African Journal of Emerging Issues
Peer reviewed | Double blind | Interdisciplinary

African Journal of Emerging Issues (AJOEI)
Online ISSN: 2663 - 9335
Available at: https://ajoeijournals.org

INFORMATION SCIENCE AND TECHNOLOGY

LIBRARIANS' SUPPORT AND SUCCESS OF THE DOCTORAL RESEARCH PROCESS IN SELECTED KENYAN PUBLIC UNIVERSITIES

[1*]Mary Njeri Wachira, [2]Dr. Jane Maina & [3]Prof. E. O, Okemwa, (PhD)

[1]PhD Student, Information Science
Kisii University
BTECH (INF) (UNISA), BINF (HON) (UNISA), MA (INF) (UNISA)

[2]Chair of Department - Library & Information Science,
Kisii University

[3]Lecturer, School of Education,
Machakos University

***Email of Corresponding Author: mnwachira@gmail.com**

ABSTRACT

Purpose: Enrollment of students pursuing doctoral qualifications has been increasing over the last decade, yet success of doctoral studies has been at an all-time low in Kenya compared to other universities in the world. Some of the arguments advanced for the low completion rates are supervisory, student issues and lack of quality information resources and poor information seeking skills. Librarians' support in the success of doctoral research process is considered in this study. The objective of the study was to examine how librarians' support contributes to the success of doctoral research process in selected Kenyan public universities. The study was informed by Kolbs learning cycle theory.

Methodology: Using a pragmatic research philosophy the study employed a descriptive survey design. A sample size of 384 doctoral students was drawn from public universities within Nairobi Metropolitan region offering doctoral programs and 18 senior librarians were sampled to solicit information on services, resources and the infrastructure for research.

Results: The findings indicated a strong and positive relationship between the librarians support and the success of the doctoral research process. An increase in librarian support explains a 43.4 percent success rates for doctoral research process. The current study confirms the need to rethink the librarian's role that would address the doctoral research information needs and improve accessibility, discoverability of appropriate support.

Policy implication: There is need for librarians to design a framework providing specific support services dedicated for the success of the doctoral research process.

Keywords: *librarians' support, success of the doctoral research process, Kenyan public universities*

1.1 INTRODUCTION

Librarians and libraries of the 21st century are faced with changing user demand with the advancement of technology. Learners are today faced with a wide selection of sources of information for their study. Technology has provided avenues and techniques of accessing information for research (Sewell, 2017). However, not without challenges such as; inability to access useful research information and lack of requisite information searching techniques. This may afford research students an opportunity to keep on searching, information avoidance and as a result it may take longer to complete a scheduled program. Due to proliferation of online literature coupled with information seeking behavior patterns (Catalano, 2013), learners may need assistance in accessing useful research information. Such support can only be handled better by the librarian or anyone with knowledge management skills. Due to information overload and failure for adult users to acknowledge they need help with certain aspects of their research, lack of access to quality information useful for research may affect the rate of completion of a PhD program (Secker, 2012; Sewell, 2017).

Globally, higher education is experiencing changes both technical and administrative. In Kenya, the government requires a certain level of qualification to provide workforce in higher education. One has to hold a PhD to teach in a university (CUE, 2016). This has put pressure on the need to ensure that higher education is seen to produce enough manpower. It has been found that areas which influence completion of PhD program include supervision, funding, individual's intrinsic characteristics, and PhD seekers perception institutional culture.

University librarians can no longer rely on their stakeholder's belief in their importance, rather, they must proactively demonstrate their value and inclusivity in a vast changing research terrain (Cutis+ Cartwright Consulting Limited, 2014; Groenewegen, 2017; Humphrey & Hamilton, 2004; Sewell & Kingsley, 2017). On the other hand academic librarians (hereafter Librarian) may assume that challenge. The need to ensure information is available for answering research becomes critical. Research students, who are pursuing a doctoral degree, have previously acquired basic research skills (Jackson, MacMillan, & Sinotte, 2014). However the learning environment is dynamic; influenced by technology, time and engagement of the research students. Librarians due to their specialized skills and knowledge about information searching and proper utilization of databases are better placed to stand in the gap that overwhelms the research community. In order to meet specific and anticipated needs of research students, librarians in their roles, must be able to identify user needs, provide resources according to needs identified, ensure accessibility and provide appropriate support.

According to Stamatoplos (2009), academic libraries and librarians should engage formally with the learning and research community to ensure availability, access, use of needed information and skills acquisition. She further argues that the librarians should think and work beyond traditional models of library service and singles out the information environment to raise awareness about opportunities for library involvement with researchers and postgraduate programs. By focusing on specific type of users, academic libraries and librarians have new opportunities to re-establish their place in the research life cycle and higher levels, as they engage with faculty and graduate school, and maximize their contribution to their institutions and higher education as a whole; a concern for the proposed study. With digitization, University librarians would play an important role in offering a greater support service for young professors

and PhD students, which would help in the development of their academic careers (Rasul & Singh, (2017).

The roles of the librarians in supporting research may be influenced by individual characteristics which include gender, educational level, and skills as well as perception. One of the indicators cited by CUE (2012) is the quality of staff in terms of competencies, qualification and experience in order to support information needs. Further the standard indicates the need for closer partnerships with faculty in assisting the users in evaluating, interpreting information available in various formats. Key to the role is ensuring that user needs are met in a manner that contributes to the achievement of the vision, mission and values of a learning institution, universities as research institution need the kind of librarian support that impacts or promotes efficacy on the research process. The commission provides indicators for continuous assessment as meeting user needs, customer satisfaction and continuous improvement.

1.2 Statement of the Problem

Enrollment of students pursuing doctoral qualifications has been increasing over the last decade, yet successful completion of doctoral studies has been at an all-time low in Kenya compared to other universities in the world. Albeit, Kenyan universities have continued to rank lowly, both globally and regionally (Omanga. 2017; Commission for University Education [CUE], 2016; Amutabi, 2011). The problem calls for appropriate librarian support to learners for successful doctoral research process. Amutabi (2011) expressed concern about the low completion rate, and the long duration taken to complete doctoral studies in Kenya. Following the directive by CUE, that only lecturers with PhDs will be allowed to teach in universities, scholars are concerned with the number of doctoral holders available in the country.

Statistical reports indicated that in 2014, out of 40173 people who had registered for post graduate studies, only 4375 were enrolled for doctoral studies (KNBS, 2015), and by 2016 the Ministry of Education, Science and Technology introduced new regulations compelling universities that 25% of graduates each year should be at postgraduate level, as government data shows that more than 90% of the nearly 25,000 people who graduate from universities annually are at undergraduate level and noted that the country has slightly over 400 full professors, 600 associate professors and fewer than 7,000 PhD holders.

Other reports (Commission of University education [CUE], 2016) revealed an increase from 4375 to 6059 doctoral candidates enrolled in Kenyan public universities. Omanga (2016) asserts that universities in Kenya graduate 230 PhDs against the target of a 1000 per year.

Librarians have been acknowledged to perform important roles in research in terms of identification of user needs and designing need based learner support to ensure availability, discoverability and accessibility to relevant research information. However, there are scarcely identifiable empirical studies in Kenya regarding the contribution of librarians to the doctoral completion rate. Related studies (Aukland (2013); Covert-Vail (2012); Oyewusi and Oyeboade (2009) and Research Libraries in United Kingdom (2011), on the role of academic librarians in research have not addressed the relationship between the librarian support to learners and success of doctoral research process which this study sought, hence exuding a research gap. Sacchanand (2012) recommended that librarians should expand their roles or play new roles as teachers/ instructional partners/ facilitators and as researchers along with information specialists/providers role to ensure support to doctoral degree programmes in their university. Brewer (2017) concurs that librarians are educators that procure content and provide instruction on how to use and evaluate resources. Therefore, based on the foregoing there was need to study the librarian's learner's support and its influence on the success of doctoral research process in Kenyan public universities.

1.3 Objective of the study

To determine how librarians'support can contribute to the success of doctoral research process in selected Kenyan public universities

1.4 Research Questions

How can the Librarians'support contribute to the success of doctoral research process in selected Kenyan public universities?

1.7 Conceptual Framework

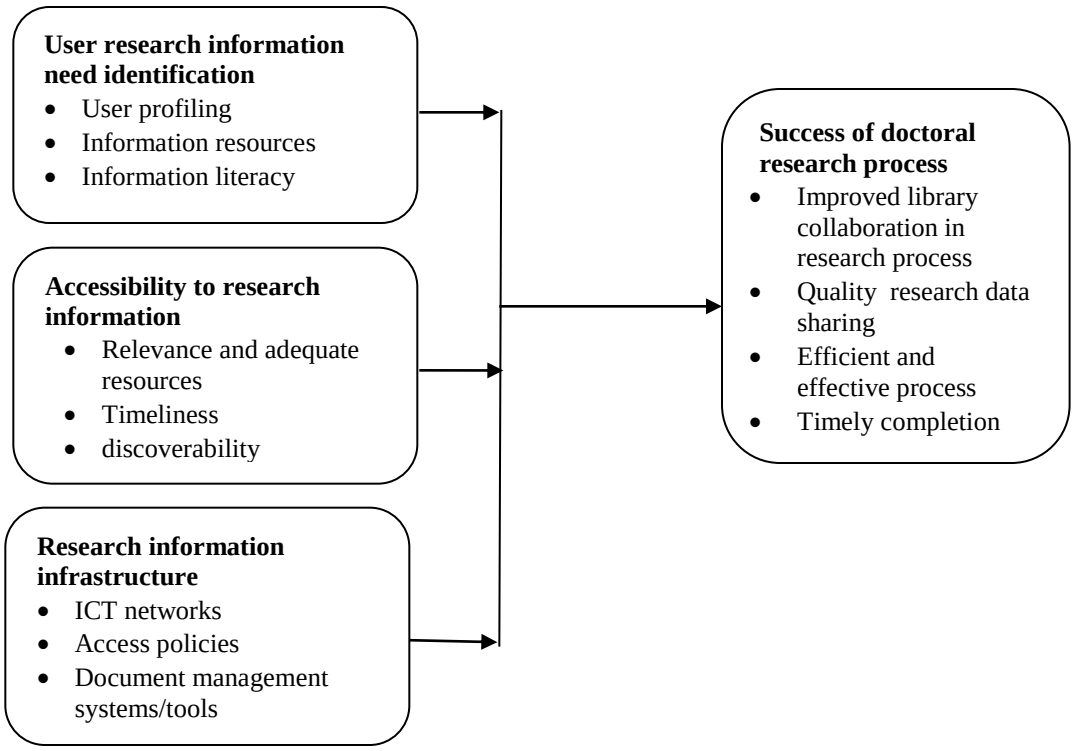

Figure 1: Conceptual Framework.

2.1 LITERATURE REVIEW AND THEORETICAL FRAMEWORK

2.2 Theoretical Framework

The study was informed by Kolbs learning cycle theory. Learning theories are conceptual frameworks in which knowledge is absorbed, processed and retained during learning. A process is a state of learning how to do things in a systematic way from start to end. A process is said to be efficient if one achieves the desired results (Ha & Verishagen, 2015). A doctoral research commences with admission, and must follow a series of steps to qualify. The content and knowledge creation process demands that time, resources and support are forthcoming. Libraries are interested in improving the user experience, since they tap into users' expectations, behaviors, and attitudes.

Kolb's learning cycle theory (1976) describes the stages of learning as a process in which knowledge, experience and skills are acquired. This perspective of learning is called 'experiential learning' or 'learning by doing' and relates to constructivist learning. The cycle can begin from any one of the four stages; feeling, watching, thinking or doing and link to any other stage. Kolb and Kolb (2005) argues that learning environments which fail to match preferred learning styles are likely to be rejected or resented. Sarabdeen (2013) and Bhagat, Vyas and Singh, (2015). Concur that learning style with appropriate instructional strategies depending on the activities which learners themselves, perform in their learning process or regulated by teachers/books while in the absence of regulation students are unable to regulate their learning process by themselves and also experience insufficient support from external regulation as provided by teachers and learning environment. For learning and knowledge creation to take place

Ha and Verishagen (2015) portend that instructors must create the learning space. That is, welcoming and respectful of past experiences as current needs are met. Doctoral students bring along past experiences necessary to provide space for conversational learning, experiment as well as reflect to encourage researchers to take charge of their research process effectively. Benjamin Franklins' quotation (Elmore (2015) 'Tell me, and I will forget, show me, and I may remember, involve me, and I will understand" applies to Kolb learning theory about facilitation that helps learners to move from each stage of learning cycle, transform what is learnt into new knowledge, and be able to resolve issues that may hinder progress towards successful completion of PhD programme.

Research is a knowledge creation phenomena and knowledge is information put to use tacitly or explicitly. Experiential Learning Cycle [ELT]. Passarelli & Kolb, 2012) defined learning as "the process whereby knowledge is created through the transformation of experience. Knowledge that results from the combination of grasping and transforming experience" becomes useful to the study.

In this study, the components of Kolb's learning theory are used to study how librarian support contributes to the success of doctoral research process. The study was anchored on Kolb's theory because it postulates that experience is a critical aspect in the research process, it often involves elements of practice and hands on experience in as far as literature search, synthesis and application to one's study is concerned (Kolb, 1981). The theory further provides a learning style

that facilitates the doctoral research student in the research cycle and new knowledge creation if properly followed would lead to effectiveness and efficient completion of their research process. The theory also highlights experimentation, reflection and abstract conceptualization; it is suited for the doctoral research process by obtaining skillsets taught by librarians to assist in navigating the information terrain. The need for librarians to create awareness (tell) show how (orientation) involve (hands-on-experience) and application (conceptualize) at each stage of the process leads to a more satisfying outcome. The researcher gets enough time to concentrate on the content of research saving the time and propels one towards completion. Notably when a researcher has all tools in place, there are high chances of producing better quality of research papers.

Bergsteiner, Avery and Neumann (2010) applied Kolb's experiential learning theory in adult learning. This is significant because models can aid scientific understanding and progress, as well as theory development and research. Applying accepted modelling and categorization criteria to Kolb's basic model reveals fundamental graphic arrangement errors, a failure to meet modeler's graphic sufficiency and simplification tests, categorization and definitional problems relating to learning activities and typologies, misconstrued bi-polarities and flawed logic. The authors propose guidelines for recasting the model with a view to overcoming these weaknesses, guiding future research and theory development, and starting to integrate the disparate field of experiential learning.

According to Ha and Verishagen (2015) in terms of understanding the user needs (as shown in table 1), Kolb's theory brings knowledge on the type of users behavior that may inform product and service development in supporting learning and information literacy delivery techniques that address specific doctoral candidates research needs and aspirations and encourage efficient and effective completion of the process.

Table 1: Kolb's Theory, Characteristics of Various Learners and Best Delivery Methods

Kolb's Learning Styles	*Characteristics*	*Training Delivery Mode*
Converger	They are abstract conceptualisation and active experimentation. Thus they will be able to make practical application of ideas by deductive reasoning. They are also good problem solvers.	Small- group discussion and class room participation dislike lectures. They are not risk takers. Thus they prefer data-based programs and prefer computer based learning.
Diverger	They are good at concrete experience and reflective observation. Therefore they tend to be imaginative and provide innovative ideas.	Traditional classroom based delivery that comprises of brainstorming sessions, reflective activities, lectures and rhetorical questions (Blackmore, 1996 & - Hodgson, 1998).
Assimilator	This group uses abstract conceptualisation and reflective observation. They are good at using inductive reasoning. They are "private learners".	Prefer print-based delivery (Delahaya, 2005)
Accommodator	This group of learners tends to use concrete experience and active experimentation. They are good at actually doing the things.	Like experiment. So could use hands-on computer-based simulation games, online group works, role play games and observations. They prefer computer based delivery mode. [O'Conner, 1998, Mootter-Hodgson, 1998, & McCarthy, 1985]

Adopted from: (Sarabdeen, 2013; Ha, C., & Verishagen, 2015)

Sarabdeen (2013) opines that learners have their own preference in learning, and that trainers should modify their training programmes and training methods in order to maximize on the outcomes of the training. Librarians, like any trainers included should be cognisant of various learning styles. A survey was conducted by Sarabdeen (2013) among 106 students and the result showed that there are variations in learning preferences and confirmed that students could possibly have more than one learning style. Thus, the research in theory confirmed the earlier research findings that learning styles must be taken into consideration for better learning outcomes. The practical implication is that the trainers should adopt various learning strategies to achieve the learning objectives.

Earlier, Buch and Bartely (2002) used Kolb's model in their research where they conducted a survey in a large financial services institution in the Southeast USA. 337 employees were identified and questionnaires were distributed. 165 respondents participated. The research questionnaire included 5 delivery modes: computer based, TV based, print based, audio based and classroom based. The result revealed that 25% were accommodators, 29% were assimilators,

22% were convergers and 24% were divergers. This proved that there are various styles of learning represented in an adult population. The divergers preferred traditional mode of delivery and accommodators preferred computer based learning. The finding is one of the many research findings that support Kolb's theory of Learning Style Inventory. Lum et al. (2011) used Kolb's theory in analyzing bridging professional education programmes in three institutions among three different professionals in Ontario, Canada. All three professionals were found to be divergent as they preferred to observe than participate in person. The authors suggest that the relevant authority should consider offering more courses by considering their learning style. The need to understand the nature of the users needing your services informs the design of information literacy for doctoral students and improves their information seeking skills.

The advantage of the theory is that in order to balance different needs of learners, it provides learning objectives in many diverse ways to ensure that all learning styles are accommodated. This can be achieved through group learning and informal learning. Upon this measure, Having that in mind librarians can form the learning groups randomly of special user groups considering all four types of learning prepare their information literacy and competency models.

Kolb's theory is widely accepted and has its use for improving performances especially in higher education. However, there are a number of problems with the model (Greenway, 2004). The problem here is that the experiential learning model does not apply to all situations. PhD students bring different experiences to their research process and though assumed to have a level of information literacy, may require different approaches.

Another problem is that Kolb's theory provides only limited number of factors that influence learning. It doesn't explain psychodynamic, social, and institutional aspects of learning. It is important to have in mind that people differ in their learning type over time and over situations (Muetzel, 2015). Different approaches may be needed even to same person in different situations.

2.3 Empirical Literature Review

2.3.1 The Doctoral Research Process

Martinsuoa and Turkulainen (2011) observed that doctoral programmes vary significantly across countries and universities resulting in a variance in completion time. However, giving example

of the USA, where most programmes are rather similar in nature, and formal and well structured; noted that in Europe there was a variance in doctoral programmes is much higher and concluded that even though the informal doctoral programmes, in Nordic and central European countries, provide the student freedom in terms of both topic and time of completion; often have poor degree completion rates. Doctoral students slowly withdraw from the programme or drop out after a few years, eventually failing to complete their degree. Prior research has addressed reasons for failures and drop-outs, including students 'procrastination or perfectionism, mismatched expectations between faculty and students, the unexpected reality of research work, and the mismatch between student and supervisor (Golde 1998, 2005). However the studies (Green 1997; Johnson, Green, and Kluever 2000), never addressed the role of librarian or information resources among the reasons.

According to Spaulding and Rockinson-Szapkiw (2012), looking at the factors that influence a doctoral candidate's persistence, revealed three basic elements that play in successful completion. These were demonstrated in three broad groups of factors which contribute to timely completion by higher degree research students. Student personal characteristic and behavior impact on timely doctoral completion as influenced by, first their inherent qualities and information seeking skills, personal situation and busyness, secondly by the supervisor-candidate relationship and his/her scholarly environment and thirdly by the quality of research facilities and information resources. The mention of the information resources portends a role in the contribution to completion rates but does not expand on the how it impacts on the candidate's research life

Van de Schoot, Yerkes, Mouw & Sonneveld (2013) opines that the information professional fits in to provide the necessary support with regards to availability of resources, relevant quality services and discoverability of resources through suitable information infrastructure. Institutions have invested in both qualified personnel and resources to complete the process. In prior research, (Martinsuoa & Turkulainen, 2011) candidates were typically examined in terms of their individual characteristics and experience, or their perceptions of the faculty whereas the actual support in issues regarding the librarian , information resources and commitment they put into doctoral studies have received less attention. Among the research facilities collaborating in research besides the faculty and the board of graduate school the library is not featured

prominently. The studies are quiet as regards to the access to information resources as an investment for research.

There are several steps involved in the doctoral research process that yield a successful experience. Basically, there are several steps involved in a successful research process. The major steps include 1) identification and formulation of the research topic, 2) reviewing the relevant literature; 3) choosing a research design; 4) writing a research proposal, 5) data collection and 6) presentation of the final report As depicted below on the mind map (Concordia University 2014) the process is further broken as searching for research topic; finding relevant information for literature review and organizing and report writing. Information needs differ in intensity from one stage to the other. Accessibility to useful information (Amutabi 2011; Omanga, 2012; Opata, 2017) is critical for one to be able to search background information and develop a research gap form literature especially in humanities (Glazer, 2010).

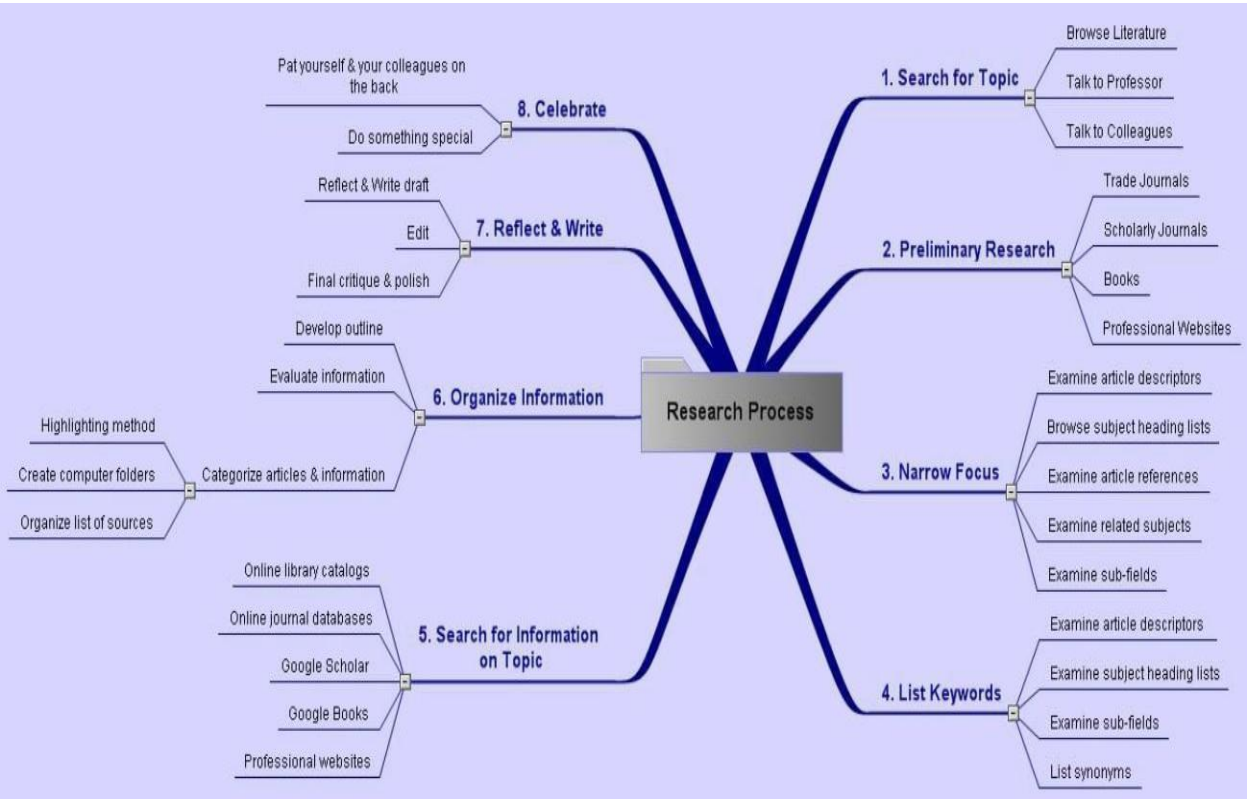

Figure 2.1: Research process mind map. Source: Crowe & Shepherd, 2012

The most challenging and time intensive task after identifying a topic is in step two where a researcher needs to create a research map, find the right place to look for information and finally to ensure that resource identified are safe and well organized in a standard acceptable manner. This is an area which librarians and information professionals are skilled in as metadata and information organization experts. The research needs to identify different sources of information for preliminary search. According to the Kenya Librarian and information scientists consortium [KLISC), libraries subscribe to licenses that enable access to journal and e-books. The mandate is to create awareness and direct the researcher to such correction in a seamless manner. This notwithstanding, Amutabi (2017) raises the alarm as to the fact learner possess poor access skills to such resources. However, Fullback, Rullestad and Calvo (2013) averred that 'PhD candidates arrived to their programmes with significant academic experience, and experience in orienting themselves in scholarly literature'. Furthermore, the scholars said that the candidates are highly motivated for independent learning. Librarians are therefore warned against meeting the candidates with a "deficiency model' (Gullbekk, Rullestad, & Carme Torras i Calvo, 2013) but should be ready to help and strengthen the candidate's knowledge concerning the tools available in the library. The study sought to assess the extent to which librarians and the library resources can help doctoral research students in achieving an efficient and successful research process.

The success of doctoral process has been measured using different perspectives. Where doctoral programmes are increasingly concerned with degree completion in line with a four-year schedule such measures as time to degree completion (Martinsuoa & Turkulainen, 2011) citing (Ferrer de Valero 2016; Seagram, Gould, and Pyke 1998, Golde 1998, 2005; Girves and Wemmerus 1988; Martinsuo 2007) argued that drop-out rates can be ascertained only after the degree has been completed, giving little indication of how the students are progressing during their studies as well as in estimating doctoral students' success during their studies using student withdrawal or attrition. Additionally factors like dissertation delay, research productivity in terms of articles published, satisfaction with research progress and degree progress in terms of achieving certain milestones during doctoral studies have been considered.

The research process requires different resources at different stages where librarians can employ their professional skills in knowledge and information management to improve the researchers' experience in line with the library science laws (Takeuchi, 2010; Asundi, 2012; Carr, 2014;

Cochrane, 1992; Khode & Khode, 2011) that understudy access, time and change in library and information service that focus on the user and user needs.

Doctoral candidate's personal characteristics, expectations, motivations and goals are frequently associated with degree success. Prior research has focused extensively on assessing the effect of various aspects of skill level and readiness to complete the dissertation on degree progress or student status. For example, Martinsuo (2007) reports that students' own skills (having access to relevant knowledge, solving problems, spending time) are the single most important factor explaining research progress. The doctoral process begins with registration to a program, course work for some institutions while other have research by dissertation only- and then study gaps identification which are developed as concept papers presented to the faculty board for ratification. For a students to be referred to as a doctoral candidate they have to have successfully defended their proposal to acceptable to ate for them to process to research. This is the part that holds most learners down and demand suitable support to retain the grit and progress.

2.3.2 Library Support for Learners and the Success of Doctoral Research Process

Eddy and Solomon (2017) in their study revealed how liaison librarians successfully used their knowledge of scholarly communications and applied innovative bibliometric analysis to help enhance the discoverability and user experience of an online journal publication. The study made specific recommendations for optimizing journal website content organization, search functionality, metadata standards and marketing opportunities that were subsequently implemented by the editors and platform managers. These constitute support for doctoral researchers for effectiveness and efficient discoverability and usability of research information resources.

World class universities can be recognized by their top quality human academic output and their involvement in the execution and publication of landmark research (Chanesta, 2014 citing Salmi 2009), which is supported by facilities like the internet, electronic resources and appropriate academic libraries (Altbach 2004). `

A study sponsored by research libraries in the United Kingdom studied the values libraries offer to the research environment and listed values such as; good libraries help institutions to recruit and retain top researchers; libraries help researchers win grants and contracts ; Libraries promote and exploit new technologies and new models of scholarly communications; Repositories

increase the visibility of the institution and raise its research profile; Outward-facing libraries contribute to institution-wide initiatives; Specialist staff work in partnership with academic departments; Connecting with researchers enhances the value of the library services (Aukland, 2013). Gessner, Jaggars, Rutner and Tancheva (2011) said that dedicated spaces provide a better work environment for researchers; convenient access to high-quality research content remains a key foundation for good research; libraries are a physical manifestation of the values of the academy and of scholarship. Walton (2016), in his book '*University libraries and space in the digital world*' noted that libraries as a space has changed with time between the 70s and 2000s. Technological advancements and none-traditional means of access to higher education (distance, online and part-time) have had a major impact on library space. Some of the non- traditional learners may have challenges in using e-resources Vis a Vis the age-gap of learners may have its effect on the use of space. Distance learning implies that learners could access resources remotely but some because of age may prefer to use the physical space

Review of evidence (Koltay, 2017; MacMillan, 2015) conducted studies on developing data indicated that literacy competencies enhance faculty collaborations. The studies observed that in order to align information literacy instruction with changing faculty and student needs, librarians must expand their skills and competencies beyond traditional information services. In the sciences, data resources used by researchers are integrated into graduate support related functions of the library. Open access data repositories allow students to work with more primary data than ever before, and know how and where to look.

Auckland (2012) investigation into the role and skills of subject and liaison librarians required to effectively support the evolving information needs of researchers identified several key skills, where the involvement of librarians in supporting and advising researchers was considered to be important now and was expected to grow in the future. These include: the preservation of research outputs, data management and curation, complying with the various mandates of funders, and requirements, potential data manipulation tools, data mining and the use of metadata.

Chanetsa (2014) examined the changing roles, responsibilities and skills of subject and learning support librarians in universities in the Southern African Customs Union Region. The study found that the main models of subject librarianship in place were the dual and hybrid models. It

determined the main titles that subject librarians were known by, and that their role, involved providing teaching, learning and research support to faculty members, staff, students and researchers.

Koltay (2016a) investigated tasks and roles of academic libraries in supporting Research. The findings revealed that there was a need for providing information literacy education mainly in the form of data literacy, providing research data services, addressing data quality and data citation, raising awareness of faculty members on different issues and providing individual support to them.

Warburton and Macauley (2014) found out that librarians have taken to the role of information literacy advocates within the university sector. The study critiqued the role of librarians from the perspectives of doctoral candidates and doctoral supervisors and suggested some librarians are perceived as a hindrance, or not needed. The majority of doctoral researchers were in favor of more involvement of librarians to assist with their information literacy. Many candidates acknowledged information literacy deficiencies, only half of the candidates claimed to have ever been trained in information literacy skills. 31.3 per cent of supervisors claimed to have ever been trained. The study also indicated that while the proliferation of information, combined with technological advances including the Internet, had made identifying and locating information easier, evaluating synthesizing, and organizing information had become more difficult, thus causing a dilemma for researchers.

Federer (2014) observes that librarians have been providing support to researchers with a focus on responding to researchers' needs for access to the existing literature. Mamtora (2013) notes that librarians' skills and expertise make them uniquely suited to provide a wide range of assistance to researchers across the entire research process, from conception of the research question to archiving of collected data at the project's conclusion. In response to increasingly stringent demands on researchers to share their data, and as computationally intensive and primarily data-driven scientific methods begin to take the place of traditional lab-based research, the "research informationist" has emerged as a new information profession. With a background in library and information sciences, as well as expertise in best practices for data management, grant funder policies, and informatics tools, the research information is capable of implementing full of research support services.

Ramírez (2011) observes that as the volume of digital data multiplies exponentially and the use of digital repositories to capture academic research expands, the demands on academic librarians are also increasing. Librarians are expected to serve as liaisons between data authors, managers, scientists and end users, while providing a full range of curation services. Little had been offered from the perspective of archival and records management, despite archivists' traditional role as keepers and stewards of scholars' data. Archival science focused on appraising, selecting and describing data, managing data retention and attending to source, authenticity and preservation. Professional archivists had considerable expertise in handling volumes of research data, and archival methods could add efficiency to digital data management. Greater collaboration between academic library liaisons and archivists was urged while recognizing and integrating the skills of each profession to the best advantage for the most effective approach to comprehensive data curation and management of digital repositories.

Matthews (2015) on the impact of different library factors on student learning and success observed there was an evidence-based assessment finding about the positive contributions of the library to students' academic success growth. The project activities were grounded in action research, which meant that the focus was on institutional priorities and using the assessment findings to inform and improve academic initiatives in ways that were meaningful and sustainable. Library is increasingly recognized as integral to advancing the academic success of students at higher education institutions.

Conclusively, a combined research by Online Computer Library Centre [OCLC] (2011) and the Research Information Network (RIN) (2011) documented the nature and scope of tools and services that researcher's use. The focus was the effectiveness of the tools used in meeting researchers' needs and as well as investigating if there were any unmet needs. The independent reports identified an intersections as well as gaps among the services provided by various entities such as: on-campus and off-campus consortia, and commercial endeavors. The results revealed good practice, with recommendation on areas where new practice might emerge, and identify possible areas and scope for collaboration within and between institutions research framework. The objective was to provide evidence and encourage coordination of research related activities that would meet and ensure user needs satisfaction for doctoral research information internationally.

OCLC (2011) highlighted existence of a number of opportunities to support researchers during the research process as follows: alert researchers to new and forthcoming grant opportunities from a range of funding bodies in their respective fields; identify research of potential commercial value to the university and start the processes to commercialize where appropriate; help investigators locate potential collaborators and make their own expertise known; enable collaborative management of documents and analysis of data. Additionally, to improve their information retrieval and management skills; provide tools for analysis of large text aggregations; help manage citations.; store, curate and preserve researchers' data sets; help find the most effective manner and vehicle in which to publish; provide advice in protecting intellectual property rights; support tenure and promotion, such as a service that tracks how often a researcher's articles have been cited, where and by who. They inform researchers on how they rate within their field (i.e. their indexes according to various measures based on citation analysis) as well as manage and preserve preprints, publications and post-prints.

Research at the doctoral level therefore requires a sophisticated use of specialized information sources, and involves synthesis of information from various stages of the scholarly communication process, that is, from primary, secondary, and tertiary sources. Studies offer that (Monroe-Gulick & Petr, 2012; Stec, 2006; Young & Jacobs, 2013) library instruction for graduate students must address this complexity, since the high expectations and with respect to access to research information can be stressful. When developing library support programs for doctoral students, it is important to keep in mind that students will have varying levels of expertise that emanate from their previous experience and technological advancement (Young & Jacob, 2013). Further they agree that doctoral research students may need to develop specialized skills and abilities, and that they may not be aware of what they need to learn. Other areas of focus are instilling such skills as regards information searching, filtering or evaluation of information, synthesizing and analyzing, plagiarism avoidance, referencing and citation, document formatting are identified as some of the time consuming procedures in the research process.

3.0 METHODOLOGY

The study was conducted in selected public universities within the Nairobi metropolitan region which span across four counties. The area is selected due to its high enrolment for doctoral students due to its proximity to the city Centre. Most students pursuing doctoral studies may be returning students who also work as well as pursue their doctoral studies and prefer institutions within workplace proximity. Most of the institutions also have a long history of library services development to meet higher education standards.

The study adopted descriptive survey research design. The research adopted a pragmatic philosophical approach bringing together qualitative and quantitative research. The study population of the study constituted of all the Kenyan chartered public universities. Based on this, the population of the study targeted all the doctoral students registered with the board of postgraduate in the Kenyan public universities between 2016-2017, the librarians in-charge of section managing service and support activities, to triangulate the data collected the research also targeted the directors of graduate schools and documents relating to doctoral research process. Therefore the target population of the study was 3620 comprising 3602 doctorate student. To confirm the level of services and resources the study considered the section heads library service areas those directly involved with readers services from which 18 librarians, were selected. The researcher sampled 384 (11%) doctoral students using proportionate simple random sampling to be a representative sample size. All the 18 librarians were included in the study. Both quantitative and qualitative data collection instruments were employed consistent with the research method chosen for the study. The data collection instruments used for this study was a structured questionnaires, document review. The models that were estimated were in the following forms:

$Y= \beta_O + \beta_1 X_1 + \varepsilon$, where X_1 represented role of librarians in research information need identification, β_O is the constant while β_1 is the coeffecient are the role of librarians in research information. Y represents dependent variable (Sucess of doctoral research process) and ε represents the disturbance or error term.

4.0 FINDINGS, INTERPRETATION AND DISCUSSIONS

4.1 Response rate

Out of 384 questionnaires that were administered, 311 questionnaires were properly filled and returned. This represented a response rate of 81.0 % as shown in Table 2.

Table 2 Response Rate

Target Population	Response	Frequency	Percent
Doctoral students	Returned	311	81.0%
	Not returned	73	19.%
	TOTAL	384	100%
Librarians	Returned	18	100%

Babbie (2013) asserted that return rates of above 80% is excellent. The study results indicate a response rate of 81% and therefore, considered adequate for further analysis. The high response rate was attributed to follow ups to the respondents and in some instances encouraging the respondents to fill the questionnaires and return them instantly.

4.2 Librarians' support and the success of doctoral research

The findings agrees with the finding of Covert-Vail (2012) in UK libraries created "co-branded" services that took advantage of librarian skills, to do so they implemented service centers to support the use of data and visualization processes and stressed the need to provide access to technologies and resources that increase efficacy and also support those resources with instruction and expert assistance.

This was further evaluated by asking the doctoral respondents to how they perceived the librarians participation and support in their research process, this was a qualitative question as it solicited information of librarians' characteristics and their impact on the learners' experience. The question was whether it was very helpful at different stages of the study. This was measured with 5-point likert scale at 1 being strongly disagree 2 disagree 3 slightly agree 4. Agree 5 Strongly Agree. Results are presented in Table 3.

Table 3: Librarian characteristics

	N	Minimum	Maximum	Mean
The Librarian is available to provide guidance on referencing and citation style.	311	1	5	4.08
I only learnt about the librarian participation in the research process at proposal development	311	2	5	4.05
I only learnt about the librarian participation in the research process at the point of submitting my final thesis	311	2	5	4.04
Librarian provided basic information literacy	311	1	5	4.02
The librarian had positive Influence of in research process	311	2	5	3.55
I consulted the librarian for guidance on availability of needed information	311	1	5	3.40
Valid N (listwise)	311			

The availability of the librarian as a guide for referencing and citation at a mean score of 4.08 shows that the respondent agreed to the fact that it was helpful in their research process.

The researcher also sought to examine the knowledge of respondent on how helpful the librarian was to their research process. 4.05 agreed they learnt about the role of the librarian during their proposal development. This has an early start and may benefit from the interaction, however 4.02 equally indicated that the only learnt about the librarian role at the point of submission of the final copy of the document.

In table 3 respondents were asked to respond on how the librarian interacted with their research process, The least in rank was Researcher/librarian relationship is fortified for the duration of the research process, and the commitment shown by the library is rewarded in terms of user satisfaction and, potentially, use as indicated by mean of 2.61.

Overall the finding are in agreement with Moon, et al. (2012) on the role librarian paly to ensure access to information in research, argued that access to relevant information is necessary for students' to take efficient decision in their research.

This finding was consistent with the information on submission steps available, and the clearance document available at the board of graduate school. The study is supported by Sawang and Jamieson, (2013) who advised on the need to increase learners' satisfaction/intention to adopt to the changing learning environment. Additionally said that characteristics of the learner are linked to the satisfaction or dissatisfaction in the learning process. Further the findings are consistent

with the Tenopir, Sandusky, Allard,and Birch (2013) who commented that although the librarian is not a specialist in all disciplines in research , with their metadata competencies, they stand a better chance to support researchers in managing document format and citation standards to harness their technical writing, but Gullbekk et al., (2013) observed a gap in that most of the times the librarian were involved at the tail end of the research process in most cases, which causes a delay as a matter of compliance . Further the researcher sought to find out what the perception of learners on the librarian role in the research process. This was measured using nine statements and were supposed to strongly agree, agree, disagree and strongly disagree. The results are presented in table 4.

Table 4: How libraries support for learners

	N		Mean	Std. Deviation
	Valid	Missing		
Internet connectivity24/7	18	0	4.44	.784
Virtual public network for off-campus access	18	0	4.33	1.029
Subscription to scientific databases	18	0	3.94	1.349
Digital revolution	18	0	3.83	1.098
Maintain an Institutional Repository	18	0	3.78	1.437
Collaboration...research process	18	0	3.67	.970
Provide literacy skills	18	0	3.56	.784
Librarians modify behaviour	18	0	2.61	.778
Researcher librarian relationship fortified	18	0	2.61	1.092

In Table 4, most of the respondents agreed that Internet connectivity 24/7 had mean of 4.44 virtual public network for off-campus access had mean of 4.43,followed closely by subscribing to scientific databases had mean of 3.94. Digital revolution at a mean of 3.83, maintaining of an institutional repository with a mean of 3.78. Thus gave prominence to digital related access services. It was further noted that most respondents agreed that academic libraries could promote the perceived outcomes of learning literacy skills better with mean of 3.56 ill-informed beliefs and perceptions by other stakeholders about librarians' skills may adversely affect acceptance of collaborative partnerships had mean of 3.56, librarians are not always well-equipped to promote change, and researchers sometimes resist efforts to modify their behaviors and practices had

mean of 2.61. The least in rank was Researcher/librarian relationship is fortified for the duration of the research process, and the commitment shown by the library is rewarded in terms of user satisfaction and, potentially, use as indicated by mean of 2.61. Overall the finding are in agreement with Moon, et al. (2012) on the role librarian play to ensure access to information in research, argued that access to relevant information is necessary for students' to take efficient decision in their research.

4.6.1 Success of Doctoral Research

The researcher sought to measure to the extent to which the respondents agreed on the influence of the librarian their research process. This ranges from database awareness, library workshops, ability to approach the librarian for help, the kind of services sought and the point of interaction. The results are presented in Table 5.

Table 5: Success of Doctoral Research

Statement	N		Mean	Std. Deviation
	Valid	Missing		
Awareness of the publishing cycle in my study discipline	311	0	4.25	**1.243**
Ability to determine what information needed to answer question(s) in my research area.	311	0	3.88	**1.361**
Ability to evaluate information for quality, relevance, fitness for purpose of my study area.	311	0	3.57	**1.380**
Ability to evaluate relevant data e.g. statistics.	311	0	3.38	**1.369**
Ability to read scholarly articles, to inform my study area	311	0	3.37	**1.371**
Understanding of biases in information in my discipline	311	0	3.15	**1.373**
Understanding of the economic/political/social aspects of information production and dissemination	311	0	3.12	**1.254**
Ability to use citations from one source to track other sources	311	0	3.02	**1.345**
Ability to locate relevant data e.g. statistics, resources form a variety of sources	311	0	2.86	**1.268**

The results in table 5 shows the level of awareness with mean score of 4.25 agreed to awareness of the publishing cycle had an influence in their study discipline while a mean of 3.88 agreed to the ability to determine what information was needed to answer question(s) in their research area. Also with a mean score of 3.57 agreed with the statement the ability to evaluate information for quality, relevance, fitness for purpose of my study area. Moderately agreed with a mean score of 3.38 for ability to evaluate relevant data e.g. statistics; while ability to read scholarly articles,

to inform my study area; understanding of biases in information in my discipline; understanding of the economic/political/social aspects of information production and dissemination; ability to use citations from one source to track other sources with a mean score of 3.38; 3.37, 3.15, 3.12, 3.02 respectfully; this shows that learners were not quite sure what influence of the librarian impacted on their research process. However, a minority of respondents with means core of 2.86 who did not agree that they gained from the ability to locate relevance data e.g. statistics, resources form a variety of sources. The results imply that there are areas for consideration for librarians to make themselves visible to research students and support their information needs.

The findings of the study confirm the observations of Walshaw (2013) on 'getting grip of doctoral research' that doctoral students require certain skills which will be useful for their studies. Further that information retrieval skills and familiarity with online databases top of the requirements, efficient use of their time and ability to get up-to-date, precise and accurate information resources. On the other hand Delaney and Bates (2018) observed the misconceived graduate perceptions that everything was available for the researcher on the internet, and therefore there was no need of physical library services and interventions.

4.3 Multiple Regression Analysis

A multiple regression model was first run to determine librarians' support can contribute to the success of doctoral research process in selected Kenyan public universities. The results in Table 6 present the fitness of model used in explaining the relationship between independent variables (research information needs identification, accessibility to information services and resources and research information infrastructure) and the dependent variable (success of doctoral research process). The independent variables were found to be satisfactory in explaining their contribution to the success of doctoral research process. The model summary results, ANOVA results and regression coefficients were presented in Tables 6, 7, 8 respectively.

Table 6: Combined Regression Analysis Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.744[a]	.553	.549	.263

a. Dependent variable: Success of doctoral research process.
b. Independent variables : (Research Information Needs Identification, Accessibility to Research Information services and Resources, Research Information Infrastructure)

As shown in table 6, the correlation coefficient (R) of 74.4 per cent means that there is a strong multiple linear relationship between the independent variables (research information needs identification, accessibility to research information services and resources, research information infrastructure) and the dependent variable (success of doctoral research process).

The coefficient of determination R^2 of 0.553 means the independent variables(research information needs identification, accessibility to research information services and resources, research information infrastructure) of the study explained 55.3 per cent of the variation in the dependent variable (success of doctoral research process).

Further an analysis of variance for independent variables (research information needs identification, accessibility to research information services and resources, research information infrastructure) was conducted and the results are as shown in table 7.

Table 7: Combined ANOVA

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	26.275	3	8.758	126.782	.000[b]
1Residual	21.208	307	.069		
Total	47.483	310			

a. Dependent Variable: The Success of Doctoral Research Process
b. Independent variables: Information Infrastructure, Access to Research Information Resources, Research Information Needs Identification

Result in table 7 indicated that F statistic of 126.782 was significant at 0.000 ($p \leq 0.05$) which indicates that the model used in the study was significant and that the independent variables (information infrastructure, access to research information resources, research information needs identification) fitted well in the model. Therefore, independent variables (research information infrastructure, access to research information services and resources, research information needs identification of the study were significant in explaining the success of doctoral research process.

Table 8: Combined Regression Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	p-Value
		Beta	Std. Error			
1	(Constant)	.927	.147		**6.300**	**.000**
	Research Information Needs Identification	.236	.045	.292	**5.212**	**.000**
	Accessibility to Research Information services and Resources	.268	.042	.328	**6.387**	**.000**
	Research information Infrastructure	.218	.048	.239	**4.564**	**.000**

a. Dependent variable: the success of doctoral research process
b. Independent variables : research information needs identification, Accessibility to research Information services and Resources, research information infrastructure

The results in table 8 show the regression coefficients for the combined independent variables. The multiple regression model was as shown by $Y= 0.927+ 0.236X_1+ .268X_2 + 0.218X_3$. Where Y represents the success of doctoral research process and X_1 represent research information needs identification X_2 represents access to research information services and Resources X_3 represents the research infrastructure. The results also indicate that all the three independent variables attribute positively to the dependent variable. It implies that a unit increase of research information needs identification causes a 23.6 % variation in the success of doctoral research process; a unit increase of accessibility to research information services and resources causes a 26.8% variation on the success of doctoral research process whereas a unit increase of research information infrastructure causes a 21.8% variation on the success of doctoral research process.

Regression coefficients results in Table 8 shows that research information needs identification had a statistical significant influence on the success of doctoral research process with t and p-values of 5.212 and 0.000; accessibility to information services and resources had a statistical significantly influence on success of doctoral research process with t and P-value of 6.287 and 0.000 and research information infrastructure has a statistical significant influence on the success of doctoral research process with t and p values of 4.564 and 0.000. The results agree with Allee *et al*., (2014); Jaguszewski and Williams (2013) argue that with the emerging roles, the librarians need to understand and support the process of scholarship. They need capacity to move away

from the routine of reference, instruction and collection development to a modified research support systems.

5.0 CONCLUSION

Descriptive results showed that librarians' support to learners is essential to the success of doctoral research process. The study established that doctoral research students underscored the important role played by librarians in identifying the critical research information required for enriching research studies. The success rate of doctoral research process is directly related to the efficiency in which learners acquire relevant research information to meet the needs at each stage of the research cycle. The role of librarians in the doctoral research cycle is of paramount importance. Therefore the study concludes that the librarian should develop a framework that addresses these issues relating to doctoral research processes

6.0 IMPLICATIONS OF THE FINDINGS AND RECOMMENDATIONS

The results of the study provide and an empirical research on the relationship between the librarians' support to learners and the success of doctoral research process in selected Kenyan public universities. Current study suggests strong relationships between these variables that curve a niche for librarian to design dedicated services aimed at enhancing the doctoral research process. The findings of this study have a number of implications for theory, practice and policy.

This study contributes to understanding the importance role of librarians' support to learners and the success of doctoral research process. All other factors held constant the study explains 55 percent of the librarians' support to learners in the success of doctoral research process. The role of academic libraries in facilitating research is highly acknowledged ad that academic libraries play a pivotal role in ensuring the success of research. With greater attention on research given by universities, the considerable amount of literatures has showed that libraries have put more emphasis on their services as compare to research facilities.

Librarians need to help faculty discover and utilize the resources and tools that improve scalability, close knowledge gaps, improve confidence as well as enhance the process in research. The theory becomes practical in the communication process and changing how they provide learners support research.

There is need for university libraries to align library facilities deliberately create an environment suitable to accelerate doctoral research process. Students at the doctoral level frequently need detailed, comprehensive information particularly for thesis research and therefore need strong information-seeking and use skills to accomplish their research goals. User needs assessment helps to determine what academic libraries can do to help doctoral students complete their degrees. The study recommends that academic research libraries need to understand how library services might impact graduate student success in terms of degree completion and time to completion.

REFERENCE

Allee, N., Blumenthal, J., Jordan, K., & Lalla, N. (2014). One institution's experience in transforming the health sciences library of the future. Medical Reference. Retrieved from http://www.tandfonline.com/doi/abs/10.1080/02763869.2014.866444.

Altbach, P. G. (2004). Higher education crosses borders: Can the United States remain the top destination for foreign students? *Change: the magazine of higher learning*, *36*(2), 18-25.

Amutabi, M. (2011). Why Kenyans take forever to acquire Ph.Ds. *Nairobi: Daily Nation*. Retrieved from https://www.nation.co.ke.

Amutabi, M. (2017). The Average Age of PhD Graduates in Kenyan universities is worrying. Retrieved from https://kenyasocialscienceforum.wordpress.com.

Asundi, A. V. (2012). Five laws of library science 80. *SRELS Journal of Information Management*, *49*(2), 125–126. Retrieved from http://search.ebscohost.com/login.aspx?direct=true&db=lxh&AN=75377893&site=ehost-live.

Auckland, M. (2012). *Re-skilling for research: An investigation into the role and skills of subject and liaison librarians required to effectively support the evolving information needs of researchers* (p. 115). London: Research Libraries UK. Retrieved from http://www.rluk.ac.uk/wp-content/uploads/2014/02/RLUK-Re-skilling.pdf.

Babbie, E. R. (2015). *The practice of social research*. Nelson Education.

Bergsteiner, H., Avery, G. C., & Neumann, R. (2010). Kolb's experiential learning model: critique from a modelling perspective. *Studies in Continuing Education*, *32*(1), 29-46.

Bhagat, A., Vyas, R., & Singh, T. (2015). Student's awareness of learning styles and their perceptions to a mixed method approach for learning. *International Journal of Applied and Basic Medical Research*, *5*(Suppl 1), S58.

Buch, K. & Bartley, S. (2002). Learning Style and Training Delivery Mode Preference, *Journal of Workplace Learning*, 14 (1), 5 – 10.

Carr, P. L. (2014). Reimagining the Library as a Technology: An Analysis of Ranganathan's Five Laws of Library Science within the Social Construction of Technology Framework. The *Library Quarterly, 84*(2), 152–164. http://doi.org/10.1086/675355.

Catalano, A. (2013). Patterns of graduate students' information seeking behavior: A meta-synthesis of the literature. *Journal of Documentation*, *69*(2), 243–274. Doi: 10.1108/00220411311300066.

Chanetsa, B. (2014). *The changing roles, responsibilities and skills of subject and learning support librarians in universities in the southern African customs union (SACU) region: guidelines for the establishment of a new service.* Unpublished PhD thesis University Of South Africa.

Cochrane, P. A. (1992). Information Technology in Libraries and Ranganathan's Five Laws of Library Science. *Libri*, *42*(3), 235–241. http://doi.org/10.1515/libr.1992.32.2.23.

Commission of University Education (2016). *The Agenda: State of Universities in Kenya,* Nairobi: CUE.

Connaway, L. S., Harvey, W., Kitzie, V., & Mikitish, S. (2017). Academic Library Impact: Improving Practice and Essential Areas to Research. College & Research Libraries, preprint, 40. Retrieved from http://www.ala.org/acrl/sites/ala.org.acrl/files/content/publications/whitepapers/academiclib.pdf.

Costiander-Huldén, E., & Järveläinen, L. (2013). Developing informational literacy among doctoral students and researchers - Case Åbo Akademi University Library and Turku University Library. *Nordic Journal of Information Literacy in Higher Education*, *5*(1). https://doi.org/10.15845/noril.v5i1.210.

Covert-Vail, L., & Collard, S. (2012). *New Roles for New Times : Research Library Services for Graduate Students*. London: Association of Research Libraries.

Cutis+ Cartwirght Consulting Limited. (2014). Supporting researchers - Research Libraries UK. Retrieved November 11, 2017, from http://www.rluk.ac.uk/strategicactivity/strategic-strands/redefining-research-library-model/foundations/supporting-researchers/.

Delaney, G., & Bates, J. (2018b). How can the university library better meet the information needs of research students? Experiences from Ulster University. *New Review of Academic Librarianship*, *24*(1), 63-89.

Eddy, M. A., & Solomon, D. (2017). Leveraging librarian liaison expertise in a new consultancy role. *The Journal of Academic Librarianship*, *43*(2), 121-127.

Federer, L. (2014). Exploring new roles for librarians: The research informationist. *Synthesis Lectures on Emerging Trends in Librarianship*, *1*(2), 1-47.

Gessner, G. C., Jaggars, D. E., Rutner, J., & Tancheva, K. (2011). Supporting Humanities Doctoral Student Success: *A Collaborative Project between Cornell University Library and Columbia University Libraries. Studies, 4*(4), 4.

Glazer, G. (2010), *Study to see how libraries can help humanities Ph.D. students finish degrees.* Retrieved from http://news.cornell.edu/stories/2010/02/library-help-humanities-phds-graduate-faster.

Groenewegen, D. (2017). Yesterday and Today: Reflecting on Past Practice to Help Build and Strengthen the Researcher Partnership at Monash University. *New Review of Academic Librarianship*, 23(2–3), 171–184. https://doi.org/10.1080/13614533.2017.1336637.

Gullbekk E., Rullestad, T. Calvo M.C., Torras, i (2013). *PhD candidates and the research process*: The library's contribution. Oslo: University of Oslo.

Ha, C., & Verishagen, N. (2015). Applying Kolb's Learning Theory to Library Instruction: An Observational Study. *Evidence Based Library and Information Practice, 10*, 186–199.

Hart, G., & Kleinveldt, L. (2011). The role of an academic library in research. *Researchers' perspectives at a South African University of Technology*. *77*(1), 37–50.

Humphrey, C., & Hamilton, E. (2004). Is it working? Assessing the value of the Canadian Data Liberation Initiative. *The Bottom Line, 17*(4), 137–146.

Jackson, B., MacMillan, M., & Sinotte, M. (2014). Great Expectations: Results from a Faculty Survey of Students' Information Literacy Proficiency. *Proceedings of the IATUL Conferences, 23*. Retrieved from https://mruir.mtroyal.ca/xmlui/handle/11205/133.

Jaguszewski, J. M., & Williams, K. (2013). *New Roles for New Times: Transforming Liaison Roles in Research Libraries*. Washington D.C: Association of Research Libraries.

Khode, S., & Khode, A. (2011). Online electronic journals and the five laws of library science. *SRELS Journal of Information Management, 48*(1), 9–1 NULL. Retrieved from http://search.ebscohost.com/login.aspx?direct=true&db=lxh&AN=60362919&site=ehost-live&scope=.

Kolb, A. Y., & Kolb, D. A. (2005) Learning styles and learning spaces: Enhancing experiential learning in higher education. *Academy of Management Learning & Education, 4*(2), 193-212.

Kolb, D. A. (1981). Experiential learning theory and the learning style inventory: A reply to freedman and stumpf. *Academy of Management Review, 6*(2), 289-296.

Koltay, T. (2016a). *Data governance, data literacy and the management of data quality*. *42*(4), 303–312. https://doi.org/10.1177/0340035216672238.

Koltay, T. (2017). Data literacy for researchers and data librarians. Journal of Librarianship and Information Science, 49(1), 3–14. https://doi.org/10.1177/0961000615616450.

Lum, L., Alqazli, M., & Englander, K. (2018). Academic Literacy Requirements of Health Professions Programs: Challenges for ESL Students. *TESL Canada Journal, 35*(1), 1-28.

MacMillan, D. (2015). Developing data literacy competencies to enhance faculty collaborations. *LIBER Quarterly, 24*(3), 140-160.

Matthews, J. R. (2015). *Library assessment in higher education*. London: Libraries Unlimited.

Monroe-Gulick, A., & Petr, J. (2012). Incoming Graduate Students in the Social Sciences: How Much Do They Really Know About Library Research? Portal. *Libraries and the Academy*, *12*(3), 315–335.

Moon, J., Hossain, M. D., Kang, H. G., & Shin, J. (2012). An analysis of agricultural informatization in Korea: the government's role in bridging the digital gap. *Information Development*, *28*(2), 102-116.

Muetzel, A. M. (2015). *Experiential Learning & Engagement : The Role of Professional Development and Engagement in the Graduate Assistant Experience*. LSU doctoral dissertation. Louisianna: LSU.

Oakleaf, M. (2010). The value of academic libraries. In *Review Literature and Arts of the Americas* (Vol. 71). https://doi.org/978 -0- 8389 - 8568 -7.

OCLC (2011). *Annual report Research, 2013-2014* https://www.oclc.org/en/annual-report/2014/home.html/.

Omanga, D. (2017, June 10). Why Kenya ranks so lowly in doctoral studies among peers in the region __ Kenya - *The Standard. Standard media*.

Opata, F. (2017, June 25). *Commission of university education is to blame*, Rerieved from https://www.standardmedia.co.ke/ureport/story/2000189332.

Oyewusi, F. O., & Oyeboade, S. A. (2009). *An Empirical Study of Accessibility and Use of Library Resources by Undergraduates in a Nigerian State University of Technology*,

Passarelli, A. M., & Kolb, D. A. (2012). Using experiential learning theory to promote student learning and development in programs of education abroad. *Student learning abroad: What our students are learning, what they're not, and what we can do about it*, 137-161.

Ramírez, M. L. (2011). Opinion: Whose role is it anyway? : A library practitioner's appraisal of the digital data deluge. *Bulletin of the American Society for Information Science and Technology*. https://doi.org/10.1002/bult.2011.1720370508.

Rasul, A., & Singh, D. (2010). The role of academic libraries in facilitating postgraduate students' research. *Malaysian Journal of Library and Information Science*. *15*(3), 75-84.

Research Libraries UK. (2011). *the value of libraries for research and researchers*. Annexes A, B and C. Retrieved from http://ecr2star.org/blog/2014/9/3/the-value-of -libraries-for-researchers.

Sacchanand, C. (2012, August). Building collaboration between library and information science educators and practitioners in Thailand: transcending barriers, creating opportunities. In *World Library and Information Congress, Helsinki, August 11â* (Vol. 17).

Sarabdeen, J. (2013). Learning Styles and Training Methods. *Communications of the IBIMA*, *2013*, o1-9.

Secker, J., & Macrae-Gibson, R. (2011). Evaluating MI512: an information literacy course for PhD students. Library Review, 60(2), 96–107.

Sewell, C., & Kingsley, D. (2017). Developing the 21st Century Academic Librarian: The Research Support Ambassador Programme. *New Review of Academic Librarianship, 23*(2–3), 148–158. https://doi.org/10.1080/13614533.2017.1323766.

Spaulding, L. S., & Rockinson-Szapkiw, A. J. (2012). Hearing their voices: Factors doctoral candidates attribute to their persistence. *International Journal of Doctoral Studies, 7*(1), 199-219.

Stamatoplos, A. (2009). The role of academic libraries in mentored undergraduate research: A model of engagement in the academic community. *College & Research Libraries*, *70*(3), 235-249.

Stec, E. M. (2006). Using best practices: librarians, graduate students and instruction. *Reference Services Review, 34*(1), 97–116. http://doi.org/10.1108/00907320610648798

Takeuchi, S. (2010). A Commentary on S. R. Ranganathan's Five Laws of Library Science. *Information Studies*, *16*(3), 149–154.

Tenopir, C., Sandusky, R. J., Allard, S., & Birch, B. (2013). Academic librarians and research data services: preparation and attitudes. *IFLA Journal*, *39*(1), 70–78.

Tomaszewski, R. (2012). Information needs and library Services for doctoral students and postdoctoral scholars at Georgia State University. *Science & Technology Libraries*, *31*(4), 442–462.

Valero, Y. F. de. (2016). Departmental Factors Affecting Time-to-Degree and Completion Rates of Doctoral Students at One Land-Grant Research Institution. *The Journal of Higher Education*, *72*(3), 341–367. Retrieved from http://www.jstor.org/stable/2649335.

Van de Schoot, R., Yerkes, M. A., Mouw, J. M., & Sonneveld, H. (2013). What Took Them So Long? Explaining PhD Delays among Doctoral Candidates. *PLoS ONE*, *8*(7), e68839.

Vekkaila, J., Pyhältö, K., & Lonka, K. (2013b). Experiences of disengagement–A study of doctoral students in the behavioral sciences. *International Journal of Doctoral Studies, 8*(2013), 61-81.

Walshaw, M. (2013). *Getting to grips with doctoral research*. New York: Macmillan International Higher Education.

Walton, G. (2016). *University libraries and space in the digital world*. Middlesex. Eng: Routledge.

Warburton, J., & Macauley, P. (2014). *Wrangling the literature: Quietly contributing to HDR completions* Authors: Melborne: RMIT University.

Young, S., & Jacobs, W. (2013). Graduate student needs in relation to library research skills. *Journal of Modern Education Review 3*(3), 181-191.