

**EFFECTIVENESS OF ONLINE PUBLIC ACCESS CATALOGUE IN MEETING
USER INFORMATION NEEDS AT THE UNIVERSITY OF NAIROBI LIBRARY**

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DECLARATION

This research project is my original work and has not been presented for a degree or any award in any other university.

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DEDICATION

This work is dedicated to my family for the full support and encouragement they have granted to me this entire time.

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I wish to appreciate the entire University of Nairobi Library and the Department of Information Science for their guidance and support. Special thanks go to my Supervisor's DrIrura and DrKingori for their tireless guidance and encouragement while writing this project.

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God bless you all.

ABSTRACT

The University library is considered as the heart-beat of the intellectuality of the university as the quality of the university is determined against its library given its unique role. This critical role of libraries requires them to be innovative in their service delivery. This has resulted to systems such as OPAC that have facilitated access of catalogued information. The aim of this study was to weigh up the effectiveness of the Online Public Access Catalogue (OPAC) in meeting user information needs at the University of Nairobi (UoN) Library. The specific purpose of this study were to: establish the functions of OPAC applied at the UoN Library; determine ways in which the OPAC at the UoN Library helps in meeting user information needs; establish limitations of OPAC at the UoN Library in meeting user information needs; and determine how limitations of OPAC at the UoN Library can be addressed to help in meeting user information needs. For this study, the principle of least effort was used as the theory underpinning the area of study. Qualitative and quantitative methods were applied in the research design. Semi-structured questionnaires were used to gather data from the study's respondents. The target population was the UoN College of Architecture and Engineering Library users. The study determined that the OPAC that was being used by the University library was not meeting user information needs of all its users. The biggest limitations of OPAC included non-availability to offsite access, non-accessibility through mobile phones, lack of inter-library resource linkages, lack of user notifications of reserved materials, poor friendly user interface, low literacy skills on OPAC and location problems of materials due to miss-shelving. The study recommends strategies such as re-configuring OPAC for offsite access, accessibility through mobile phones and allowing inter-library resource linkages through OPAC as ways of improving this OPAC in meeting user information needs at the UoN library. If the findings and recommendations of the study can be adopted by University of Nairobi library management, then it will help in policy formulations and OPAC system improvement that will help in addressing user information needs.

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LIST OF ABBREVIATIONS

ALA	American Library Association
C.A.E	College of Architecture and Engineering
ICT	Information Communication Technology
JKML	Jomo Kenyatta Memorial Library
OPAC	Online Public Access Catalogue
SPSS	Statistical Package for the Social Sciences
UoN	University of Nairobi

CHAPTER ONE

INTRODUCTION AND BACKGROUND INFORMATION

1.0 Introduction

University libraries are primarily set up to maintain learning, research and teaching at the University (Mole & Mesagan, 2017:38). Hence, in supporting the University as it is required, University Library provides certain services such as facilitation in research, teaching, publication, conservation of information, ideas and knowledge and provision of extension services. In addition, Ogunsola (2014:34) notes that University libraries bear out a number of functions which include the selecting and acquiring of learning materials that could be both in print or non-print, organization of these materials which include classification and cataloguing, reference and information services, user education, bibliographic and documentation services among others. Shiv (2014), adds that in all its functions and services, the ultimate goal of any library including university libraries is to provide the required relevant information to library users in the shortest time possible in a more economical manner. Such needs necessitated innovation of a number of library systems such as OPAC system which sought to help libraries to organize their catalogued information for easier retrieval of library resources.

Owing to the nature of clients in the university environment, the university library is considered as the heart-beat of the intellectuality of the university as the quality of the university is determined against its library given its unique function (Mole & Mesagan, 2017:38). They further argue that, it is imperative that libraries need to be innovative in their service delivery. With revolution of library services, such innovations have been in the area of cataloguing services. This has resulted to systems

such as OPAC that have facilitated access of catalogued information to users hence, aiding faster access and retrieval of library resources.

1.1 Background to the study

The American Library Association (ALA) Glossary of Library and Information Science (1983) define Online Public Access Catalogue (OPAC) as a library catalogue supported by a computer that is developed to be accessed via terminals. OPAC was introduced in libraries during the 1970s in the United States (U.S.) and had undergone through various developments and change (Mole & Mesagan, 2017:39). The primary purpose of introducing OPAC in libraries was to develop a database of library collections to provide an online catalogue that will aid library users in searching and identifying information resources (Morupisi & Mooko, 2006:197). This was in line with the scope of most libraries which is to avail quality library services to users and to endeavor in their improvement. OPAC has step by step replaced the card catalogue since its introduction.

Willson and Given (2014:6) note that OPAC has revolutionized the conventional accessibility of library resources in all libraries including academic ones. Willson and Given (2014) point that OPAC systems in their interface have retrieval information tools which aid users to access library resources using a number of access points. OPAC in its traditional application is used in searching for bibliographic information and retrieving these records of bibliographic nature instead of full text materials. Hufford (2011:60) noted that most library users are likely to use readily obtainable sources of information rather than sources of information that need considerable amount of effort in retrieval. In support of this position, Mole and Mesagan (2017:38) noted that OPACs were popular with library users as compared to card catalogues as

they are more convenient and efficient for searching library materials. According to Hufford (2011:3), OPAC systems were also considered to be suitable for independent subject browsing and searching library collections as compared to manual catalogues.

1.1.1 Context of the Study

The development of the University of Nairobi (UoN) goes back to 1956 with foundation of the Royal Technical College into the sphere of higher education. Royal Technical College was transformed into the second University College in East Africa in 1961 and was later renamed Royal College Nairobi (University of Nairobi, 2017). This college was admitted as a constituent of the University of London with faculties of Science, Arts and Engineering that used to award degrees of the University of London. The college was changed the name to University College Nairobi and became a constituent college of Federal University of East Africa. Thereon, students studied for degrees of the University of East Africa rather than University of London. In 1970, it became the first university in Kenya and it changed name to the University of Nairobi.

Since 1970, the University of Nairobi underwent massive expansion. This included decentralization of its services into six (6) colleges each served by departmental library which are centrally managed from the Jomo Kenyatta Memorial Library (JKML) at the Main Campus of the University of Nairobi. The six libraries and their school and institutional branches work in unison to provide information services, driven by a common purpose of supporting the university to achieve its core mandate of teaching, research, consultancy and learning (University of Nairobi, 2017). The mission of the University of Nairobi Library is to provide quality information services that will empower the university in carrying out its core activities of teaching,

learning, research and community services and consultancy (University of Nairobi, 2017). The Library's vision is to attain status of "a world class information centre committed to excellence in the provision, dissemination and preservation of knowledge" (University of Nairobi, 2017).

The university library has numerous functions which include; having a system that ensures that library users have access to relevant information at the appropriate time to support learning, research and teaching and consultancy programmes; development of systems for the preservation and conservation of valuable and rare information resources for posterity; increase and update of library facilities for improved information delivery amongst other related functions. To achieve the above stated functions amongst others, the University of Nairobi Library management monitors and reviews its performance on a regular basis by benchmarking against the ISO 9001 standards (University of Nairobi, 2017).

1.2 Statement of Problem

The UoN Library has been using OPAC since 2004. Over the years, the university has seen an increase in population of its students, academic and the non-academic staff who form part of the university clientele. As a result, the Library has strived to increase its resources including full text database, computerized systems and resources including OPAC amongst others. The library has automated its services to assist its user's access its services remotely and to encourage its clientele become more independent. To achieve this, all catalogue records were migrated to OPAC to improve on accessibility. In addition, the library has continued to undertake its information literacy program to help clients use OPAC and other library resources more effectively. Nonetheless, observations in the university library indicate that

some users are still using reference librarians to help them access information available on the OPAC system or just browsing through the collections. For instance, according to a base-line survey conducted in 2017 a third of the library users prefer accessing information through reference librarians.

In addition, there have been a number of cases where some clients have ended up retrieving wrong information resources after using the OPAC. As a result, such users blame the university systems as they view such systems as ineffective. In certain environment as postulated by Mole and Mesagan (2017:40), such developments have not helped in meeting library user needs. Thus, it was important to assess whether the online public access catalogue is meeting user information needs effectively at the UoN Library. This study sought to determine the existing gaps within the OPAC being used by the library and how such gaps can be addressed in meeting user information needs.

1.3 Aim of the Study

The aim of the study was to assess the effectiveness of the Online Public Access Catalogue (OPAC) in meeting user information needs at the University of Nairobi Library.

1.3.1 Objectives of the Study

The objectives of the study were to:

1. Determine the role of OPAC in meeting user information needs at the University of Nairobi.
2. Examine strategies applied by the OPAC at the University of Nairobi Library in meeting user information needs.

3. Establish challenges of OPAC at the University of Nairobi Library in meeting user information needs.
4. Propose an OPAC model that can be used in meeting user information needs at the University of Nairobi Library.

1.4 Research Question of the Study

The study was guided by the following research questions:

1. What is the role of OPAC in meeting user information needs at the University of Nairobi library?
2. Which strategies are applied in OPAC at the University of Nairobi Library in meeting user information needs?
3. What were the challenges of OPAC at the University of Nairobi Library in meeting user information and dissemination needs?
4. Which is the possible OPAC model that can be used in meeting user information needs at the University of Nairobi Library?

1.5 Significance of the study

The researcher anticipated that the proposed study would be of importance in a number of ways. To begin with, it was hoped that the findings and recommendations of the study will be useful to the library policy-makers, specifically in strengthening library management policies such library collection development, open access and circulation, among others. This will help to improve performance of OPAC systems in the University library by addressing the user needs in relation to catalogue use to access information materials. In addition, with regard to policy development, conclusions drawn and recommendations made from the results of the study may be

used in informing directions for implementation of OPAC system in the library that will enhance efficient and effective operations and services of the Library.

1.6 Assumptions of the Study

The proposed study assumed that:

1. Online Public Access Catalogue at the University of Nairobi Library was not meeting user information needs effectively.
2. Library user's preferred systems that are user friendly and where they can access required information easily.

1.7 Scope of the Study

The University of Nairobi is made up of six colleges and a number of faculties. These colleges are served by mini-libraries. The study sought to establish the effectiveness of Online Public Access Catalogue in meeting user information needs at the University of Nairobi Library. The study was limited to the University of Nairobi College of Engineering and Architecture (CAE) Library and comprised the library staff, teaching staff and students at CAE Campus.

1.8 Limitations of the Study

The study was likely to be faced with a number of limitations. To begin with, the target population for this study was large and comprised different segments therefore; there were threats of biasness towards a given segment. To overcome this limitation, the study stratified its population and generated a sample from the different strata of the population. This ensured that all segments of the population were represented in the study.

The study was also likely to encounter difficulties during the research especially in reaching out the intended respondents. This was because some of the respondents like lecturers and students who are part of the university library clientele work on constrained time of activities. This was addressed by using data collection tools such questionnaires that allowed such respondents to fill up the questionnaires at their own ease of time and when they were free.

1.9 Operational Terms and Concepts.

Information literacy- this is the ability of someone to know when there is a need for information and to be in a position to identify, evaluate and effectively use it to address an issue at hand.

Information needs- it is the desire to locate information to satisfy unconscious or conscious need.

Internal organization –the conditions, entities, events, and factors within an organization that influence its activities and choices.

Library operations – A series of interrelated activities aimed at enabling staff perform the role of promoting users' satisfaction of their access, use and giving out of information across disciplines.

Online Public Access Catalogue (OPAC) -ALA Glossary of Library and Information Science (1983) define OPAC as a library catalogue supported by a computer that is developed to be accessed via terminals.

Dissemination of information – the process of availing information to the intended audience.

Information Discovery- this is the access to the required information

Chapter Summary

The University Library provides services such as research, teaching, and publication, conservation of information, ideas and knowledge and provision of extension services. With revolution of library services, innovations such as OPAC in the area of cataloguing services have helped to facilitate access of catalogued information. The proposed study sets to assess whether Online Public Access Catalogue is meeting information needs of users effectively at the University of Nairobi Library. Thus, this chapter provides that introductions to the proposed study where background information, context of the study, statement of the problem, purpose, study objectives and research questions are provided. Assumptions, the scope and limitations of the study are covered by the chapter.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The main reason underlying the development of the review of literature is to bring about different perspectives on the area of study. It also aims at bringing a better indulgence of the appropriate factors that are associated with the study objectives. Therefore, this chapter focuses on attaining information from relevant sources on the topic. By retrieving and reviewing information from various sources of literature, the researcher aims at expounding the understanding of various issues relating to OPAC and user information needs.

2.2 Theoretical Framework

Theoretical framework comes from the word theory that has various meanings in different fields, depending on their methodologies and the context of discussion. According to Rocco & Plakhotnik (2009:8) a theoretical framework synthesizes obtainable theories and connected concepts and experimental research, to develop a basis for new theory development.

Different authors have presented definitions of the word theory from both scientific and general viewpoint, and most agree that a theory is an explanation of a phenomenon and the relations of its variables that are applied to try to give enlightenment or predict that phenomenon (Thomas, 2017). The thrust of their explanations is that a theory is a set of assumptions, hypotheses or propositions or mathematically related that are given as the meaning in general terms for a wide variety of connected natural observable phenomena. For the proposed study, mental

models and the principle of least effort are provided as the theories underpinning the area of study.

2.2.1 DeLone and Mclean Information Systems Success Model

The information system success model attempts to explain success factors of any information system implementation. DeLone and Mclean (2003) in their model of information systems success describe and provide relationships of six scopes of success along which information systems are evaluated (Molla & Licker, 2001). These critical success factors of any information system as identified by DeLone and Mclean are information quality, system quality, service quality, system use, user satisfaction, and the net system benefits (Rai, Lang & Welker, 2002).

According to DeLone and Mclean (2001), information quality is the quality of information that an information system is capable of storing, producing or delivering. This is a critical dimension that any information system is evaluated against. DeLone and Mclean (2001) note that information quality affects information system satisfaction of user's and even their purpose to using such a system. On the other hand, system quality directly affects the degree to which the system is capable of meeting its intended benefits by way of having a relationship between intention of usage and user contentment (Rai, Lang & Welker, 2002).

In addition, an information system's effectiveness is also determined by the quality of service delivery. Also, the quality of service of any system according to DeLone and Mclean (2003) directly impacts the intention, utilization and satisfaction of such a system which directly determines the benefits of the system. Additionally, system use and its intentional use are inclined by the information, service and quality of the system. Use of a system is supposed to influence satisfaction of the user with the

system which then determines usage intention. This in turn influences system net benefits. Again, information system user satisfaction directly impact the net benefits accrued from the system. Lastly, the net gain that a system is capable of delivering is a key facet of the overall significance of the system to its users in an organization (Molla& Licker, 2001).

2.2.2 Mental Models

Norman (1983) explained mental models to be “internal representations result from interaction” of the human beings with the external environment and technological artifacts. According to Makri, Blandford, Gow and Rimmer (2007:4), mental models are rarely accurate as they are predictive and evolving and that they are always restricted by a person’s technological capability, preceding experiences and the general architecture of information processing system.

Makri, Blandford, Gow and Glimmer (2007:12) determined that master’s students applied their indulgence of search engines to determine how to search electronic libraries. Nonetheless, the ability not to understand the access limits and the system’s investigative functions led to trial-and-error behavior. On the other hand, Holman (2011:5) noted that when looking at first-year university students, she determined that individuals with many definite mental models applied more complex search strategies thus only some students were successful with their search. All this indicate that mental models determine satisfaction level of users when using an OPAC.

2.2.3 Principle of Least Effort

This principle holds that users prefer to use things that are more physically close, accessible, and convenient since they want to reduce their effort when obtaining

information from information sources. According to Tenopir (1997), information seeking behavior ends as soon as any acceptable results are found. The principle assumes that information channel utilization is a role of user awareness. In addition, the principle holds that users strongly have a preference to return to sources they have accessed even when the information is of lower quality rather than find new information sources. Thus, the proposed study will apply the principle of least effort. This is based on the study's assumption that library users like systems that are friendlier to them in accessing information so that they can use minimal efforts. Library users are in most cases not patient in search for information materials, therefore as provided by Tenopir (1997:32), the principle of least effort is the most suitable theory for the proposed study.

2.3 Role of Online Public Access Catalogue in Meeting User Information Needs

Open access is viewed to have emerged to address various problems that students and researchers faced in their seeking of knowledge. In that regard, it is opined to have changed the conventional card catalogue system. The importance of OPAC comes from its feature of allowing data to be transferred within the computer while allowing for easier retrieval of information. The importance of the system has led to many libraries applying its operations using the feature to meet the needs of various users (Kumar, 2011).

First, open access is seen to reduce the subscription fees rates. It provides free and immediate access to research text sources for any individual across the globe. According to Brun (2009), a provision of free and right information is the most important value of a library system. Therefore, in order to satisfy an academic

community's search for knowledge, OPAC enables the users to get access to multiple knowledge resources without incurring high costs.

Moreover, the use of open access catalogues provides users with many access points. The feature ensures that the users can get relevant information within a short period unlike the use of manual catalogue which is considered to be time consuming. An overview of OPAC initiatives in regions such as Europe indicates that the systems enhance refinement of results as well as leads to effective screening of information (Brun, 2009). Kumar (2011) did a study about the impact of web-searching using OPAC. The comparative study showed that many students utilized web-based resources because they had full access to the information they wanted on OPAC.

Kumar and Vohra (2011) examined the utilization of OPAC in the library system of Punjab University. The study showed that the retrieval system has led to changes in the attaining of academic bibliographies. They view that features such as boolean tools, keyword searching, and identification of items in the library have led to easier access to knowledge. Features such as truncation and proximity searching were not available in the traditional card system. However, despite such improvement in searching activities, few facilities have examined the users to determine their comfort in using the system.

It is expressed that OPAC systems support both research and teaching purposes that require various standards. Talking of students, it is viewed that many do not want to read books but instead want to access the information from web sources (Ebiwolate, 2010). Lecturers who are knowledgeable about the importance of library system encourage students to utilize the resources, hence fulfilling their academic and research purposes (Yu & Young, 2004). According to Kumar (2011), his study on

selected university libraries showed that the use of OPAC searching increased the expectations of the students, hence motivating them to engage in more research.

The application of OPAC is also viewed to bring about changes in the library practices. According to Kumar and Vohra (2011) the usage of the system has led to the breaking up of the physical boundaries as the users have focused on online access catalogues usage. The authors also observe that the information requirements in online usage have been more satisfactorily achieved than in the physical searches. According to Harris (2008), satisfaction of users increased with the adoption of OPAC system. He further elaborates that librarians in developing nations get the opportunity to choose a library catalogue that best suits the users.

Ortiz-Repizo et al. (2006) pointed out that before OPAC started getting popular, users complained of having problems in the searching as there was information overload in the searching of resources. Moreover, he adds that users complained of errors in searching of subjects in traditional browsing options. Therefore, it can be opined that usage of the system leads to reduction of complaints about library services.

The OPAC system is made up of various components that a user needs to understand their functionalities. The researcher views that by understanding the different modules of the OPAC system, there will be a better understanding of the elements required to meet some of the objectives. The following section shows some of the modules used in the OPAC system.

According to Angeles (2008), the system's menu is universal as all the users accessing a type of OPAC such as iLib, will view the same set of menu. The main menu of an OPAC system is found on a particular area on the screen for the system type. The component is made up of sub-components such as Online Catalog and MyLibrary. MyLibrary module is viewed to have subsections that provide various

options for users. For instance, in the OPAC system of University of Philippines, the subsection includes students, staff, faculty, and other users given the permission of using the library (Angeles, 2008).

The online catalog serves as a platform to view a list of acquisitions and managing bookmarked items. The interface contains modules such as basic search and advanced search. The basic search section gives the user the options to search box and searching in specific fields. This module is considered useful to use as one needs to only type the search expression. On the other hand, the online catalog has a module search for advanced search (Angeles, 2008). This sub-component is quite complex to use if the user is not trained. It deals with searching using different combinations and within certain limits. The research result module is also found under the interface. The module provides a display of the returned records from the search activity (Mi&Weng, 2008).

This subsection mostly contains an e-card which is the electronic version of a user's traditional borrower's card. This feature enables the library to attain information about the borrower's personal information, their identification, and sometimes the faculty that they come from (Mi&Weng, 2008). Moreover, MyLibrary subsection also contains a feature for recommending a title. Under this interface, a user is able to create a purchasing request for a possible book title in the library unit. MyLibrary also contains Feedback module which sends one the system's feedback of user's request. However, since the module is not designed to work in the same way as a search engine, some people experience problems using it (Novotny, 2004).

OPAC system usually is opined to contain the visitors' area which enables guest users to provide essential information for their needs. This component provides information

in two modules: “Library Information” and “What’s New.” The Library Information module brings forth a list on various college libraries that serve under the main library. In that regard, the modules list the unit libraries in various faculties or campuses of the university. When one logs into the window, the he or she learns detailed information about the unit library. In the “What’s New” section, a user gets important messages on announcements, instructions, and system alerts (Angeles, 2008).

In OPAC systems, there is a default interface which provides search engine and also supports activities such as advanced search options and also options to limit searches of academic materials in physical form Narang& Singh (2013). Moreover, Narang and Singh (2013) add that the application module controls search limits by date or specific library unit. It is viewed that there are unique features of the system such as options to request material titles for future use. Angeles (2008) opines that application component also supports suggestions, comments, and request in a feedback methodology. The application component is opined to about a reference retrieval system that is usable by people from different backgrounds without the need of an intermediary.

According to Angeles (2008), this OPAC module is an application component that is purely web-based. This feature only requires the presence of a computer with an internet connection. It also needs a web-browser that is java-enabled. The interface is viewed to work well with net browsers such like Internet Explorer 6 and above and Mozilla Firefox version 1.5 and above. Some of the interfaces in the module require that a person uses Portable Document Format reader on the workstation in order to view the reports. Although the system requirements make it easier for the system to be applied in various browsers, there is still controversy on whether the system can be

upgraded quickly to align with the faster upgrading of software such as the browser versions. However, it can be opined that the system usage will still continue to grow before better software is developed (Angeles, 2008).

Generally, it is viewed that OPAC does not need to log into the system. Therefore, different types of users will only have to log in when they are reviewing their electronic library card or want to place some reservations on the system. This increases usability of the system without the need for logging and saving passwords (Mi&Weng, 2008).

2.3.1 Role of Online Public Access Catalogue in Information Discovery

According to Jacobsen (2011), OPAC discovery interfaces are one of the newest trends that provide intuitive experience to users in both public and academic libraries. Unlike in the traditional search systems, OPAC's discovery interfaces enhance the discovery of many resources. For instance, OPAC is viewed to enable a user get a vast number of information sources by use of one or more keywords. This feature guides users to access the most relevant materials. It is opined that this type of searching was pioneered by firms such as eBay and Amazon and have been proven to be successful in enabling the users to attain the relevant information they seek (Jacobsen, 2011).

In the recent past, the use of discovery interface in searching for information has increased tremendously in libraries, with many libraries purchasing or developing OPAC systems with these interfaces to assist researchers and users in searching for library sources with most relevant information (Jacobsen, 2011). It is viewed that discovery interfaces do not just search a single dataset but are capable of searching multiple catalogues, repositories, and external content to access disparate resources.

Typically, in the discovery of information, these interfaces provide users with features such as saving of searches, transferring of citation via mobile devices, bookmarking and sharing of records, and transferring of records to bibliographical administration software such as EndNote (Pérez, Montoya&García-Peñalvo, 2016).

Since most of the information stored in libraries is either structured or semi-structured, the use of OPAC in attaining relevant knowledge has proved to be important. Currently, it is opined that OPAC systems have précis queries, which do not just locate and integrate values in tables but also consider values related to the information. In that regard, when a user answers a précis query, he or she might get information found in other parts of the database (Osborne & Cox, 2015).

2.4 Strategies which OPAC helps in Meeting User Information Needs

Open access is viewed to have emerged to address various problems that students and researchers faced in their seeking of knowledge. In that regard (Kumar & Vohra, 2011) opined that changes were made to the conventional card catalogue system. The importance of OPAC comes from its feature of allowing data to be transferred within the computer while allowing for easier retrieval of information. The importance of the system has led to many libraries applying its operations using the feature to meet the needs of various users (Kumar & Vohra, 2011:3).

Moreover, the utilization of online access catalogues provides users with many access points. The feature ensures that the users can get relevant information within a short period unlike the use of manual catalogue which is considered to be time consuming. An overview of OPAC initiatives in regions such as Europe indicates that the systems enhance refinement of results as well as leads to effective screening of information (Brun, 2009). Kumar (2011:14) did a study about the impact of web-searching using

OPAC. The comparative study showed that many students utilized web-based resources because they had set access to the information they wanted on OPAC.

2.5 Challenges of OPAC in Meeting User Information Needs

Despite various benefits that the initiative of open access has brought, there are barriers that limit its success. First, OPAC system still relies much on technology. It is viewed that its architecture makes it difficult to integrate with other services. For instance, users without Portable Document Format may find it difficult to access some of the reports. This limitation reduces the system's usage in libraries (Devendra&Nikam, 2013:830).

Ignorance on the part of the user also affects the impact of OPAC system. Many users are viewed to lack knowledge on the existence of OPAC. In a study done by Ogunniyi and Efosa (2010:2) on the problems facing the use of OPAC, a substantial number of the respondents showed that they did not know that the system existed. Such a revelation shows that system training that is advanced by various universities may not be effective in creating awareness to the students.

Inadequate funds also reduce the effectiveness of OPAC. According to Chilimo, Lwoga, and Damas (2005), insufficient funds make libraries not to be able to acquire requisite equipment to support OPAC interfaces. Moreover, the libraries are also unable to train its employees. Therefore, the library experiences poor user education and maintenance culture which lead to reduction on the system's sustainable usage.

2.6 Solutions to Problems Facing OPAC in Meeting User Information Needs

From a designer's perspective, it is viewed that the key element in the improvement of OPAC's effectiveness is how the users interact with the system. Since there are

many kinds of users, retrieval of general information is quite difficult. Therefore, interface features should include recognition to enable the system to deploy the required task for the specific type of user. In addition, the interaction between the system and the user needs to be encouraged so that the users may use limited time on the system (Mi&Weng, 2008:6).

Moreover, relevant stakeholders need to put forth guidelines on training of library users. The guidelines need to be implemented so that the users can be educated to upgrade their skills hence improve the usage of OPACs. Regional workshops are viewed to be an essential way of training the staff in diversified ways of coping up with the various complexities associated with the systems (Mulla&Chandrashekar, 2009:39).

Information and communication technology (ICT) regulations are some of the ways that can lead to curbing of challenges faced while using OPAC systems. In developing countries it is viewed that the governments have initiated few regulations relating to the use of information technology and communication in information centres in particular academic libraries (Chilimo, Lwoga, &Damas 2005). As a remedy, governments need to develop minimum ICT standards for all institutions having libraries. At the present time, most of the academic libraries in Africa are struggling to meet them. Implementation of the standards will enable the libraries to have advanced automated systems that would make it easy to engage in the processes and procedures of OPAC systems (Nkhoma-Wamunza, 2002).

2.7 Conceptual Framework

The study conceptualizes that effectiveness of OPAC in meeting user information needs at the University of Nairobi College Of Architecture and Engineering Library, ADD Campus is dependent on OPAC system capabilities, supporting ICT

infrastructure and the OPAC user information literacy which plays as part of the independent variables. For adoption and implementation of OPAC in the library, there must be ICT infrastructure in place. In addition, every OPAC has different system capabilities, features and attributes. Also, for its effective use, OPAC users are supposed to be trained. Therefore, these variables vary from one library to another hence serving as independent variables for the study. However, this is affected by intervening variables such as content metadata, user search skills, and OPAC user interface. OPAC is fed with metadata, its users have varied search skills and OPAC interfaces differ from one system to another. If the content metadata is well enriched, the user has good search skills and the OPAC has good user interface, then, OPAC is likely to be effective in meeting information user needs and vice versa. Thus the outcomes are supposed to be increased access to information materials in the library and satisfied library users.

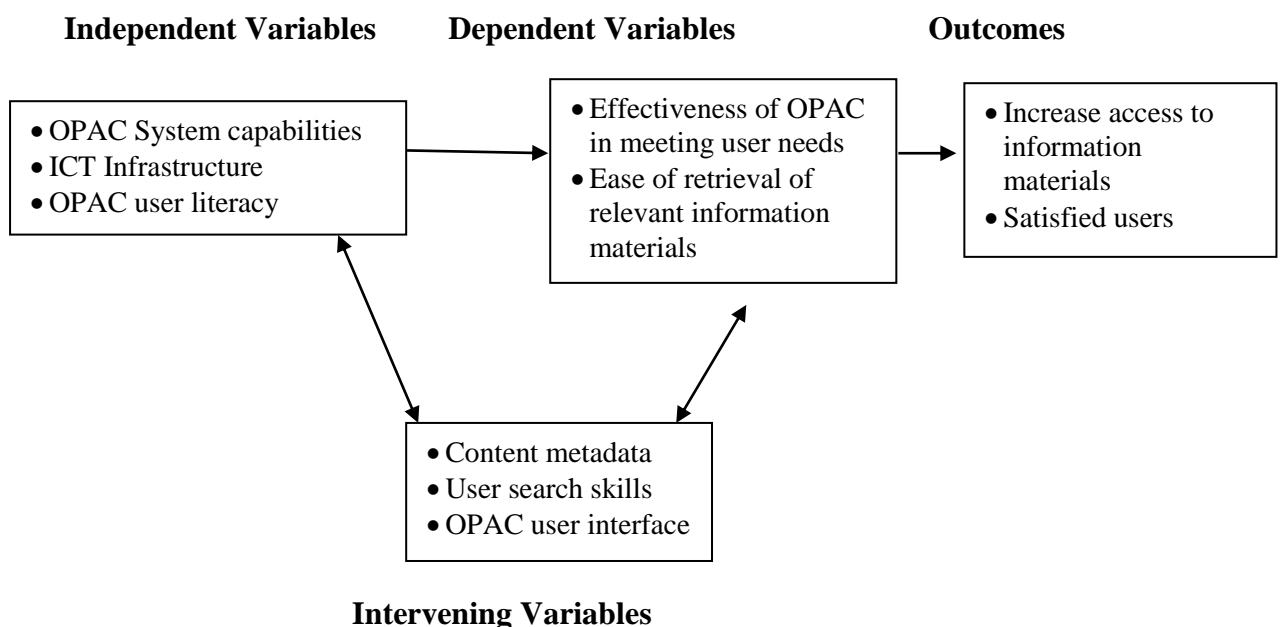


Figure 2.1: Conceptual Framework

2.8 Research Gap

The study reviewed several related literatures on Online Public Access Catalogue. However, based on the available reviewed literature, there exist a gap in literature that relates to accessibility of the catalogue through new technological developments such as mobile phones and remote access. Therefore, the study aimed at filling this existing gap in literature.

2.9 Chapter Summary

The literature review shows that OPAC is essential in the retrieval of information for information services and libraries. Usually, users come to the system when they want to get information about a certain material in the discipline of their own interest. In that regard, OPAC plays a huge role in the tracing of academic materials for users' research or educational purposes. From the review, it can be opined that many researchers depict OPAC as an important application in library usage. However, the challenges that limit the effectiveness of OPAC usage need to be assessed and controlled in order to obtain clarity on the effectiveness of the system in the satisfying the users while giving a room for improvement. The review shows some of the ways in which the challenges facing the system can be controlled. The chapter has also provided theoretical and conceptual framework which guide the study.

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Introduction

This chapter provides the methods that were used in collecting information for the study. The chapter covers the research design, target population, sample size, sampling procedures, data collection methods, validity and reliability, data analysis and ethical considerations.

3.1 Research Design

In the study both quantitative and qualitative methods were applied. As stipulated by Kothari (2004:36), quantitative and qualitative design is finely applied when learning a social matter that can be considered both quantitatively and qualitatively. Kothari (2004) also states that quantitative research design enables a researcher to tackle quantitative data attained from primary information sources. The study was about assessing effectiveness of OPAC in meeting user information needs at the University of Nairobi. Descriptive research design was used to collect data whereby semi-structured questionnaires were used to gather data of the study's respondents. The descriptive study was carefully designed to make sure there was minimal bias in the data collection and to minimize the chances of error when interpreting data. Hence, in this study, quantitative data allowed research on numerical data and qualitative method was used to study behavior, attitudes and opinions (Lapan, 2012:72).

3.2 Area of Study

The study sought to establish the effectiveness of online public access catalogue in meeting user information needs at the UoN Library. The study was limited to the UoN College of Architecture and Engineering Library.

3.3 Population

According to Silverman (2010:14), target population comprises of a group of people, events, facets, services or groups of things that are being investigated or studied. With respect to this study, the target population was the UoN College of Architecture and Engineering Library users who comprised of the library staff, teaching staff and students. This comprised of five (5) library staff, 128 teaching staff and 2840 students (University of Nairobi Registrar's Register, 2018; UoN Library Staff List, 2018). Thus, the total target population for UoN College of Architecture and Engineering Library was 2973. This study targeted the library staff since they use the OPAC both as back and front end users, teaching staff and students were targeted since they use the OPAC in searching for information materials based on their varied information needs. On the other hand, the UoN College of Architecture and Engineering Library was used as a case study since the researcher had previously been attached to other UoN branch libraries, The population assisted in achieving a representative of the whole library hence, there was need to use this to eliminate any form of biasness from the researcher.

Data for teaching staff and students used in the sample frame was formally obtained from the office of the registrar CAE College and data for library staff was availed by the Department of Library and Information Services Directors Office after a request

was made by the researcher and a print out of all the data was provided by the two parties.

Table 3.1: Target population

Area of Study	Sampling Stratification	Target Population
University of Nairobi College of Architecture and Engineering Library	Library Staff	5
	Teaching Staff	128
	Students	2840
Total		2973

Source: UoN Registrar's Register, 2018; UoN Library Staff List, 2018

3.4 Sampling Strategies and Sampling Techniques

According to O'Leary (2014: 138), sampling is the process of selecting part to represent the whole population. As postulated by Konar (2009), sampling ensures that some elements of a population are chosen to be representative of the population. In this study, the purpose of sampling was to secure a representative part of the target population known as a sample to facilitate the researcher to gather information about it.

A researcher may not be in a position to conduct data collection from the entire population which is involved in the study making it necessary to select a representative sample, hence sampling techniques are applied to reduce the population to a manageable manner Taderdoost (2017:18).

3.4.1 Sampling Strategies

Sampling strategy is a plan you set forth to be sure that the sample you use in your research study represents the population from which you drew your sample (Taderhoost, 2017). In this study both probability sampling and non-probability sampling designs were both applied. Probability sampling included some form of

random selection in choosing the elements. This ensured that greater confidence was placed in the representativeness of the probability samples. The selection process guaranteed that each element in the population had an equal and independent chance of being selected. The study applied stratified random sampling which was used to sample teaching staff and student strata owing to their huge numbers hence not all could be sampled. The study applied census method to library staff stratum as they were few in number and were key informants. Sampling was also used to ensure that the elements that made up a section of the sample were selected by non-random methods using census method. Census sampling provided the researcher with strong theoretical reasons for the choice of items to be included in the sample.

3.4.2 Sampling Techniques

In the study, the technique of stratified random sampling was applied to choose the sample for the teaching and students strata. However, for the library staff, census sampling was applied since it was assumed by the study that they were all key OPAC users hence being key respondents for the study (Alvi, 2016:30).

According to Taderdoost (2017:22), non-probability sampling is usually related to case studies research design and qualitative research. This research entails a case study of the UoN. The institution was purposively selected because it's an academic institution and the library is the center of teaching and research whose mission involves providing information resources to users and the OPAC being the key tool and guide by which the resources are accessed by the users. The study sought to assess the effectiveness of OPAC in meeting user information needs at the University of Nairobi.

As explained by Creswell (2013:138), stratified random sampling technique helps to ensure that an equal representative sample is resultant from a population as every segment of the target population is assured of having a representation in the study. In the study, stratified random sampling method was applied to accommodate the various categories of library clients targeted in the various schools and departments. Stratified random sampling is a probability sampling technique whereby a population is separated into equally selected groups or strata and a simple random sample is then drawn from each group (Etikan & Bala, 2017:2). Etikan and Bala further state that probability sampling means that every item included in the population stands an equal chance of being included in the sample eliminating any form of biasness as illustrated in the sample frame in Table 3.2.

3.4.3 Sample Size

To be able to establish the sample size, this study applied Slovin formula as illustrated in figure 3.1 below (Yamane, 1967:23). The Slovin formula removed biasness in selecting a sample size without structured method. Based on this formula, a sample of 114 respondents formed the sample size of this study. A sample frame was applied to select representation from the target population which was too big to be completed within the stipulated time. As opined by Taderdoost (2017:20), a sample frame is a documentation listing the specific participants from which the sample size would be drawn and this sample frame has to reflect representation of the larger population. The sample frame used in this study was a database drawn from CAE College.

This sample size was first subdivided into three categories of library staff, teaching staff and students. This stratification was used to assure probability of inclusion of all the categories of the study sample in the sample size. Thereafter, teaching staff and

students strata was further subdivided to their respective departments which are Urban & Regional planning, Architecture, Real Estate, Quantity Surveying and Construction Management and Art and Design. Each stratum was presented based on their percentage composition of the entire target population as illustrated in Table 3.2 below. However, the library staff stratum was all included in the sample since it was assumed that they were all key OPAC users thus they contributed five (5) respondents, the teaching staff contributed five (5) respondents and students contributed 104 respondents to the sample size.

In this study the researcher used the sample frame to show the different schools and departments at CAE and the population size in each department. Individual respondents were randomly chosen from every stratum by use of simple random sampling.

$$n = \frac{N}{N * (d)^2 + 1}$$

where n=sample size

N=Number of Population

d=1-degree of confidence

$$n = \frac{2973}{2973 * (0.95)^2 + 1} = 114$$

Figure 3.1: Slovin formula

Table 3.2: Sampling Frame

Strata	Sampling Stratification		Target Population	% of the Total Population	Sample size (%of total population * 114)
Library Staff	Library Staff		5	0.2	5
University of Nairobi College of Architecture and Engineering, (ADD Campus) Teaching Staff	Urban & Regional planning		24	0.8	1
	Architecture		44	1.5	2
	Real Estate, Quantity Surveying and Construction Management		37	1.2	1
	Art and Design		23	0.8	1
University of Nairobi College of Architecture and Engineering, (ADD Campus) Students	School of Arts and Design Students		565	19	19
	School of the Built Environment	Department of Real Estate and Construction Management	1235	42	46
		Department of Urban and Rural Development	412	13.9	15
		Department of Architecture and Building Science	651	22	24
Total			2973	100	114

Source: Author, 2018

3.5 Data Collection Methods

Data collection methods are ways by which research data is gathered (Kothari 2004:95). These methods are different based on a number of parameters such as time, cost or further resources at the inclination of the researcher (Orodho, 2008). These methods may entail questionnaires, interviews or literature sources. The study employed semi structured questionnaires that were to respondents in their various

engagements, whereby they were given sufficient time to respond during their own time, this was so that to obtain the primary data. Open-ended questions were utilized to give the respondents more freedom to express their views or opinions. In certain circumstances, closed-ended questions were applied to guide the respondents to give the specific responses relevant to the study.

3.5.1 Questionnaires

According to Kim (2011:45) the questionnaire is developed comprising of a number of questions that address specific objectives, research questions or premise of the study. The researcher has to also know how information attained from each questionnaire item will be analyzed. The questionnaire used addressed four themes of the study which were to: determine the role of OPAC in meeting user information needs at the UoN Library; examine strategies applied by the OPAC at the UoN Library in meeting user information needs; establish challenges of OPAC at the UoN Library in meeting user information needs; and propose an OPAC model that can be used in meeting user information needs at the UoN Library.

Section A assisted the researcher to obtain the respondent's background information. The rest of the sections all tackled the different themes of the study as they were pointed out by the stated objectives and study research questions as stated above.

The questionnaire contained both closed and open ended questions which enabled the researcher to gather data qualitatively and quantitatively. Closed ended questions provided the respondent with various options to select from while the questions that were open ended permitted the respondent to give personal views and opinions. The questionnaires were designed for all the respondents as they were all key users of the library and OPAC.

Questionnaires as data collection tool were used as they were easier to distribute to a large group of people within constrained time. The tool was used as it gave time allowance to respondents to respond to the questions given and for collection of data from a large sample of respondents by the researcher.

3.6 Research instruments

Research instruments are apparatus applied by a researcher for data collection in a specific area of research work. It is essential for the researcher to ensure that the tools selected are suitable and consistent since the validity and reliability of every research study depends mainly on the appropriateness of the instruments employed (Annum, 2017:1).

3.6.1 Pilot Study

Pilot study as provided by Kim (2011:30) is undertaken to identify flaws in the design, instrumentation and make available proxy data for probability sampling. The pilot study helps to validate whether research tools are consistent and whether respondents are able to understand them (Bryman, 2012:264). The measures applied to pre-test the questionnaire were matching with the ones used during the actual study. The pilot study comprised of 15 respondents representing (10 percent) of the sample who were drawn from Dedan Kimathi University. Dedan Kimathi University was used since its population was heterogeneous in nature and consisted similar segments of the respondents as the target population of this study. The sample for pilot study was randomly sampled from students, teaching staff and library staff where each segment contributed equally by having 5 respondents each. Based on the sampled respondents for the pilot study, 15 questionnaires were distributed. From the 15 distributed questionnaires, 12 questionnaires were returned indicating 80.00 percent

return rate. After the pilot study, the returned questionnaires informed refining of the study's questionnaires as questions unclear to the respondents were simplified.

3.6.2 Validity

Validity means the degree where a tool measures what it should measure (Bryman, 2012: 168). It is also considered as the extent to which the variations found with an evaluation instrument reflects the true differences between the ones tested (Kothari, 2004:73). As opined by Nasrudin and Othman (2012) validity in this study was achieved by subjecting the questionnaire to a pilot study that aide the researcher to assess whether the questions in the questionnaires were effective. This helped to obtain the expected data that addressed the objectives and answered research questions. Objective questions constructed in the questionnaire guaranteed validity of this research.

3.6.3 Reliability

Abbot and McKinney (2013) opines that "reliability is the consistency of measurement despite the changing conditions". This was done by having the instruments pretested by dispensing the questionnaire to ten percent of the sample size, this was done by conducting a pilot study and the data collected was then used to check the reliability. According to Silverman (2010:55), reliability of the study can be determined through undertaking a pilot study while using a 10 percent of the sampled population. In addition, reliability was controlled by enhancing rigor in checking similar questions with different respondents with a view to detect arising variations in their responses.

3.7 Data Collection Procedure

Data to the study was collected using questionnaires. This helped to limit the respondents to only give information which the researcher was interested in. Nonetheless, in some cases, open-ended questions were used to obtain some qualitative information. The researcher issued these questionnaires and made a follow up to ensure they were duly filled and returned for analysis.

3.8 Data Analysis and Presentation

According to O’Leary (2014:281), data analysis entails the method of systematically searching and ordering data, field notes and other resources obtained during fieldwork with the intention of increasing one’s grasp and to allow the presentation of the information to others. The collected data was analyzed by use of quantitative and qualitative methods of analysis. The qualitative data from the open ended questions in the questionnaires was analyzed thematically. Based on the four themes derived from the research objectives, qualitative data was categorized based on the themes of the study which were drawn from four objectives which were; determine the role of OPAC in meeting user information needs at the University of Nairobi; examine strategies applied by the OPAC at the UoN Library in meeting information needs of users; establish challenges of OPAC at the UoN Library in meeting information needs of users ; and propose an OPAC model that can be used in meeting user information needs at the UoN Library which helped the study to make inferences from them. Qualitative and quantitative techniques of data analysis were applied in this study to establish essential facts and conclusions were drawn from this study.

Data analysis was completed with the assistance of Statistical Package for Social sciences (SPSS version 21.0) tool which helped to analyse quantitative data. The use of SPSS helped in analyzing quantitative data hence helped in presenting statistical information in percentages, frequencies and descriptive phrases that were used in drawing inferences. In addition, quantitative data was also presented statistically in form of tables, graphs and charts.

3.9 Ethical Considerations

The first ethical consideration the researcher considered was observation of the fundamental principle of voluntary involvement amongst respondents. The ethical issue supported by Ridley (2012:44), stipulates that when undertaking a research study, the researcher should not force participants into engaging in the study. Another fundamental consideration as provided by Bryman (2012:138) is the precondition of knowledgeable consent. The researcher made sure that contributors were made aware of the process of the research and they had the freedom to accept or decline before being included to be among the study sample. Respondents were guaranteed of the privacy of their information. In addition, the researcher obtained a letter of introduction to undertake a study from the UoN which helped to give the study process legitimacy. Lastly, the study acknowledged all sources of its information to ensure issues of plagiarism would not arise. The work was subjected to a check in turnitin anti-plagiarism software to ensure a similarity index of 15% and below.

3.10 Chapter Summary

This chapter covers research methodology whereby quantitative research design was applied as the research design for the study. In attaining the aim of the study, the questionnaires were used as the data collection tools for the study while the study

population comprised of the library staff, teaching staff and students at the UoN College of Architecture and Engineering Library. Stratified random sampling was used in getting the sample for the study. Lastly, descriptive statistics was used in the analysis of collected data using SPSS as a statistical tool.

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND INTERPRETATION

4.1 Introduction

This chapter covered presentation of data analysis and interpretation that was collected from students, library staff and teaching staff at UoN College of Architecture and Engineering Library as previously indicated in the sample of the study. The data was collected using questionnaires that were semi structured which were administered to the study's respondents.

4.2 Response Rate of Respondents

Questionnaires were distributed to all 114 respondents sampled. However, data was collected from 89 respondents who returned their questionnaires hence giving a response rate of 78.07 percent. From the responsive respondents, four (4) library staff, three (3) teaching staff and 82 students gave back their questionnaires. According to Creswell (2013), a response rate of over 75 percent is good enough to obtain objective results in any study. Therefore, the response rate obtained for this study was satisfactory in helping to attain its aims and objectives. Based on the response rate across the study's strata, every segment's response rate was sufficient for representation in the study. This is illustrated in Table 4.1 below.

Table 4.1: Response Rate of the Respondents

Stratum	Sample size	Response Rate
Library Staff	5	4
Teaching staff	5	3
Students	104	82
Total	114	89

4.2.1 Duration at the University

Importantly, the study wanted to determine the duration under which the respondents have been at the University. This was imperative as it aide to establish whether the respondents had sufficient experience to be able to inform the study. Hence, students were asked their year of study, while library and teaching staff were asked their work experience at the University.

The results were as illustrated in Tables 4.2, 4.3 and 4.4 respectively. As illustrated in the tables, 16.85 percent of the students had been in the University for a less than one year, 21.35 percent had been in the University between one and two years, 38.20 percent had been in the University between three and four years while 23.60 percent had been in the University between five and six years. On the other hand, 25.00 percent of the library employees had worked with the University between six and 10 years, 50.00 percent had worked for a period between 11 and 15 years while 25.00 percent had worked for over 15 years. Lastly, 66.67 percent of the teaching staff had taught at the University for a period between 11 to 15 years while 33.33 percent had taught for over 15 years. This pointed out that the majority of the respondents to the study had the requisite experience with the University hence in a position to inform the study.

Table 4.2: Duration at the University-Students

Students	Frequency	Percentage %
Less than 1 year	15	16.85
1-2 years	19	21.35
3-4 years	34	38.20
5-6 years	21	23.60
Total	89	100

Table 4.3: Duration at the University-Library staff

Library staff	Frequency	Percentage %
0-5 years	0	0.00
6-10 years	1	25.00
11-15 years	2	50.00
Over 15 years	1	25.00
Total	4	100

Table 4.4: Duration at the University-Teaching staff

Teaching staff	Frequency	Percentage %
0-5 years	0	0.00
6-10 years	0	0.00
11-15 years	2	66.67
Over 15 years	1	33.33
Total	3	100

4.3 Availability of OPAC at the UoN Library

The aim of the study was to assess the effectiveness of the Online Public Access Catalogue in meeting user information needs at the UoN Library. As part of the specific objectives of the study in achieving its aim, the study sought to determine application of OPAC in meeting user information needs. Under this objective, several questions were posed to the study respondents. To start with, the study wanted to determine if the UoN Library had OPAC. This was important as it helped to determine if the targeted population was familiar with OPAC operations.

As illustrated in Table 4.5 below, 87.64 percent of the respondents affirmed that the library had an OPAC, 3.37 percent noted that the OPAC was not there while 8.99 percent of the respondents did not know if an OPAC existed. From the results, it was inferred that the University of Nairobi Library had an OPAC. However, a minority of respondents who did not know whether OPAC existed or not may not have gone through a proper library orientation process. These findings agreed with the position held by Ogunniyi and Efosa (2010) who noted that not all library users may know the existence of library systems if all users are not taken through a proper user orientation program. Thus, it is imperative that successful implementation of systems including OPAC should prioritize user trainings and current awareness. The trainings and awareness programs will help to equip users with the required skills to be able to use these systems.

Table 4.5: Availability of OPAC at the University of Nairobi Library

Presence of OPAC	Frequency	Percentage %
YES	78	87.64
NO	3	3.37
DON'T KNOW	8	8.99
Total	89	100

4.3.1 Role of OPAC at the UoN Library

Importantly, the study sought to determine different functions of OPAC used by the UoN Library. This question was pertinent to the study as it helped to establish if the OPAC that was being used by the University was serving the University by addressing different library functions. Thus, when a question was posed on what were some of the functions of the OPAC, the outcomes were as indicated in Table 4.6 below.

As indicated in the table, there were various functions that were being met by OPAC that was being used by the University library. Based on the results of the study, 40.45 percent of the respondents indicated that the OPAC was being used for searching of information materials, 3.37 percent noted that OPAC was used for providing library users status, 26.97 percent pointed out that reservation of information materials was one of the key functions of the OPAC while 29.21 percent of the respondents pointed out that aiding in locating information materials was one of the functions of the OPAC.

Based on the results of the study, it was inferred that OPAC used by the University of Nairobi library had numerous functions. These functions included searching of information materials, providing library user status, aiding in locating information materials and reservation of information materials.

Table 4.6: Functions of OPAC at the University of Nairobi Library

Functions of OPAC	Frequency	Percentage %
Searching of information materials	36	40.45
Providing library users status	3	3.37
Reservation of information materials	24	26.97
Aiding in locating information materials	26	29.21
Total	89	100

4.3.2 Other Desirable Functionalities of OPAC

Besides, the study sought to determine if there were other desirable functionalities that were missing in the OPAC that was being used by the University library. This was imperative to the study as it helped to determine if there was a need of additional functionalities that were required by users.

Therefore, when respondents were asked this question, the outcomes were as illustrated in Table 4.7 below. As illustrated in the table, 85.39 percent acknowledged that there was a need for other desirable functionalities that could be incorporated to the OPAC used by the University library. However, 6.74 percent of the respondents

noted that there was no need for additional functionalities while 7.87 percent did not know if there was any need of other desirable functionalities.

Based on the results of the study, it was inferred that there was need to add other desirable functionalities to the OPAC that was being used by the University library. Additional functionalities will help in to meeting user information needs of the university library users. The findings of the study concurred with the position held by DeLone and McLean (2003) who noted that with the continued use of library information systems, users demand for more functionality which in turn helps in revolution of library systems.

Table 4.7: Other desirable functionalities of OPAC

Need for other functionalities of OPAC	Frequency	Percentage %
YES	76	85.39
NO	6	6.74
DON'T KNOW	7	7.87
Total	89	100

4.3.3 Other Specific Desirable Functions

Significantly, the study sought to determine other desirable functionalities that could have been included to OPAC used by the University library. This question was asked to the respondents who had indicated that there was a need to have other desirable functionalities. This question was important to the study as it helped to determine desirable functionalities that were missing from the OPAC that was in use by the University library.

When asked, the respondents reacted to the question as in the following results, as indicated in Table 4.8 below. As shown in the table, it was determined that there were numerous other functionalities of OPAC that were not being offered by the system. Based on the findings, 32.89 percent of the respondents noted that the OPAC needed to be integrated with other search engines, 21.05 percent pointed out that provision of abstracts, synopsis and summaries needed to be included as additional functionalities of the OPAC, 27.63 percent mentioned that OPAC needed to allow users inquiries while 18.42 percent noted that the OPAC needed to allow special group users to be able to use it through use of braille and other aiding functionalities.

Based on these findings, it was deduced that there existed a number of user expectations that the OPAC that was in use by the University library was not meeting. This according to Kumar and Vohra (2011), library users are always full of expectations with library information systems whenever they are applied in the library and therefore, continuous improvement of the systems need to be done to be able to address changing information needs of library users.

Table 4.8: Other specific desirable functionalities of OPAC

Other desirable functionalities of OPAC	Frequency	Percentage %
Integration with other search engines	25	32.89
Provisions of abstracts, synopsis, summaries	16	21.05
Allow user inquiries	21	27.63
Allow special group users	14	18.42
Total	76	100

4.4 Extent of Satisfying User Information Needs by OPAC

As part of attaining the study's aim of assessing the effectiveness of the Online Public Access Catalogue in meeting user information needs at the UoN Library, the study sought to explore ways in which the OPAC at the UoN Library helps in meeting user information needs. Under this objective, several questions were posed to the study's respondents.

To start with, the study sought to determine the extent to which the OPAC used by the University library was meeting its user information needs. With respect to this, the outcome was as illustrated in Table 4.9 below. As illustrated in the table, it was noted by 17.98 percent of the respondents that they were very satisfied with the OPAC being used by the University, 43.82 percent were satisfied while 12.36 percent of the respondents were neutral. On the other hand, 15.73 percent of the respondents were dissatisfied with OPAC being used by the University while 10.11 percent very dissatisfied with the OPAC being used by the University library.

Although the OPAC that was being used by the University of Nairobi library was meeting needs of majority its users' information needs, there was a significant section of users whose information needs were not being met. These findings agree with the position held by Fabunmi and Asubiojo (2013) who pointed out that an information system is less likely to meet information needs of all of its users.

Table 4.9: Extent of satisfying user information needs by OPAC

Extent of OPAC satisfying user information needs	Frequency	Percentage %
Very Satisfied	16	17.98
Satisfied	39	43.82
Neutral	11	12.36
Dissatisfied	14	15.73
Very Dissatisfied	9	10.11
Total	89	100.00

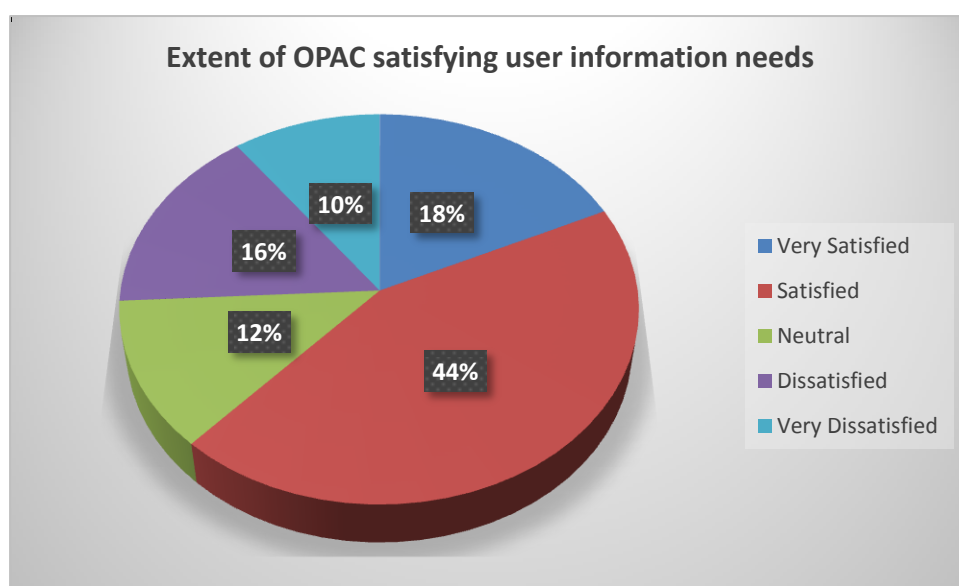


Figure4.1: Extent of Satisfying user information needs by OPAC

4.4.1 Level of Satisfaction of Information Needs by OPAC

The study sought to determine how user information needs were being met from library users who indicated that there was some level of satisfaction by the OPAC that was being used by the University library. This was imperative as it helped to the study

to establish ways through which the OPAC was being used in meeting user information needs at the University library.

The respondents responded as indicated in the illustrated in Table 4.10 below. As shown in the table, library users who stated that their information requirements were being met by the OPAC pointed out that collection search, information materials reservations, ranking of information materials and locating information materials in the library were being met at 34.55 percent, 23.64 percent, 12.73 percent and 29.09 percent respectively.

Based on these outcomes, it was inferred that the OPAC used by the University library was addressing user information needs in a variety of ways.

Table 4.10: Level of Satisfaction of Information Needs by OPAC

How user information needs are being met by OPAC	Frequency	Percentage %
Collection Search	19	34.55
Information Materials Reservations	13	23.64
Ranking of Information Materials	7	12.73
Locating Information Materials in the Library	16	29.09
Total	55	100.00

4.4.2 Level of Dissatisfaction of Information Needs by OPAC

The study sought to determine if there were needs that were not being met by the OPAC that was in use by the UoN library. This question was relevant to the study as it helped to establish level of dissatisfaction of library users to the OPAC that was being used by the University library.

When a question was posed to the respondents in respect to as to whether there were needs which were not being met, the results were as illustrated in Table 4.11. As shown in the table, 46.07 percent of the users felt that there were some information user needs that were not being met by the OPAC while 49.44 percent did not know if there existed some needs that were not being met. On the other hand, 4.49 percent of the respondents felt that there were no information user needs that were not being met by the OPAC.

Based on these findings, it was deduced that a significant section of the library users had information user needs that were not being addressed by the OPAC that was in use by the University of Nairobi library. These findings were in contradiction with the position held by Kumar and Narendra (2016) who noted that a good library system needed to have at least 60 percent user satisfaction levels. This implied that the OPAC that was in use at the University of Nairobi library needed to be improved to increase its user satisfaction levels.

Table 4.11: Level of Dissatisfaction on Information Needs by OPAC

Whether there are needs not being met by OPAC	Frequency	Percentage %
YES	41	46.07
NO	4	4.49
DON'T KNOW	44	49.44
Total	89	100

4.4.3 Information Needs Not Met by OPAC

The study sought to determine the needs that were not being met by OPAC that was in use at UoN library. This question was important to the study as it helped to determine the gaps that existed in the OPAC that was being used by the University of Nairobi library.

Hence, when this question was fronted to the study respondents, the outcome was as indicated in Table 4.12 below. As indicated in the table and in the figure, 31.11 percent of the respondents noted that offsite access was a user information need that was not being met by the OPAC that was being used by the UoN library, 26.67 percent highlighted that accessibility through mobile phones was not being met as a need, 13.33 percent noted that inter-library resource linkages was a need that was not being met and 28.89 percent of the respondents noted that user notifications of reserved materials was not being addressed by OPAC that was in use.

Based on these findings, it was affirmed that there were a number of desirable information user needs that were not being met by OPAC that was in use at the UoN library. The findings contradict the position of Mi and Weng (2008) who held that a good OPAC should meet expected user information needs of its targeted users.

Table 4.12: Information User Needs Not Met by OPAC

Information user needs not met by OPAC	Frequency	Percentage %
Offsite Access	14	31.11
Accessibility through mobile phones	12	26.67
Inter-library resource linkages	6	13.33
User notifications of reserved materials	13	28.89
Total	45	100.00

4.5 Challenges of OPAC in Meeting User Information Needs

In addition, as part of attaining the study's aim of assessing the effectiveness of the Online Public Access Catalogue in meeting user information needs at the UoN Library, the study sought to determine limitations of the OPAC that was in use in meeting user information needs. Under this objective, two questions were posed to the study respondents.

4.5.1 Existence of Challenges of OPAC at UoN library

The study sought to ascertain if there were limitations in meeting user information needs at the UoN library. When this question was given to the respondents of the study, the results were as illustrated in Table 4.13 below. As indicated in the table, 73.03 percent noted that there were limitations of OPAC in meeting user information needs while 17.98 percent noted that there were no limitations. Meanwhile, 8.99 percent of the respondents did not know if there existed limitations of OPAC in meeting user information needs.

From the results of the study, it was deduced that the OPAC that was in use at the UoN library had some limitations in meeting user information needs. The findings concur with the position held by Devendra and Nikam (2014) who noted that university libraries serve techno savvy clientele whose information user needs change drastically, hence, most information systems used by such users is likely to be limiting as compared to their needs.

Table 4.13: Existence of Challenges of OPAC at UoN Library

Challenges of OPAC in meeting user information needs	Frequency	Percentage %
YES	65	73.03
NO	16	17.98
DON'T KNOW	8	8.99
Total	89	100

4.5.2 Challenges of OPAC at UoN Library

Besides, the study sought to determine specific challenges of OPAC in meeting user information needs at the UoN library from the users' perspective. This question was important as it helped the study to determine challenges of the OPAC which formed the basis of suggesting possible solutions. When this question was posed, the outcomes were as indicated in Table 4.14 below. As illustrated in the table, various challenges were provided by the respondents which were believed to be a hindrance in meeting user information needs.

Non availability to offsite access was pointed out by 21.54 percent of the respondents, non-accessibility through mobile phones was pointed out by 18.46 percent, lack of inter-library resource linkages was mentioned by 9.23 percent of the respondents, lack of user notifications of reserved materials was highlighted as a challenge by 20.00 percent of the respondents, poor user interface was mentioned by 13.85 percent of the respondents, while low literacy skills on OPAC and location problems of materials due to miss-shelving were noted by 10.77 percent and 6.15 percent of respondents respectively.

Based on these findings, it was deduced that there were numerous challenges of the OPAC that was in use by the UoN library that contributed to problems in meeting user information needs. In addition, it was inferred by the study that addressing these challenges could help increase user information needs of the library users.

Table 4.13: Challenges of OPAC in Meeting User Information Needs at UoN

Library

Challenges of OPAC in meeting user information needs	Frequency	Percentage %
Non-Availability of Offsite Access	14	21.54
Non-Accessibility through mobile phones	12	18.46
Lack Inter-library resource linkages	6	9.23
Lack User notifications of reserved materials	13	20.00
Poor Friendly User Interface	9	13.85
Low literacy skills on OPAC	7	10.77
Location problems of materials due to miss-shelving	4	6.15
Total	65	100.00

4.6 Solutions to Challenges Facing OPAC at UoN Library

Lastly, the study sought to determine solutions to the challenges facing OPAC at the UoN library in meeting user information needs. Under this objective, the researcher presented two questions to the study respondents.

4.6.1 Challenges Facing OPAC in Meeting User Information Needs

To start with, the study sought to establish if the existing challenges in meeting user information needs at the UoN library could be addressed. Based on this question, the results were as illustrated in Table 4.15 below.

As illustrated in the table, 75.28 percent of the respondents acknowledged that the limitations facing OPAC in meeting user information needs could be addressed, 15.73 percent held that they could not be addressed while 8.99 percent did not know if they could be addressed. Based on the findings, it was deduced that there were strategies that could be put in place to address limitations facing OPAC in meeting user information needs at the University of Nairobi library.

Table 4.14: Challenges facing OPAC in meeting user information needs

Limitations facing OPAC in meeting user information needs	Frequency	Percentage %
YES	67	75.28
NO	14	15.73
DON'T KNOW	8	8.99
Total	89	100

4.6.2 Solutions to Challenges Facing OPAC

Besides, the study sought to determine ways through which limitations facing OPAC in meeting information needs could be addressed at the UoN library. This question was important to the study as it helped to provide solutions to the existing limitations of OPAC hence proving an avenue for meeting user information needs. When this question was posed to the respondents, the results were as illustrated in Table 4.16 below.

As indicated in the table, 20.22 percent noted that re-configuring OPAC for offsite access would have been a solution to the limitations of OPAC in meeting user information needs, 15.73 percent of the respondents noted that reconfiguring OPAC to allow accessibility through mobile phones would be a solution, 10.11 percent of the

respondents pointed out that configuring OPAC for inter-library resource linkages could be a solution, 21.35 percent highlighted configuring OPAC for user notifications of reserved information materials as a solution, 12.36 percent noted that redesigning OPAC user interface to a friendly interface as a solution, 11.24 percent pointed that developing information literacy programme could be a solution and 8.99 percent of the respondents noted that improving organization of information materials in the library could be part of the solutions for limitations of OPAC in meeting user information needs at the UoN library.

Based on the findings of the study, it was deduced that the limitations facing OPAC in meeting user information needs at the UoN library could be addressed by instituting various strategies as illustrated above.

Table 4.15: Solutions to challenges facing OPAC

Solutions for Limitations of OPAC in meeting user information needs	Frequency	Percentage %
Re-configure OPAC for Offsite Access	18	20.22
Re-configure OPAC to allow accessibility through mobile phones	14	15.73
Configure OPAC for inter-library resource linkages	9	10.11
Configure OPAC for user notifications of reserved materials	19	21.35
Redesign OPAC User Interface to friendly interface	11	12.36
Develop an information literacy programme	10	11.24
Improve organization of information materials in the library	8	8.99
Total	89	100.00

4.7 Chapter Summary

The study determined that the OPAC that was being used by the University library was not meeting user information needs of all its users. User needs that were not being addressed by the OPAC included non-availability to offsite access, non-accessibility through mobile phones, lack of inter-library resource linkages, lack of user notifications of reserved materials, poor friendly user interface, low literacy skills on OPAC and location problems of materials due to miss-shelving.

Therefore, in addressing these limitations, strategies such as re-configuring OPAC for offsite access, accessibility through mobile phones and allowing inter-library resource linkages through OPAC. In addition, configuring OPAC for user notifications of reserved information materials, redesigning OPAC user interface to a friendly interface and developing user literacy skills on OPAC would be important in meeting user information needs. Also, improving information materials organization in the library could be applied as part of the solutions to the limitations of OPAC in meeting user information needs at the UoN library.

CHAPTER FIVE
SUMMARY OF KEY FINDINGS, CONCLUSION AND
RECOMMENDATION

5.1 Introduction

The aim of the study was to assess the effectiveness of the Online Public Access Catalogue in meeting user information needs at the UoN Library. This chapter presents a summary of the key findings which are presented based on the study's objectives. In addition, the chapter draws conclusions and presents recommendations for the study on how to improve effectiveness of the Online Public Access Catalogue in meeting user information needs at the UoN library.

5.2 Summary of Key Findings

The study presents the summary of its key findings based on the four themes which were drawn from its objectives. These themes are; application of OPAC in information discovery at the UoN, ways that the OPAC at the UoN Library helps in meeting user information needs, limitations of OPAC at the UoN library in meeting user information needs and solutions to problems facing OPAC at the UoN library in meeting user information needs.

5.2.1 Application of OPAC in Meeting User Information Needs at the UoN

The study established that there was an OPAC that was being used by the University of Nairobi library. The functions of OPAC included searching for information materials, providing library user's status, reservation of information materials and aiding in locating information materials in the library. The findings relate to the position of Osborne and Cox (2015) that held that OPAC systems have précis queries,

which do not just locate and integrate values in tables but also consider values related to the information hence they are able to offer various information services to library users. Nonetheless, the study established that there was a need for other desirable functionalities that needed to be incorporated to the OPAC.

Importantly, the study determined other desirable functionalities that needed to be included to OPAC. These desirable functionalities included the need for it to be integrated with other search engines, capability for it to provide abstracts, synopsis and summaries. In addition, the study established that this OPAC needed to allow for user inquiries and the need to allow special group users such as the blind to be able to use it. The finding on the need for the special group users was in line with the position held by Kumar and Vohra (2011) who noted that most library systems including OPAC were not designed to allow for special user groups.

5.2.2 The Role of OPAC at the UoN Library

Although the OPAC that was in use by the UoN library was meeting a majority of the library users' information needs, there was a significant section of users whose information needs were not being met. The role of OPAC included collection search, information resources reservations, ranking of information materials and locating information materials in the library. The findings were in concurrence with Kumar and Vohra (2011) who noted that the utilization of online access catalogues provide users with many access points as the users can get relevant information within a short period unlike when using manual catalogue.

Notably, it was determined that a significant section of the library users had information user needs that were not being addressed by OPAC. User needs such as offsite access, accessibility through mobile phones, inter-library resource linkages and user notifications of reserved materials were not being met by the OPAC that was in use by the UoN library. The findings concur with the position held by Devendra and Nikam (2014) who noted that university libraries serve techno savvy clientele whose information user needs change drastically, hence, most information systems used by such users is likely to be limiting as compared to their needs.

5.2.3 Challenges of OPAC at the UoN Library

The study determined that the OPAC had some limitations in meeting user information needs. These limitations were a hindrance in meeting user information needs. The limitations included non-availability through offsite access; mobile phones; lack of inter-library resource linkages, lack of user notifications of reserved materials, poor user interface, low literacy skills on OPAC and location problems of materials due to miss-shelving. This was contrary to the findings of Jacobsen (2011) who noted that the use of friendly user interface in searching for information has increased tremendously in libraries, with many libraries purchasing or developing OPAC systems with more friendly interfaces to assist researchers and users in searching for library sources with a lot of flexibility.

5.2.4 Solutions to Challenges Facing OPAC at the UoN Library

The study determined that the challenges facing OPAC in meeting user information needs can be addressed. It was determined that there were ways through which limitations facing OPAC in meeting information needs can be addressed at the University of Nairobi library.

The solutions included re-configuring OPAC for offsite access; reconfiguring OPAC to allow accessibility through mobile phones; enabling OPAC for inter-library resource linkages, of OPAC for user notifications of reserved information materials; redesigning OPAC a friendly user interface; developing user literacy skills on OPAC and improving information materials organization in the library.

5.3. Conclusion

The study established that the University of Nairobi library had an OPAC. This OPAC had different functions which included searching of information materials, providing library users status, reservation of information materials and aiding in location information materials. Nonetheless, there was a need for this OPAC to have other desirable functionalities which include being integrated with other search engines, being enabled to provide abstracts, synopsis and summaries. In addition, this OPAC needed to allow user inquiries. Importantly, the OPAC needed to allow special group users to be able to use it. Nonetheless, the OPAC that was being used by the University library was meeting a majority of the library users' information needs.

However, there was a significant section of the users whose information needs were not being satisfied by the OPAC. User needs information needs such as offsite access, accessibility through mobile phones, inter-library resource linkages and user notifications of reserved materials were not being fulfilled by the OPAC. This user information needs that were not being addressed were the biggest limitation of this system.

As a result, the study concluded that addressing the OPAC limitations would be critical in meeting user information needs. In addressing these limitations, strategies such as re-configuring OPAC for offsite access, accessibility through mobile phones, allowing inter-library resource linkages were considered as important strategies for the University library to undertake. In addition, configuring OPAC for user notifications of reserved information materials, redesigning OPAC to user friendly interface were considered as important strategies. Also, developing user literacy skills on OPAC and improving information materials organization in the library were believed to be solutions to the limitations of OPAC in meeting user information needs at the UoN library.

5.4 Recommendations

i. Re-configuring OPAC for Offsite Access and enable Mobile Phone

Accessibility

The study recommends that the OPAC that was in use at the University of Nairobi library needs to be improved by reconfiguring it for offsite access and enable mobile phone accessibility. This will help to ensure that library users are able to access OPAC remotely. In addition, it will in turn help in easing pressure on the computer systems used in the library in accessing OPAC. Also, users will be able to determine if the library has relevant information materials and be able to reserve these materials without necessarily physically visiting the library.

ii. Inter-Library Resource Linkages through OPAC

Currently, OPAC that was being used by University of Nairobi library did not allow for inter library linkages. The study recommends that the OPAC should be linked with other OPACs used by other libraries that fall under relevant library collaborations.

This inter-library resource linkage through OPAC will help users to determine if their required relevant information materials are within the accessibility of the University of Nairobi library or not. This recommendation is in line with the position of Kumar and Vohra (2011) who suggested that library collaborations should include catalogue systems to aid users know available information materials that are within the reach of the library.

iii. Configuring OPAC for User notifications of Reserved Information Materials

The OPAC that was in use by the University library did not provide user notifications of reserved information materials. The study recommends that the OPAC need to be configured to allow for user notifications of reserved information materials. This will help to improve effectiveness and efficiency in meeting user information needs as users will be receiving prompt messages whenever their reserved information materials are available in the library.

iv. Redesigning OPAC User Interface to a Friendly Interface

The study established that the OPAC that was in use at the University of Nairobi library had a user interface that that was not friendly to a section of its users. Based on these outcomes, the study recommends that the OPAC user interface should be redesigned to make it friendly to its users. This will improve its usability. This recommendation is in line with the position held by Fabunmi and Asubiojo (2013) who recommended that any library information system should have a friendly user interface to promote its usability among users.

v. Information Literacy Programme

The study established that part of the UoN library users did not have the requisite literacy skills on information resources. As a result, the study recommends that the library should put relevant strategies such as structured user orientation programs on information resources to boost user literacy skills. This will help to improve usability of the OPAC that will in turn improve effectiveness of OPAC in meeting user information needs at the UoN library.

vi. Improving Information Materials Organization in the Library

The study determined that information materials were not properly organized in the library especially after being returned by users. This contributes to location challenges even after OPAC shows that they are available on the shelves. Based on this finding, the study recommends that the University of Nairobi library should improve its efforts in information materials organization library materials. This can be done through increasing library attendants who should be tasked with such responsibilities. This will help to ensure that information provided by OPAC is reliable hence contributing to effectiveness in meeting information needs at the University of Nairobi library.

5.5 Proposed OPAC Model

The study proposes an OPAC model that can be applied to help in meeting user information needs at the University of Nairobi College Of Architecture and Engineering Library, ADD Campus. The study proposed that a strong OPAC infrastructure that is comprised of good OPAC system capabilities, strong ICT infrastructure and good OPAC policies are critical in meeting user information needs. However, the OPAC users on the other hand need to be information literate and be supported through a continuous awareness of the library resources. Importantly, users'

feedback need to be continuously evaluated and monitored and be incorporated in the OPAC infrastructure to continually support and meet user information needs of the library users. This is illustrated in Figure 5.1 below.

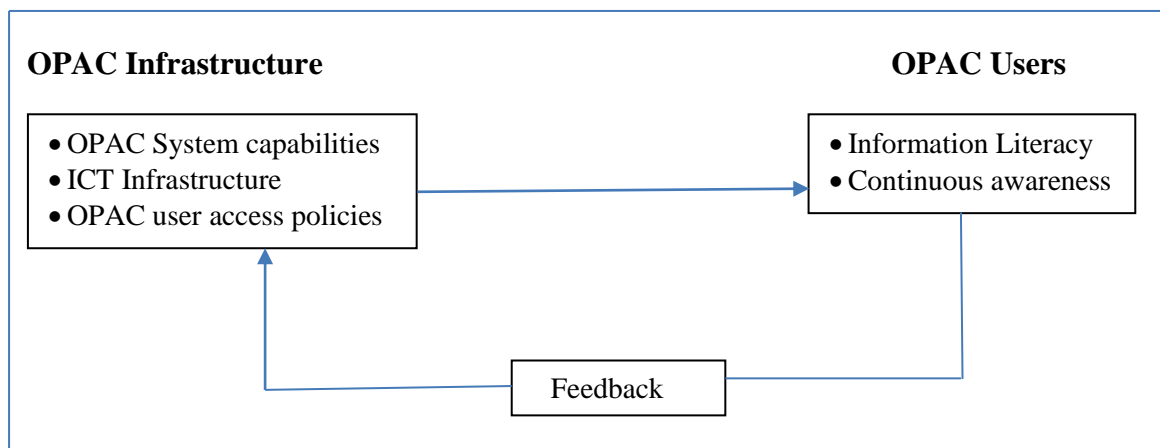


Figure 5.1: Proposed OPAC Model

5.6 Suggestions for Further Research

The following areas of study were identified as requiring further research:

5.6.1 Information Literacy Programme

One of the key findings in this study is the challenge of low information literacy skills among users of OPAC to access library information resources. A study on enhancement of information literacy programme in academic libraries in Kenya, with reference to access of library information resources and OPAC.

5.6.2 Research in Public and School libraries

This study limited itself to academic libraries in Kenya. There is need to conduct a similar study in public and school libraries to investigate the status of OPAC use and effectiveness in meeting user information needs in public and school libraries. This would be necessary in establishing whether the findings in this study are representative of OPAC use and its effectiveness across all libraries in Kenya.

REFERENCES

- Abbott, M.L. and McKinney, J. (2013). *Understanding and applying research design*. Hoboken, NJ: John Wiley & Sons.
- Alvi, M. H. (2016). A manual for selecting sampling techniques in research. Retrieved from https://mpa.ub.uni-muenchen.de/70218/1/MPRA_paper_70218.pdf
- American Library Association. (1983). *ALA glossary of library and information science*. New York, NY: Author.
- Annum, G. (2017). Research Instruments for Data Collection. Retrieved from https://www.academia.edu/11695245/RESEARCH_INSTRUMENT_FOR_DATA_COLLECTION?auto=download
- Brun, C. (2009). Information literacy and Health libraries: *Journal of Information Literacy*, 6(1), 1- 3.
- Bryman, A. (2012). *Social research methods* (4th ed). New York, NY: Oxford University Press.
- Chilimo W., Lwoga, T. & Damas, S. (2005). Adequacy and sustainability strategies for funding library automation: experiences from Tanzania Public University libraries. In: M. K. Kakai, & Akiteng (Eds.), *Library automation in East and Southern African Universities: proceedings of a sub-regional conference*. Proceedings of a Sub-regional conference. Retrieved from <https://archive.ifla.org/IV/ifla73/Sat1-Musoke-en.pdf>
- Creswell, J. (2013). *Research design: qualitative, quantitative and mixed methods approaches*. London, UK: Sage Publication.
- Devendra, N., & Nikam, K. (2013). Attitudes of law university library users towards the use of OPAC/web OPAC in Andhra Pradesh: A Study. *SRELS Journal of Information Management*, 50(3), 327-335.
- Devendra, N., & Nikam, K. (2014). Attitudes of law university library users towards the use of Web OPAC in Karnataka: A study. *The Electronic Library*, 32(6), 825-833. Retrieved from <https://doi.org/10.1108/EL-10-2012-0132>.
- DeLone, W. H., & McLean, E. R. (2003). The DeLone and McLean model of information systems success: A ten-year update. *Journal of Management Information Systems*, 19(4), 9-30.
- Ebiwolate, P. B. (2010). The use of the library catalogue by undergraduate students in Niger Delta university library. *Library Philosophy and Practice* (e-journal) 392. Retrieved from <http://digitalcommons.unl.edu/libphilprac/392>
- Etikan, I and K. Bala (2017). Sampling and sampling methods. *Biometrics & Biostatistics International Journal*, 5(6):1-3.

- Fabunmi, O. M., & Asubiojo, B. O. (2013). Awareness and use of online public access catalogue funding library automation: Experiences from Tanzania Public University Libraries. Retrieved from: https://www.uonbi.ac.ke/about/profile?quicktabs_1=2
- Harris, C. (2008). Fishing for information, *School Library Journal*, 54(1), 24
- Holman, L. (2011). Millennial students' mental models of search: Implications for academic librarians and databases developers. Retrieved from <https://mdsoar.org/bitstream/handle/11603/170/HolmanMillennialsMentalModels.pdf?sequence=5&isAllowed=y>
- Hufford, J. R. (2011). Use studies and OPACS. *Technical Services Quarterly*, 9(1), 57-70.
- Jacobsen, J. (2011) Discovery interfaces: A new OPAC for libraries. Retrieved from <http://www.andornot.com/>
- Kim, Y. (2011). The pilot study in qualitative inquiry. Retrieved from <http://qsw.sagepub.com/content/early/2010/04/21/1473325010362001>.
- Konar, N. (2009) *Communication skills for professionals*, New Delhi, IN: PHI Learning Pvt. Ltd.
- Kothari, C. R. (2004). *Research methodology, methods and techniques* (2nd ed.). New Delhi, IN: New Age International (P) Ltd. Publishers.
- Kothari, C. R. (2013). *Research methodology: methods and techniques* (2nd Rev. ed). New Delhi, IN: New Age International Publisher.
- Kumar, S., & Vohra, R. (2011). Online public access catalogue usage at Punjab university. *DESIDOC Journal of Library & Information Technology*, 31, 4, 302-310.
- Kumar, K. N., & Narendra, B.K. (2016). Use and user's satisfaction on online public access Catalogue (OPAC) services in BGS institute of technology- A survey. *International Journal of Library and Information Studies*, 6(2), 142-150.
- Kumar, R., & Singh, J. (2017). Use of OPAC in the university library of GGIPU, Delhi. *Indian Journal of Information Sources and Services*, 7(1), 16-20.
- Kumar, S. (2014). Relationship of OPAC users' satisfaction with their demographic characteristics, computer skills, user education, user assistance and user-friendly OPAC. *The Electronic Library*, 32, 1, 106-123. Retrieved from <https://www.emerald.com/insight/content/doi/10.1108/EL-01-2012-0002/full/pdf?title=relationship-of-opac-users-satisfaction-with-their-demographic-characteristics-computer-skills-user-education-user-assistance-and-user-friendly-opac>
- Lapan, S., Quartroli, M., & Riemer, F. (2012). *Qualitative research: An introduction to methods and design*. San Francisco, CA: Jossey-bass
- Mi, J., & Weng, C. (2008). Revitalizing the Library OPAC: Interface, searching, and display challenges. *Information technology and libraries*, 27(1), 32-59. Retrieved from <https://doi.org/10.6017/ital.v27i1.3259>.
- Molla, A., & Licker, P. S. (2001). E-commerce systems success: An attempt to extend and respecify the DeLone and McLean model of IS success. *Journal of Electronic Commerce Success*, 2(4), 1-11.

- Mole, A. C., & Mesagan, F. O. (2017). Provision of online public access catalogs for effective utilization of library resources in three university libraries in Nigeria. *Library Collections, Acquisitions & Technical Services*, 40(2), 38-45.
- Morupisi, L., & Mooko, N. P. (2006). Using the online public access catalogue at the university of Botswana. *Information Development*, 22(3), 196-204.
- Mulla, K. R., & Chandrashekhara, M. (2009). A study on the effective use of online public access catalogue at the libraries of engineering colleges in Karnataka (India). *International Journal of Library and Information Science*, 1(3) 29-42. Retrieved from <http://www.academicjournals.org.ijlis>
- Narang A., & Singh, S. (2013). Use of online public access catalogue by the research scholars of Guru Nanak Dev University, Amritsar: A study. *SRELS Journal of Information Management*, 50(2), 191-200.
- Nasrudin, N., & Othman, N. (2012). Entrepreneurship education programs in Malaysian polytechnics, *Education and Training*, 58(7/8), 882-898.
- Nkhoma-Wamunza, A. G. (Ed.), (2002). Training and management of information services in the OCLC systems & services. *International Digital Library Perspectives*, 20(4), 183-191.
- Ogunniyi, S. O. & Efosa, F. E. (2013). Use of library catalogue by students of Adeyemicollege of education, Ondo. *Greener Journal of Library, Information and Archival Sciences*, 1 (1), 001-006.
- Ogunsola, L. A. (2014). Information and communication technologies and the effects of globalization: Twenty-first century "Digital Slavery" for developing countries--myth or reality? *Electronic Journal of Academic and Special Librarianship*, 6, 1-2
- O'Leary, Z. (2014). *The essential guide to doing your research (2nd ed.)* London, Uk: Sage
- Orodho, J. A. (2008). *Techniques of writing research proposal and reports in education and social sciences*. Maseno, KE: Kanezja Enterprises.
- Ortiz-Repiso, V., Bazan, V., Ponsati, A. & Cottureau, M. (2006). How researchers are using OPAC of the Spanish council for scientific research library network?" *The Electronic Library*, 24. 2, 190-211.
- Osborne, H. M., & Cox, A. (2015). An investigation into the perceptions of academic librarians and students towards next-generation OPACs and their features. *Program*, 49(1), 23-45.
- Pérez, L. I. G., Montoya, M. S. R., & García-Peñalvo, F. J. (2016). Discovery tools for open access repositories. Retrieved from https://repositorio.grial.eu/bitstream/grial/743/1/LauraIcela_Mapping_Presentation.pdf.
- Rai, A., Lang, S. S., & Welker, R. B. (2002). Assessing the validity of IS success models: An empirical test and theoretical analysis. *Information Systems Research*, 13(1), 50-69.

- Ridley, D. (2012). *The literature review, a step by step guide for students*. London, UK: Sage Publication.
- Rocco, T. S., & S. Plakhotnik (2009). Literature reviews, conceptual frameworks, and theoretical frameworks: Terms, functions, and distinctions. *Human Resource Development Review Online*, 8(1), 120-130. Retrieved from <file:///C:/Users/uon/Downloads/LCT10.1.1.1022.1009.pdf>
- Silvermann, D. (2010). *Doing qualitative research* (3rd edn). London, UK: Sage Publications
- Taderhoost, H. (2017). Sampling methods in research methodology: How to choose a sampling technique for research. *International Journal of Academic Research in Management*, 5(2):18-27.
- Tenopir, C. (1997). Common end user errors. *Library Journal*, 122(19), 9731-32
- Thomas, Jason (2017). Scholarly views on theory: Its nature, practical application, and relation to world view in business research. *International Journal of Business and Management*; 12, 9, 231-240.
- University of Nairobi (2017). UON Profile. Retrieved from <http://www.uonbi.ac.ke/about/profile>
- Unuoha, U. D., Umahi, F. O., & Bamidele, I. A. (2013). Use and satisfaction with online public access catalogue in selected university libraries in Ogun State, Nigeria. *Information and knowledge management*, 3(11), 1-6.
- Willson, R., & Given, L. M. (2014). Student search behavior in an online public access catalogue: and examination of searching mental models and searcher self-concept. *Information Research*, 19(3). Retrieved from <http://InformationR.net/ir/19-3/paper640.html>
- Yamane, T. (1967). *Elementary sampling theory*. London, UK: Prentice Hall.
- Yin, R. K. (2014). *Case study research: Design and methods*. Thousand Oaks. CA: Sage Publications Inc.
- Yu, H., & Young, M. (2004). The impact of web search engines on subject searching in OPAC. Retrieved from <https://ejournals.bc.edu/index.php/ital/article/view/9658/8547>

APPENDIX I: LETTER OF INTRODUCTION

Jane Muriithi

University of Nairobi

Department of Library and Information Science

9th July, 2018

Dear Respondent,

Subject: Introduction for permission to collect research data

I am a student at University of Nairobi pursuing a Master of Library and Information Sciences. As part of the requirements for this program, I am undertaking a research study titled, “Effectiveness of Online Public Access Catalogue in Meeting User Information Needs at the University of Nairobi Library”.

The aim of the study will be to assess the effectiveness of the Online Public Access Catalogue in meeting user discovery and dissemination needs at the University of Nairobi Library. The specific objectives of the study are to: determine application of OPAC in information discovery at the University of Nairobi library; examine ways in which the OPAC at the University of Nairobi Library helps in meeting user discovery and dissemination needs; establish limitations of OPAC at the University of Nairobi Library in meeting user discovery and dissemination needs and; propose solutions to problems facing OPAC at the University of Nairobi Library to help in meeting user discovery and dissemination needs.

I kindly request you to complete this questionnaire so as to assist me complete the study. All the information provided will be accorded utmost confidentiality and will only be used for the purpose of this research.

Regards.

Jane Muriithi

APPENDIX II: TRANSMITAL LETTER



UNIVERSITY OF NAIROBI

FACULTY OF ARTS

DEPARTMENT OF LIBRARY AND INFORMATION SCIENCE

Telephone: +254 20 318262, Ext. 28095
Telegram: Varsity
Fax: +254 20 2245566
dnjiraine@uonbi.ac.ke

P.O. Box 30197- 00100 GPO
Nairobi, Kenya.

Our Ref: UON/CHSS/FOA/DLIS/303

14th June 2018

To whom it may concern

Dear Sir/Madam,

RE: Jane Muriithi: C54/86252/2016

The above named is a bonafide student at the University of Nairobi undertaking a Master of Library and Information Science (MLIS), at the Department of Library and Information Science.

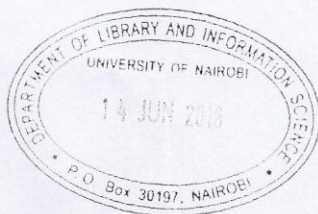
She has successfully completed her course work and has been cleared by the Department to collect data for her research project "Effectiveness of Online Public Access Catalogue (OPAC) in meeting User Information needs at the University of Nairobi Library, College of Architecture and Engineering ", which is a requirement for the award of the degree.

Your support towards accomplishing the research study will highly be appreciated.

Yours faithfully,

A handwritten signature in black ink, appearing to be 'Dorothy Njiraine'.

Dr. Dorothy Njiraine
Ag. Chairperson
Department of Library & Information Science (DLIS)



**APPENDIX III: QUESTIONNAIRE FOR UNIVERSITY OF NAIROBI
LIBRARY USERS-LIBRARY STAFF**

**SECTION A: GENERAL INFORMATION FOR UNIVERSITY OF NAIROBI
LIBRARY STAFF**

1. Designation:

2. Work experience in the University (Tick appropriately)

0-5 yrs	[]	5-10 yrs	[]
10-15	[]	Over 15 yrs	[]

**SECTION B: ROLE OF OPAC USED BY THE UNIVERSITY OF NAIROBI
LIBRARY**

5. Does the University of Nairobi library have OPAC?

Yes No Don't Know

6. If Yes in question 1 above, what are the different functions of OPAC used by the University of Nairobi Library? (tick where in appropriate)

- i. Searching of Information Materials
- ii. Providing Library User's status
- iii. Reservations of Information Materials
- iv. Aiding in locating Information materials

7. Are there other desirable functionalities missing in the OPAC used by the University library?

Yes No Don't Know

8. If Yes in question 3 above, what are the other desirable functionalities that can be included?

i.

ii.

iii.

SECTION C: STRATEGIES APPLIED WHICH CAN BE USED BYOPAC AT THE UNIVERSITY OF NAIROBI LIBRARY HELP IN MEETING USER INFORMATION NEEDS

9. To what extent does OPAC used by the University of Nairobi Library help in meeting your user information needs? (Please tick where appropriate)

Very Dissatisfied Dissatisfied Neutral Satisfied

Very Satisfied

10. In case there is any level of satisfaction by the OPAC used by the University of Nairobi Library in meeting your user information needs, how are these needs being met?

i.

ii.

iii.

iv.

11. Are there needs that are not being met by the OPAC used by the University of Nairobi Library?

Yes No Don't Know

12. Indicate needs that are not being met by the OPAC used by the University of Nairobi Library?

i. Bibliography Search

ii. Collection Search

iii. Ranking Listing

iv. Book Reservation

v. Any other.....

.....

.....

SECTION D: CHALLENGES OF OPAC AT THE UNIVERSITY OF NAIROBI LIBRARY IN MEETING USER INFORMATION NEEDS

11. Are there limitations experienced in meeting user information needs at the University of Nairobi Library?

Yes No Don't Know

12. If Yes in question one above, what are these limitations?

- i.
- ii.
- iii.

SECTION E: SOLUTIONS TO THE LIMITATIONS OF OPAC AT THE UNIVERSITY OF NAIROBI LIBRARY IN MEETING USER INFORMATION NEEDS

13. Can the limitations experienced in meeting user information needs at the University of Nairobi Library be addressed?

Yes No Don't Know

14. If Yes in question one above, how can these limitations be addressed?

- i.
- ii.
- iii.

APPENDIX IV: QUESTIONNAIRE FOR TEACHING STAFF

SECTION A: GENERAL INFORMATION

1. Designation:

2. Work experience in the University (Tick appropriately)

0-5 yrs [] 5-10 yrs []

10-15 [] Over 15 yrs []

SECTION B: ROLES OF OPAC USED BY THE UNIVERSITY OF NAIROBI LIBRARY

3. Does the University of Nairobi use OPAC?

Yes No Don't Know

4. If Yes in question 1 above, what are the functions of OPAC used by the University of Nairobi Library?

i. Searching of Information Materials

ii. Providing Library User's status

iii. Reservations of Information Materials

iv. Aiding in locating Information materials

5. Are there other desirable functionalities missing in the OPAC used by the University library?

Yes No Don't Know

6. If Yes in question 3 above, what are the other desirable functionalities that can be included?

- i.
- ii.
- iii.

SECTION C: STRATEGIES WHICH CAN BE APPLIED BY OPAC AT THE UNIVERSITY OF NAIROBI LIBRARY TO HELP IN MEETING USER INFORMATION NEEDS

7. To what extent does OPAC used by the University of Nairobi Library help in meeting your user information needs?

Large Extent Moderate Extent Less Extent Not At all

8. In case there is any level of usage of OPAC by the University of Nairobi Library in meeting your user information needs, what are these needs being met?

- i. Collection Search
- ii. Ranking Listing
- iii. Book Reservation
- iv. Any other.....
.....
.....

9. Are there needs that are not being met by the OPAC used by the University of Nairobi Library?

Yes No Don't Know

10. What are these needs that are not being met by the OPAC used by the University of Nairobi Library?

i. Collection Search []

ii. Ranking Listing []

iii. Book Reservation []

iv. Any other.....
.....
.....

SECTION D: CHALLENGES OF OPAC AT THE UNIVERSITY OF NAIROBI LIBRARY IN MEETING USER INFORMATION NEEDS

11. Are there limitations in meeting user information needs at the University of Nairobi Library?

Yes No Don't Know

12. If Yes in question one above, what are these limitations?

i.

ii.

iii.

SECTION D: SOLUTIONS TO THE LIMITATIONS OF OPAC AT THE UNIVERSITY OF NAIROBI LIBRARY IN MEETING USER INFORMATION NEEDS

13. Can these limitations experienced in meeting user information needs at the University of Nairobi Library be addressed?

Yes No Don't Know

14. If Yes in question one above, how can these limitations be addressed?

- i.
- ii.
- iii.

APPENDIX V: QUESTIONNAIRES FOR UNIVERSITY OF NAIROBI

LIBRARY STUDENTS

SECTION A: GENERAL INFORMATION

1. Year of study:

**SECTION B: ROLES OF OPAC USED BY THE UNIVERSITY OF NAIROBI
LIBRARY**

2. Does the University of Nairobi use OPAC?

Yes No Don't Know

3. If Yes in question 1 above, what are the functions of OPAC used by the
University of Nairobi Library?

i. Searching of Information Materials

ii. Providing Library User's status

iii. Reservations of Information Materials

iv. Aiding in locating Information materials

4. Are there other desirable functionalities missing in the OPAC used by the
University library?

Yes No Don't Know

5. If Yes in question 3 above, what are the other desirable functionalities that can
be included?

- i.
- ii.
- iii.

SECTION C: STRATEGIES WHICH CAN BE APPLIED BY OPAC AT THE UNIVERSITY OF NAIROBI LIBRARY TO HELP IN MEETING USER INFORMATION NEEDS

6. To what extent does OPAC used by the University of Nairobi Library help in meeting your user information needs?

Large Extent Moderate Extent Less Extent Not At all

7. In case there is any level of the OPAC used by the University of Nairobi Library in meeting your user information needs, how are these needs being met?

- i. Collection Search []
- ii. Ranking Listing []
- iii. Book Reservation[]
- iv. Any other

.....

8. Are there needs that are not being met by the OPAC used by the University of Nairobi Library?

Yes No Don't Know

9. What are these need that are not being met by the OPAC used by the University of Nairobi Library?

i. Collection Search []

ii. Ranking Listing []

iii. Book Reservation []

iv. Any other.....
.....
.....

SECTION D: CHALLENGES OF OPAC AT THE UNIVERSITY OF NAIROBI LIBRARY IN MEETING USER INFORMATION NEEDS

10. Are there limitations in meeting user information needs at the University of Nairobi Library?

Yes No Don't Know

11. If Yes in question one above, what are these limitations?

i.

ii.

iii.

SECTION D: SOLUTIONS TO THE LIMITATIONS OF OPAC AT THE UNIVERSITY OF NAIROBI LIBRARY IN MEETING USER INFORMATION NEEDS

12. Can these limitations experienced in meeting user information needs at the University of Nairobi Library be addressed?

Yes No Don't Know

13. If Yes in question one above, How can these limitations be addressed?

- i.
- ii.
- iii.