis and projects, electronic version have rapidly displaced print journals, with convenience and digital visibility being critical factors in the new information landscape. A study among academic staff at Catalan universities by Borrego et al. (2007a), showed that there was a high level of familiarity with, and extensive use of, electronic journals among academics. However, this behavior was highly dependent on age and discipline, with younger scholars and those working in sciences being the most active users.

Umbur, (2008) in his study on the information generation and seeking behavior of some academics in two universities noted that researchers used journals mostly as a source of information. In a study carried out in India by Khaiser and Madhu, (2006) the expectations and perceptions of the users of the national law school of India University library (NLSIU) the authors ascertained that 88% of information users visited the library

daily, however faculty members were not regular library visitors. A study by Naushad and Hasan, (2006) among teachers on their access to the library and information services at Aligarh Muslim University library showed that most of the users were visiting library to collect teaching material and borrow books, while approximately 14% teachers visited for research purpose.

In their research, Gowda and Shivalingaiah (2009) investigated the attitude of research scholars towards electronic information resources in the University Libraries in Karnataka to examine the preference of research students towards print and electronic resources and effectiveness of usage of e-resources among users. Through their study, the authors showed that 58.12% of the users indicated preferred using print resources over electronic resources. The use of print resources was found to be influenced by the nature of resources available in libraries while usage of electronic resources depended upon the type of IT infrastructure available in libraries. On the other hand, Chowdappa et al. (2009) while studying the impact of electronic information sources on the academic users in Mysore city the authors revealed that information users depended upon the electronic/digital media more.

2.2 Theoretical Literature

2.2.1 Scholarly Information Management Activities and Primitives Theory

The theory of interest for the study is the scholarly information management activities and primitive's theory as advanced by Carole, Lauren, Tefteau and Carrie in 2009. As Unsworth (2000) discussed scholarly primitives are basic functions common to scholarly activity across disciplines. He clarified the concept with a list of primitives which include discovering, annotating, comparing, referring, sampling, illustrating and representing. The current theory's concept of scholarly information management activities is related to Unsworth's theory but emphasizes the explicit role of information in the conduct of research. In the current framework, searching for information is interpreted as a scholarly information management activity, while the more granular activities of chaining and browsing that contribute to the larger search and discovery process are considered primitives.

The theory is framed around five core scholarly management activities these are searching, collecting, reading, writing and collaborating, with two or more primitives distinguished for each activity (Borgman, 2000). The activity/primitive framework allows individuals to see the components of this increasingly fluid set of processes and how they may vary in application by researchers working in different fields.

3. Research Methodology and Design

3. Research Methodology

The study utilized the mixed methodology, since it enabled the researcher to collect and analyze data qualitatively and quantitatively through qualitative and quantitative research design. Mixed methods approach to research was also used in this study to

draw from the strengths and minimize the weaknesses of the quantitative and qualitative research approaches (Johnson & Onwuegbuzie, 2004).

3.1 Research Design

Concurrent triangulation research design and convergent model was used to conduct this study. This is because this design allowed the researcher to use more than one design to confirm, cross-validate, or corroborate findings within the study. Therefore, in this study, both survey and case study designs were used (Creswell, 2003). The design was an excellent means of collecting original data on relationships or how variables influence each other in a colossal population. The researcher studied a large population with only a portion of the population participating and providing needed information.

3.2 Sampling Technique and Sample Size

The sampling techniques used in this study were simple random and purposive sampling techniques. Purposive sampling was used to select the study groups within the universities in Nairobi County. The use of this sampling technique was to assist in the selection of respondent's categories with the much needed information concerning this study in a population of a diverse group of respondents within available private and public universities within Nairobi County Kenya. Simple random sampling technique was used to select the required research participants from each of the three target groups as this technique provided each possible participant with an equal chance of being selected and participating in this study. On the other hand, the sample size for the study was 257 participants which included 249 postgraduate students, 4 librarians and 4 supervisors.

3.3 Construction of Research Instruments

Different instruments were used to collect different data from the respondents. For quantitative data, structured questionnaires were used and for qualitative data, interview schedule was used.

3.4. Data Analysis Techniques and Procedures

The study used descriptive data analysis techniques to determine the relationship between information literacy skills and scholarly management. The collected data was fed into SPSS version 21 to generate frequencies, percentages and means which were presented in table format. Thematic analysis was used while analyzing qualitative data. This was done by pinpointing, examining, and recording patterns within data. The themes used were derived from each study objective and questions addressing each objective were analyzed and presented under the same themes or subheadings.

4. Research Findings and Discussions

4.1 Effects of Students' Information Retrieval Skills on Scholarly Information Management

The first study objective addressed how postgraduate students' information retrieval skills affected their scholarly information management.

4.1.1 Information Retrieval Skills

Table 1: Postgraduate students' possession of information retrieval skills necessary for scholarly information management

	Frequencies	Percent
Yes	245	100.0
Total	245	100.0

Results obtained from the students' indicated that all 100% f=245 possessed information retrieval skills necessary for scholarly information management SIM. Similarly, all the librarians 100% f=4 asserted that postgraduate students' had information retrieval skills needed for scholarly information management. Similarly, empirical studies of the use of the PLUS model (Herring, 2011) have been conducted by Herring, Tarter, and Naylor (2000, 2002) and Herring (2006). These studies demonstrated that students favored the use of the model because it helped them in identifying existing knowledge, searching for information, forming questions, and being organized in their approach to completing an assignment. However, the current study also agrees that students possess information retrieval skills hence supporting the results of the reviewed studies. On whether and postgraduate students' possessed information literacy skills required for scholarly information management, the interviewees stated that: a fair number of postgraduate learners in this institution have information retrieval skills necessary for scholarly information management. (Supervisor, 2017)

Fewer numbers of postgraduate students' in this university have information retrieval skills needed for appropriate scholarly information management. (Librarian, 2017) Data was gathered on the exact information retrieval skills possessed by postgraduate students' and results presented in Table 2.

Table 2: Information retrieval skill possessed by postgraduate students'

	Frequency	Percent
Use of Google search engines	209	85.3
Use of library catalogues	36	14.7
Total	245	100.0

On information retrieval skills, based on the data gathered from postgraduate learners, the researcher established that most postgraduate learners 85.3% f=209 could effectively use Google search engines, and 14.7% f=36 could use library catalogues to retrieve information as data collected from the learner and presented in the Table above showed.

These findings therefore show that most postgraduate learners within Kiambu County are more skilled in using Google search engines for information retrieval followed by catalogue use skills. Similarly, research by Bomar (2010) established that students' relied on unstructured web searching for scholarly information management. However, it did not show the reliance on library catalogue for scholarly information management an area addressed by the current study.

On the actual information, literacy skills required for scholarly information management and possessed by postgraduate students', the interviewees stated that; from experience, the main information retrieval skill that majority of postgraduate students' in this university have is using Google search engines. (Supervisor, 2017)

The information retrieval skills possessed by Postgraduate learners in this university is the use of library catalogues as most learners depend on it to retrieve the needed information for their scholarly work. (Librarian, 2017)

4.1.2 Postgraduate Students' Perception of How Information Retrieval Skill Possessed Influence Scholarly Information Management

In the Table 3, data from postgraduate learners on the influence of their information retrieval skills on scholarly information management are presented.

Table 3: Influence of information retrieval skills on postgraduate students' scholarly information management

	Frequency	Percent
Greatly improved	123	50.2
Improved a bit	52	21.2
Moderate influence	16	6.5
N/A	54	22.1
Total	245	100.0

Most of the learners 50.3% f=123 as results in table 3 show observed that information retrieval skills greatly improved their scholarly information management, 21.2% f=52 mentioned that it improved scholarly information management while 6.5% f=16 revealed that it moderately influenced their scholarly information management. This is supported by Sundareswari, (2013) who argued that studies on the awareness, accessibility and use of electronic library resources in enhancing academic productivity showed that the provision of electronic resources plays an important role in students' academic output.

Interview results on the other hand indicate that the respondents stated that: *"the use of Google search engines to retrieve information has not only improved postgraduate learners' scholarly information management by saving time but also made accessibility of information needed for dissertation development."* (Supervisor, 2017) The use of library catalogue to retrieve information has had a great positive effect of postgraduate students' scholarly information management. (Librarian, 2017)

The students' attitude on the effects of information retrieval skills on scholarly information management was scored as 5= Strongly Agree (SA), 4= Agree (A), 3=

Neither Agree nor Disagree (NA), 2= Disagree (D) and 1= Strongly Disagree (SD) and findings presented in Table 4 below.

Table 4: Likert Scale on Effects of Information Retrieval Skills on Scholarly Information Management

Statement	SA	A	N	D	SD	Mean
Information retrieval skills by using library catalogue to access required resources for postgraduate students' thesis improves postgraduate students' scholarly information management skills	162 (66.1%)	65 (26.5%)	14 (5.7%)	4 (1.6%)	-	1.43
Ability to access current information resources for postgraduate students' thesis improves postgraduate students' scholarly information management skills	108 (44.1%)	135 (55.1%)	4 (2.2%)	2 (0.8%)	-	1.57
Ability to select and justify the appropriate search techniques in order to carry out independent research improves postgraduate students' scholarly information management skills	138 (56.3%)	75 (30.6%)	32 (13.1%)	-	-	1.57
Ability to evaluate and select the best search results related to postgraduate students' research improves postgraduate students' scholarly information management skills	111 (45.3%)	116 (47.3%)	18 (7.3%)	-	-	1.62
Ability to use various search engines to access relevant resources for postgraduate students' research improves postgraduate students' scholarly information management skills	93 (38.0%)	120 (49.0%)	32 (13.1%)	-	-	1.75
Postgraduate students' ability to identify relevant materials from the internet influences scholarly information management in their work	147 (60.0%)	82 (33.5%)	16 (6.5%)	-	-	1.47
Knowledge of how to handle accessed information influences scholarly information management in their work	105 (42.9%)	112 (45.7%)	26 (10.6%)	2 (0.8%)	-	1.69

Results presented in the Table above 4 show that a majority of students' 66.1% n=162 strongly agreed that information retrieval skills by using library catalogue to access required resources for postgraduate students' thesis improves postgraduate students' scholarly information management skills, a majority of 55.1% n=135 agreed that ability to access current information resources for postgraduate students' thesis improves postgraduate students' scholarly information management skills, 56.3% n=138 strongly agreed that ability to select and justify the appropriate search techniques in order to carry out independent research improves postgraduate students' scholarly information management skills, 47.3% n=116 agreed that ability to evaluate and select the best search results related to postgraduate students' research improves postgraduate students' scholarly information management skills, 49% n=120 agreed that ability to use various search engines to access relevant resources for postgraduate students' research improves postgraduate students' scholarly information management skills while a majority of students', 60% n=147 strongly agreed that postgraduate students' ability to

identify relevant materials from the internet influences scholarly information management in their work and lastly, a majority of 45.7% n=112 agreed that knowledge of how to handle accessed information influences scholarly information management in their work. Other studies have shown that information retrieval skills possessed by students influence scholarly information management therefore supporting findings of the current study (Habiba & Chowdhury, 2012; Agboola, 2012).

4.1.5 Respondents' Attitude Score

Respondent's attitude score was computed based on the different aspects of information retrieval skills. All the respondents who got the correct response in each statement were given a score of 1 while those who scored wrongly scored a 0. The sum score for each respondent was thereafter computed to determine the individual attitude score

Data on the attitude scores of student based on different aspects of information retrieval skills are presented in the Table 5 below.

Table 5: Information retrieval skills attitude score

N	Valid	245
Mean		6.40
Std. Error of Mean		.106
Std. Deviation		1.658
Minimum		0
Maximum		7

The information presented in Table 5 on postgraduate students' attitude scores with respect to information retrieval skills reveal postgraduate students' in Kiambu County universities had a mean of information retrieval attitude score of $\bar{x}=6.40\pm 1.658SD$. This indicates that most learners had higher attitudes with regards to information retrieval skills for scholarly information management. On the other hand, Pavey (2003) found that University students had good levels information retrieval skills but failed short of measuring students' attitudes towards information retrieval as addressed by the current study.

Further gathered data on information retrieval attitude level are as presented in Table 6 that follows. Both attitude levels that is, above average and below average were measured. Both average, above and below average attitude levels were measured.

Table 6: Information retrieval attitude level

	Frequency	Percent
Negative Attitude	28	11.4
Positive Attitude	217	88.6
Total	245	100.0

On the information retrieval, the study established that generally postgraduate students' have positive attitude levels 88.6% n=217 with a few 11.4% n=28 having

negative attitude levels. From the findings, postgraduate students' in Kiambu County universities therefore have positive information retrieval levels. Herring (2011) established that students had favorable information retrieval skills necessary for scholarly information management.

Crosstabulated data on information retrieval attitude and information retrieval skills are presented as in Table 7.

Table 7: Relationship between information retrieval attitude level and information retrieval skill possessed by postgraduate students

		Information retrieval skill possessed by postgraduate students'		Total
		Use of Google search engines	Use of library catalogues	
Information retrieval attitude level	Negative Attitude	0	28	28
	Positive Attitude	209	8	217
Total		209	36	245

Findings in table 7 above showed that only there was negative attitude among students' n=28 on the use of library catalogue while postgraduate students' n=209 had positive attitude towards the use of Google search engine. Therefore, in Kiambu County universities, postgraduate students' mainly have a positive information retrieval attitude towards the use of Google search engines and a negative information retrieval attitude towards the use of library catalogues to seek information. The use of library catalogues is an area of information literacy that postgraduate students' are facing difficulties in Kiambu County universities. This is worrying because in every university, students' are inducted on how to use library catalogues to search for information as it is the easiest way of information access and retrieval. With majority of students' relying on Google search engine, it appears that postgraduate learners are ignoring other means of information retrieval. Embi, (2007) observed that the development of computer self-efficacy can be related to anxiety, whereby the lack of knowledge about computers can create a psychological fear, hence dampening the development of confidence. Unlike the current study

Information referencing skills obtained were cross-tabulated against the information literacy attitude levels in order to test for association at 95% confidence level. In Table 8, chi-square test on the relationship between postgraduate learners' information literacy attitude levels and information retrieval skills at 95% confidence level is presented.

Relationship between information literacy attitude levels and information literacy was also established. A significant association was observed ($\chi^2=135.999$; $df=1$; $p<0.001$) between the studied variables at 95% confidence level. Therefore, information referencing skills is strongly associated to information literacy attitude levels among postgraduate learners in Kiambu County universities.

Table 8: Chi-Square Tests on the relationship between information literacy attitude levels and Information Literacy Skills

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	183.530a	1	.000		
Continuity Correction	175.927	1	.000		
Likelihood Ratio	135.999	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	182.781	1	.000		
N of Valid Cases	245				

The attitude mean difference based on scholarly information management was computed using analysis of variance and data presented in Table 9.

Table 9: Attitude mean difference based on scholarly information management

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	490.426	3	163.475	218.185	.000
Within Groups	180.570	241	.749		
Total	670.996	244			

The regression model as illuminated in the ANOVA Table predicts a statistical significance relationship between the studied variables ($p < 0.000$; $df = 3$; $F = 218.185$) at 95% confidence level. This indicates that, the regression model statistically significantly predicts the outcome variable of scholarly information management which included providing a detailed reference list, in-text referencing and paraphrasing. Therefore, there is a statistical significant relationship between the dependent and independent variables hence the null hypothesis is rejected. In a rejoinder, Herring (2011) also established that information retrieval skills possessed by students greatly affected their scholarly information management which supports results of the current study.

Further, ANOVA was used to test for significant differences in the means of attitude based on scholarly information management practice Table 10 below.

Table 10: Analysis of Variance test on information retrieval skills attitude score

Postgraduate students' scholarly information management	N	Subset for alpha = 0.05	
		1	2
Reading understanding then paraphrasing other authors' words	33	2.82	
Providing references used	83		6.95
Acknowledging authors in text	109		6.96
Using appropriate search engines and methods to gather secondary data	20		7.00

As shown in the above Table, more students' $n = 109$ were confident with acknowledging other authors in-text, $n = 83$ were able to provide references used, $n = 33$ could read, understand and paraphrase acquired information while $n = 20$ could use appropriate search engines and methods to gather secondary data. Upon further test, at the subset $\alpha = 0.05$, the study showed that reading understanding then paraphrasing other authors words have the lowest mean of $\bar{x} = 2.82$ hence presented first, followed by

providing references used with a mean $\bar{x}=6.95$, then acknowledging authors in-text with a mean of $\bar{x}=6.96$ while using appropriate search engines and methods to gather secondary data had a mean of $\bar{x}=7.00$. Therefore, more postgraduate students' in Kiambu County university could use appropriate search engines and methods to gather secondary data during the process of writing their dissertations.

Information was further collected from postgraduate students' on the relationship between their information retrieval skills and scholarly information management and data presented in Table 11.

Table 11: Relationship between student's information retrieval skills and scholarly information management

		Information retrieval skill possessed by postgraduate students'		Total
		Use of Google search engines	Use of library catalogues	
Postgraduate students' scholarly information management	Acknowledging authors in text	105	4	109
	Providing references used	79	4	83
	Reading understanding then paraphrasing other authors' words	5	28	33
	Using appropriate search engines and methods to gather secondary data	20	0	20
Total		209	36	245

The results presented above show that a majority of the students' who had knowledge on how to use Google search engine $n=105$ could appropriately acknowledge other authors in-text, a majority of the learners $n=79$ who could use Google search engine were able to provide references used in their dissertations, a majority of learners $n=28$ who could use library catalogues to retrieve information could also read, understand and paraphrase other authors words, lastly, a majority of $n=20$ postgraduate learners who could use Google search engines could use appropriate search engines and methods to gather secondary data. The data presented in the Table 11 above reveals that postgraduate learners from Kiambu County Kenya universities who had ability of using Google search engines to retrieve information were capable of scholarly managing information during their development of their dissertation. Similarly, other studies have also revealed that information retrieval skills influence scholarly information management among learners. There is evidence that frequent e-resource use for information retrieval is associated with increased publication production by academics with respect to both quality and quantity (Brown et al., 2007).

To test for relationship between information retrieval skills and scholarly information management at 95% confidence level, chi-square test was used and findings presented in Table 12 below.

Table 12: Chi-Square Tests on the relationship between information retrieval skills and scholarly information management

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	150.041a	3	.000
Likelihood Ratio	110.080	3	.003
Linear-by-Linear Association	31.453	1	.021
N of Valid Cases	245		

The results presented above show that among Kiambu County university postgraduate students', there is a statistical relationship between information retrieval skills and scholarly information management ($\chi^2=150.041$; $df=3$; $p=0.000$). Since significant association has been found between student's information retrieval skills and scholarly information management the null hypothesis H_0 that stated that "there is no relationship between student's information retrieval skills and scholarly information management" is hereby rejected. On their part, Brown, et al., (2007) also argued that information retrieval skills are greatly related to scholarly information management among learners. This therefore supports the results of the current study which reveals that there is a strong relationship between information retrieval skills and scholarly information management among postgraduate learners in public universities in Kiambu County.

5. Summary, Conclusions and Recommendations

5.1. Effects of Students' Information Retrieval Skills on Scholarly Information Management

In this section, the study sought to address the first objective of how postgraduate students' information retrieval skills affected their scholarly information management. The results generally show that postgraduate students' in the study area mostly possess information retrieval skills necessary for scholarly information management. The results further revealed that the main information retrieval skills possessed by postgraduate learners was the use of Google search engines even though some students' still employ the use of library catalogues to retrieve information they required to write their scholarly work. The perceptions of postgraduate students' on the influence of information retrieval skills on scholarly information management showed that majority agreed that information retrieval skills generally improved scholarly information management greatly while others mentioned a moderate influence. Therefore, information retrieval skills among postgraduate learners have a great influence on their scholarly information management.

The study further reveals that information retrieval skills by using library catalogue to access required resources for postgraduate students' thesis improves postgraduate students' scholarly information management skills, ability to access current information resources for postgraduate students' thesis improves postgraduate students' scholarly information management skills, ability to select and justify the

appropriate search techniques in order to carry out independent research improves postgraduate students' scholarly information management skills, ability to evaluate and select the best search results related to postgraduate students' research improves postgraduate students' scholarly information management skills, ability to use various search engines to access relevant resources for postgraduate students' research improves postgraduate students' scholarly information management skills while a majority of students', postgraduate students' ability to identify relevant materials from the internet influences scholarly information management in their work and knowledge of how to handle accessed information influences scholarly information management in their work.

Further data was gathered on information retrieval attitude level and results established that generally postgraduate students' from Kiambu County universities have positive attitude levels on information retrieval with a few having negative attitude levels. This indicates that there is a significant difference between postgraduate students' with positive attitude levels on their information retrieval skills and those with negative attitude levels. Relationship between attitude levels and information retrieval skills showed that there was a relationship between negative attitude among students' on the use of library catalogue while majority of postgraduate students' had positive attitude towards the use of Google search engine. Therefore, in Kiambu County universities, postgraduate students' mainly have a positive information retrieval attitude towards the use of Google search engines and a negative information retrieval attitude towards the use of library catalogues to seek information.

The results also revealed that students' who had knowledge on how to use Google search engine could appropriately acknowledge other authors in-text, a majority of the learners who could use Google search engine were able to provide references used in their dissertations, a majority of learners who could use library catalogues to retrieve information could also read, understand and paraphrase other authors words, lastly, a majority of postgraduate learners who could use Google search engines could use appropriate search engines and methods to gather secondary data. While testing for the relationship between information retrieval skills and scholarly information management at 95% confidence level using a chi-square test, the study established that among Kiambu County university postgraduate students', there exist a statistical significant relationship between information retrieval skills and scholarly information management leading to the rejection of stated null hypothesis.

5.2 Conclusions

The researcher has drawn various conclusions based on the results of the study and summary generated as follows.

5.2.1 Effects of Students' Information Retrieval Skills on Scholarly Information Management

In Kiambu County, postgraduate students' possess information retrieval skills necessary for scholarly information management. These include the use of google

search engines even though some students still employ the use of library catalogues. The students' information retrieval skills mostly improve scholarly information management greatly among the learners. Information retrieval skills among the students therefore affect scholarly information management practices in universities in Kiambu County. There is generally positive information retrieval attitude necessary for scholarly information management among postgraduate learners. Further, information retrieval skills possessed by postgraduate learners are significantly related to scholarly information management.

5.3 Recommendations for Practices

Based on the results obtained, the researcher therefore recommends that;

A lot of focus needs to be put in place while instructing postgraduate learners on how to retrieve information while writing scholarly work. This is because some of them still struggle with information retrieval an issue which may be having a negative influence on their SIM. More attention should be placed during lectures on information storing, catalogue use, information gathering as well as information analysis skills as learners seem to use these skills the least in information retrieval.

5.4 Recommendations for Further Research

The researcher also recommends that further studies are needed on the following areas; To assess measures in place within universities for improving the influence of information retrieval skills on their scholarly information management as these two variables have been found to be weakly associated with scholarly information management.

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