ADOPTION OF INTEGRATED INFORMATION MANAGEMENT SYSTEMS IN KENYA: A CASE STUDY AT THE KENYA BUREAU OF STANDARDS LIBRARY

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DECLARATION

This research project is my original work and has not been submitted for examination to any other university.

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ACKNOWLEDGEMENT

DEDICATION

This project is dedicated to my beloved husband Mr. Charles Nyakundi and my children, Janerose, Johnleo, and Andreas for their support toward my project.

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ABBREVIATIONS AND ACRONYMS

AMLIB   : Automated Library

OPAC   : Online Public Access Catalogue

ABCD   : Automatisacion de Bibliotecasy Centros De

NewGenlib   : New Generation Library

OCLC   : Online Computer Library Centre

NSIS   : National Intelligence Service

SQL   : Structured Query Language

KEBS   : Kenya Bureau of Standards

OSS   : Open Source Software

NSC   : National Standards Council

Oracle 9   : Oak Ridge Automatic Computer and Logical Engine

ABSTRACT

Automation in libraries has been a top agenda in the information sector, particularly in this era of information explosion. Libraries have had to adopt various integrated library management systems to be able to manage and provide their services to their users effectively. However, the choice of the particular management system seems to influence the achievement of the libraries' effectiveness in service delivery. This study sought to highlight AMLIB library information management system in terms of its suitability in Kenya Bureau of standards library over other open source library management software. The specific objectives of this study were: to examine the usability of the KEBS's library; establish the staff views on the use of AMLIB in KEBS's library as opposed to other OSSs; examine the compatibility of AMLIB with the library's daily services to the user; establish the user's ability to use AMLIB in information retrieval and finally to find out the challenges being experienced while using AMLIB in the KEBS's library. The study adopted a qualitative research methodology which involved the use of descriptive data collection techniques and interpretation. The study was based at the Kenya Bureau of Standards main library and the other libraries in its nine branches. The target population was derived from the library department and any other related department such as the information technology department. The study was expected to be a lead towards easy process, storage, retrieval, evaluation and dissemination of information.

In regard to the application of AMLB in KEBS library, the study found that KEBS library is useful to both users and staff. On matters concerning staff views on the use of AMLIB in KEBS's Library Staff, the study found that use of AMLIB in KEBS's library as opposed to other OSSs had results indicating most staff as comfortable with it up to 70% rate. , the study found that most users were in agreement that circulation module was better in satisfying the daily users of the library as it plays AMLIB's compatibility with the library's daily services to the user.

CHAPTER ONE: INTRODUCTION AND BACKGROUND TO THE STUDY

1.0 Introduction

This chapter seeks to present the introduction of the case study and background information on all matters pertaining the perceptions and preferences of a library integrated information management system with special reference to AMLIB library system in a special library setting. This study also seeks to establish the significance of automation of special libraries using AMLIB Open Source Software (OSS), while maintaining its focus to the Kenya Bureau of Standards library which was the case study of this research.

1.1 Background of the Study

Libraries need to move from the traditional library practices which embrace manual systems of delivery of services (Hughes, 2011: p.17-22). According to hughes, these practices include among others: circulation, acquisition, cataloguing and classification as well as reference services which are cumbersome in terms of the mode used to deliver them to the users. In addition, he said that these activities are vital to the day to day running of the library and hence the need to improve them in order to offer efficient and effective library services. This improvement is well achieved by the process of automating the essential library functions such as acquisitions of information materials, cataloguing and classification of information materials, serials control and usage, circulation of information material (borrowing and lending of information materials), bibliographic services and also the use of Open Public Access Catalog (OPAC). In the light of the above, librarians are focused on the benefits of improving their services by

employing the use of automation to ease their work and better their services in this age of competition (Hider, 2012 p. 33-35).

Baltzan & Phillips, (2013), define automation as the use of machines as well as structured systems to perform tasks that have been performed by human beings. These machines, they say, have been programmed through coding to carry out tasks in a more efficient and effective manner. The systems in this case include all resources documented processes of achieving the goal of library automation. This is to say that the process must include a system of interrelated activities that are geared towards achieving a given objective or goal. In an information setting such as a library or an information Centre, the resources inherent in automating the functions of the library include the staff that is manpower, the computer systems, internet connectivity and funds for outsourcing the automation process as well as buying equipment (Smet, 2009: p. 64-65). The above are then inter-linked to automate any library or resource Centre.

According to Romero (2012: p. 112), automation should be considered as a method of improving the perception of library client's appeal to the library. In her online journal publication, she argues that proper planning of automation will ensure that the automation project is sustainable to enhance an organizations ability to provide reliable services to the clients. In this respect, it is important for state corporations to invest a lot of their resources in achieving automation of information resources (Adeyinka, 2015: p. 589).

AMLIB is an Open Source System (OSS) and is well suited for a special library since it has features that are well curved to be integrated with a special library (Adera, 2013: p. 615-616). Adera also adds that, for a state corporation library to operate effectively the

library staff should assess how effective and efficient are the main functions of the library after automation of the library features and how they can be utilized by use of the integrated software. In this case, it is worthy to identify the variables that will be depending on automation of an integrated library system. Adera (2013: p. 615-616) also added that the dependent variable is the integrated library software while the independent variables are Cataloguing, circulation, OPAC, serials control and acquisition modules. All these variables work towards achieving effectiveness in the automation of library functions and hence improving the service delivery (Evgenia & Valentini, 2015: p. 37-38) .

Adera, also noted that a gap exists so that despite the fact that AMLIB integrated library system is widely used in Africa and Kenya, it has very few reviews as compared to other library OSS such as KOHA, NewGenlib and ABCD. AMLIB is an integrated library system that is owned by the Online Computer Library Centre (OCLC) and has its agents in South Africa (Muthoka, 2015). Despite being acquired at a cost similar to that of proprietary library software, Muthoka adds that its database and interface is based on an open source system.

AMLIB'S system requirements for installation include a database server that is, Microsoft SQL Server 2000, 2005, Oracle 9 ("Microsoft SQL Server," 2015). In addition, it is easily installed on Microsoft Windows 2000, XP and Vista and runs on IIS server. Also, according to the above online details, it has disaster management feature that is based on an SQL relational database management system which is able to restore the system during a system crash and offers back-ups for the online system. AMLIB is currently being used in Botswana, Mauritius, South Africa and Uganda and for example,

AMLIB is being employed in the Kenya National Library services, Ministry of Energy, NSIS KEBS ("SQL CLR," 2014). To this end the study will seek to demystify the use and application of AMLIB by showcasing its usability and feasibility of automating a library.

1.1.1 Kenya Bureau of Standards

The Kenya Bureau of Standards (KEBS) is a parastatal that was enacted on Act of Parliament (CAP 496) of the laws of Kenya. KEBS started its operations in 1974 (Simmy & Mohamed, 2008: p 249-264). It is governed by board of directors also known as the National Standards Council (NSC). The council is charged with the responsibility of policy making, supervising, controlling and coordinating the administration and financial management of the Bureau. In addition, KEBS is managed by a managing director who is in charge of the day to day operations of the Bureau under the watchful eyes of the NSC board. Its vision is to be a global leader in standards based solutions that deliver quality and confidence of products. "The benchmark," (2010: p. 6-8), an annual magazine by KEBS, also noted that while KEBs mission is to provide standardization solutions for sustainable development, KEBS is mandated to ensure that manufacturers of all kinds of products conform to the laid out standardization by offering conformity assessment services to the manufacturing industry in Kenya.

The KEBS main aim is to ensure that the Kenyan manufacturing market is free of fake products or even products that are not durable, that could end up being a health hazard to the Kenyan community ("KEBS - Standards, Training, Testing and Certification," n.d.). This is well articulated by well laid out procedures such as: promoting its standardization

of products in commerce and industry; by providing testing and calibration services; offering of product and system certification; training of standardization and the application of standards and disseminating of the international System of Units (SI) of measurements. KEBS encourages the application of these guidelines and policies to the business environment, the various stake holders, and its employees and to all the members of the public.

1.1.2 KEBS Library

Olorunsola (2010: p. 6-8) noted that the KEBS library is a special library with the main purpose of serving the members of staff of the organization. In addition, its main purpose is to acquire, process information resources that are based on the services the organization is mandated to provide. These information materials include; journals published by the organization such as the conformity standards of products, information materials pertaining to the international system of units of measurements.

Information from KEBS website indicates that the KEBS main library has six permanent staff, that is from the top level is the library manager, assistant manager, Information officer, assistant information officer, information resource assistant and resource assistant ("KEBS - Standards, Training, Testing and Certification," n.d.). In addition, the KEBS library has a network of nine branch libraries, these includes, Nakuru, Mombasa, Kisumu, Eldoret, Namanga, Isbania, Meru and Garissa. The various information materials in the library include very old books on various subjects, periodicals, magazines, CDs, special documents by the name standards (this comprise Kenyan

standards), ISO standards, East African standards, India standards, South African standards and Britain standards.

The library has a collection of two thousand books which are considered to be out of date due to the year of publication with most of them bearing a publication date of 1970s. However, the library has an integrated library system namely AMLIB. This system was installed in the year 2010 by Circuit Business Systems (K) LTD at cost of nine million Kenya shillings. This amount included the cost of installing and configuring the system as well as that of training staff on the use of the system, license fee and a maintenance fee for two years.

1.2 Statement of the Problem

The most widely used integrated system is KOHA which has dominated the library sector so much that other library software's are unknown unlike AMLIB and other OSS which are also integrated library systems but with very few users in Kenya (Macan & Fernandez, 2013: 5-6). According to Giri, (2012), the key to a smooth running of the library is effective communication of all the library departments and this can be achieved by automating the four main library functions with the most effective Open Source Software (OSS). These functions include document delivery, registering new borrowers, source of information retrieval and information referral.

Romero, (2012: p. 112), also notes that some open source softwares are more popular than others; a good example being KOHA which has become more popular in Kenya than any other. KOHA's popularity has become influential to most library managements not necessarily because it is the most effective and suitable to their particular libraries, but

because of its 'fame'. For this reason, there is an evident gap between deciding on the OSS that is suitable for a particular library and that which is finally purchased for use in that library. Unless this problem is addressed, many libraries will remain irrelevant to their users and the quality of their services will be in total mess. Unlike many other libraries in Kenya which use KOHA, KEBS has AMLIB as their OSS which qualifies it to be ideal case study for this research. The aim of this research was to evaluate the use of AMLIB integrated information management system at the Kenya Bureau of Standards library.

1.3 Aim of the Study

The aim of the study was to evaluate the use of AMLIB integrated information management system at the Kenya Bureau of Standards (KEBS) library.

1.4 Objective of the Study

The specific objectives of this study were to:

1. Examine the application of AMLIB in KEBS's library.

2. Establish the staff views on the use of AMLIB in KEBS's library as opposed to other OSSs.

3. Examine the compatibility of the AMLIB with the library's daily services to the user.

4. Establish user's ability to use the AMLIB in information retrieval as compared to other OSSs which they may have used elsewhere.

5. Find out the challenges being experienced while using AMLIB in the KEBS's library.

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1.5 Research Questions

The study sought to investigate the following research questions:

1. What is the application of AMLIB in KEBS's library?

2. What are the staff views on the use of the AMLIB in KEBS's library as opposed to the use of other OSSs?

3. How compatible is AMLIB with the library's daily services to the user.

4. To what extent are the users able to use AMLIB as compared to other OSSs which they may have used elsewhere?

5. What are the challenges experienced by both the library staff users in the use of the AMLIB in KEBS library?

6. Are there available strategies to handle the challenges being faced while using AMLIB?

1.6 Assumption of the Study

The study assumed that the KEBS library was yet to realize the full potential of AMLIB integrated library software. The study also assumed that the case study was a representation of all other AMLIB users in private corporations hence making its results and recommendation beneficial to all. Finally, the study assumed that the target population would give a comprehensive data, sufficient to bring this study to a conclusion.

1.7 Significance of the Study

This study would be of great help to various groups, institutions and organizations. Such included:

1. This study would provide a basis for which future researchers could further undertake detailed research on various integrated library information management systems in use in the library sector.

2. The library management in KEBS would also realize areas that required improvement for service delivery.

1.8 Scope of the Study

The study was limited to the Kenya Bureau of Standards library that is based at South C and the nine branches country wide.

1.9 Limitations of the Study

It was important for the researcher to identify all short comings that will hinder the successful completion of this study. Therefore, the anticipated challenges included: availability of time in getting library staff to assist in information gathering, unresponsive library staff and finally there was very little information regarding the AMLIB software in terms of reviews.

1.10 Operational Terms and Concepts

IIS server Is an internet service provider for use with Windows NT family.

Infoxpertportal This is a real-time publishing portal that allows you to access your and have them published on the web content management system.

ISO standards These are international standards for ensuring that products and services comply with the required standards in terms of safety and reliability of products.

Marc 21   These are standards for cataloguing information materials and communicating the information to machine readable format.

Z39.50   Is a tool used in automated library system for searching and retrieving information during cataloguing of information materials.

AMLIB   an Integrated library information management system suitable for all types of libraries.

Cataloging Module   This is a tool in integrated library management systems that assist in collection development in a library

Circulation Module   Is a tool in integrated library management systems that assist in management of checking in and checking out of library collections

Acquisition Module   Is a tool in integrated library management systems that assistant library acquisition of library collections.

Serial control Module   Is a tool in integrated library management systems is used for keeping   track of journals, newspapers and other items that come on a regular schedule

1.12 Chapter Summary

The issues facing libraries such as the need to have an integrated library system that will best improve service delivery to their users had been a great challenge to various libraries. Libraries have had to choose integrated library systems not because they were sure of its performance but because they had seen it being used by other libraries. The

knowledge of the performance of a particular system is important if a library will finally satisfy their users in their service delivery. This study therefore brought out an analysis of the effectiveness of AMLIB integrated library management system in comparison to other systems with the aim of bringing into knowledge its suitability. The study began with a background and a statement of problem, followed by the aim, specific objectives and the research questions which were fundamental guide to this study. This chapter ended with the mention of the significance of the study, assumptions, limitations and operational terms in use in the study.

CHAPTER TWO: LITERATURE REVIEW

2.0 Introduction

A literature review is a report that gives information found in literature that is related to particular selected area of study which is what concerns this chapter. The chapter began by looking at the use of Integrated Information Management Systems (IIMS) in general and then specific integrated management systems such as AMLIB. The chapter also presents a conceptual framework of the study.

2.1 General use of Integrated Information Management System (IIMS)

Miguel, (2011: V. 29) noted that integrated information management systems, also referred to as Library management systems (LMS) are developed to handle basic major functions of the library. He further explain that since the evolution of digital libraries and the incorporation of computer technology in the library sector, libraries have had to keep themselves consistently updated by automating most, if not all their library functions and services. Most of the functions that had to be automated were the acquisitions, major services of the library such as cataloguing, circulation, serial control (Adeleke & Olorunsola, 2010: V. 28). The use of a common database by the management systems, which is referred to as Integration made the IIMS even more effective because all the functions of the library could be managed from one database.

IIMS has been in use for quit along time in most libraries of the world though the choice of which system to use is however determined by various factors which is dependent on the particular functions of the library, financial capability, and the priorities of the library (Kamble et al., 2012). Even with a large number of IIMS available for use by various

libraries, most libraries tend to use what has or is being used by other libraries since they rely on the report of other libraries which have tried a particular IIMS and has seen it work for them. This is quite a failure in one way or another since some IIMSs tend to be highly in use than others. KOHA for example, has been in use in most libraries in Kenya and is the commonly used while there are others which are could be more suitable and effective than KOHA, yet unexploited. AMLIB is in use in public libraries like the Kenya National Library Services (KNLS), and KEBS among others, while ABCD is rarely used in Kenyan libraries.

Giri, (2012: P. 4-12), also stated that there is an increase in demand for Open Source Software's (OSS) worldwide and it is now the main theme in the software market. A study by Donabedian & Carey (2011: p. 201-223) reveals that OSS server is able to serve thirty to forty computers to facilitate e-mail, internet and e-fax with other operations running concurrently. Consequently, the full impact of OSS is being felt in all areas of business world and promotes creativity and innovation. It is also easier to learn, apply in public as well as private business sectors. In their argument, Donabedian & Carey said that AMLIB is a proprietary integrated information management system which is based on open source database as well as interfaces. It is based on an open source platform that can easily be customized to suit a library's functions such as creating an Online Public Access Catalogue.

2.2 Specific Integrated Information Management Systems

Past researches such as Donabedian and Carey have indicated that several IIMS are available for use to all types of libraries. They differ in their effectiveness, reliability, and

other determinants which give room for individual libraries to choose the best suited for their services. The commonly available and used IIMSs are as follows:

2.2.1 KOHA

Egunjobi & Awoyemi, (2012), states that KOHA was created in 1999 and was first launched in the year 2000. It was from then that many other companies of the world came in to provide commercial support and the system kept improving from one level to another which made it become very marketable in the library sector. Such support includes translation into other languages which has made it usable to several libraries offering collections different from English. For example, in 2001 it was translated into French, Chinese and Arabic among other languages. Search standards and Z39.50 was added in 2002 (Egunjobi & Awoyemi, (2012). The growth of KOHA from one level of effectiveness to another gradually spread worldwide and become an international IIMS. In Kenya, KOHA is mostly used by most academic libraries and particularly the Universities. Due to its popularity in the academic sector, new libraries and other private institutions and organizations are seemingly adopting its use which leaves other IIMSs unexploited (Macan & Fernandez, 2013: p. 12-15)

2.2.2 NewGenLib

This is an integrated management system which was developed by Verus solution and was released in March 2005 (Haravu, 2009). Previous research has indicated that this IIMS is majorly used by the developing countries as their integrated management systems (Giri, 2012). It has been revealed that NewGenLib uses a number of well supported and widely used, reliable and well tested open source components which are easy to use and

manage. Such include postgreSQL, Apache Tmcat, and Solr lucene. NewGenLib software is Java-bases, platform-neutral and uses major software technologies in its presentation, web server and database layers. According to Mukhopadhyay, (2010), NewGenLib software is a very simple IIMS. As a result, most beginning libraries find it suitable for their service delivery such as school libraries and community libraries among others.

2.2.3 ABCD

ABCD is an acronym that stands for Automatisación de Bibliotécas y Centros de Documentation which is one of the IIMSs in use in many international libraries. ABCD software however has a distinct characteristic, that is, compatibility with CDS/ISIS database technology for the bibliographic databases which makes it unique and different from other. It provides not only automation functions to conventional libraries but also provides a platform of service delivery to other information providers examples of which are the documentation centers. This software is flexible and versatile in that it accommodates any bibliographic structure including all types of digital resources (Chris, 2012).

2.2.4 AMLIB
Wayne (2006), defines AMLIB as an IIMS which is suitable for all kinds of libraries ranging from those with one staff to those that process and circulates millions of information collections. AMLIB is flexible and can be customized to all types of libraries. Its flexibility, he says, makes it even more suitable for use since it has a long lifespan that any other software in the library. AMLIB is majorly used in the UK organizations and institutions. It has however gradually penetrated into African countries

and is now being used by most non-academic institutions in Africa. The software support team is always available and provides prompt online support to their users for free. It is therefore easy to use and manage software. The rate at which AMLIB is growing in popularity is an indication that it is dominating in Kenyan libraries (Nyamboga, Ongus & Njuguna, (2013).

2.3 Contrast and comparison of the above IIMS

Talking about the three IIMSs above (Haravu, 2009) states that, KOHA has a similar feature which is cumbersome due to the long procedure of uploading the bibliographic details. However, the cataloguing module in AMLIB is able to Link multimedia and Web addresses to catalogue records. In his explanation Haravu says that original cataloguing is provided with easy, flexible worksheets, importation and exporting in MARC 21 format and integrated Z39.50 searching, see and see also references with scope notes, authority merge, printing of spine labels and DVD covers, record-level security (restrict staff from location A from modifying records owned by location B) and prevention of records from display in OPAC.

When comparing KOHA and ABCD and NewGenLib, Macan (2013) says that all have the other features except provision of see also reference and scope notes and printing of DVD covers which is essential for special libraries use. However he continues to say, AMLIB has a sufficient large database of more than twenty thousand records and can catalogue different formats of materials such as books, journals/serials CDs and DVDs. This, he says proves that AMLIB has more features than most open source library systems. It is important for the staff library to be able to utilize these functions for the

proper functioning of the library tasks and to increase efficiency and effectiveness of processing information materials.

2.4 Conceptual Frame Work

The key concepts that will be involved in this study in terms of the independent variables and the dependent variable will include the four key library functions. These are the acquisition module, cataloguing module, the circulation module and the OPAC module as the independent variable. While the dependent variable is the integrated library information management system – AMLIB, they are all modules in the Integrated Information Library Management System and they only work with the direct interventions of the library management and staff to bring the objectives of the library which is user satisfaction (Adera, 2013: p. 615-616). Below is an illustration of the independent variables, dependent variables, intervening variables and the outcome with their relationships described.

Figure. 2.1. Conceptual Framework
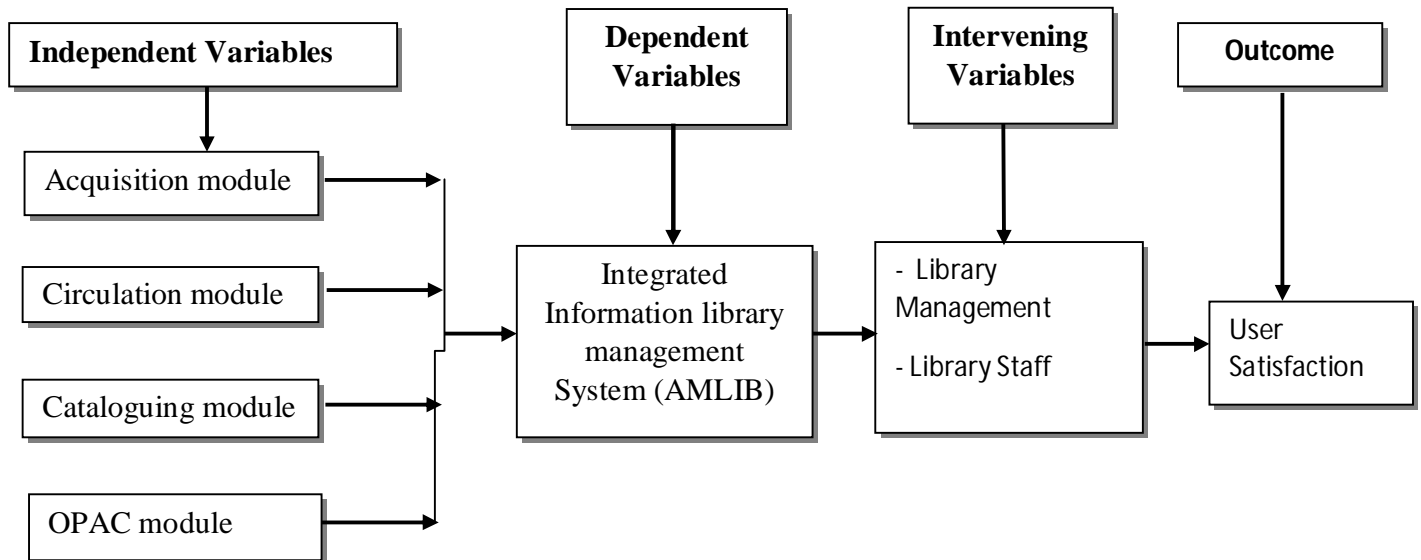
2.4.1 Functional modules

According to Adera (2013: p. 608-634), acquisition of information materials is a systematic process by which libraries and information centers perform such tasks as ordering, claiming and receiving the required information materials from pre-selected vendors. Through this process, he says, the acquisition section creates a pre-cataloguing record for each and every item acquired. The order record created by the acquisition department includes, ISBN, cost of the information material and the bibliographic information that includes the author, title, edition and place of publication and publisher. He also added that, the acquisition module in AMLIB also known as orders and finance is well suited for order processing, due to its ability of monitoring budgets, commitments as well as expenditures. This is enabled by such features as: automatic tax calculation, electronic ordering, invoice processing and inclusion of separate charges for freight.

Wang, (2009: p. 207–220), notes that through the reports and statistics feature offered by the acquisition module, one is able to generate reports of the total number of books ordered in relation to the amount spent. Consequently, Wang adds, one is able to create an order list, communicate with the vendor by mailing the required list of information materials to the vendor. Wang also stated that, the acquisition features enables the acquisition librarian to cancel the unwanted information materials in such situations when the information material is not relevant or the cost of the material is way beyond what the management of the library estimate or the budget. Wang also adds that that although KOHA and ABCD library software are heavily being embraced than AMLIB, they lack the foregoing features.

In his research report, Donabedian & Carey, (2011: p. 201-223), notes that, after acquiring an information materials what follows is the processing of the information materials. Essentially, he adds, cataloguing should be the first section in the library environment that should be automated. It is the process by which library information materials in a library have their details prepared through an informative bibliographic, physical and subject descriptions. This is done with the purpose of making an information material easy to identify and to differentiate it from other materials by assigning a classification number. For example in a report published by "The benchmark" (2010: p. 6-8), it was noted that KEBS library uses the Dewey decimal Classification (DDC) system which assists in assigning call numbers that will identify a given information material on its location in the library. DDC is useful for a special library since its subjects area is not broad and thus can easily be utilized for small and special libraries.

Adeleke & Olorunsola, (2010: V. 28), in their report in a survey on the use of online tools and techniques for cataloging and classification in Nigerian libraries provides information on libraries' awareness of the use of online methods for processing library resources, their efficiency and attitude of librarians to such tools. In their report, they insisted on the need to have a detailed knowledge of any IIMS if a library management is to achieve its objective in this era of dynamic technology. When explaining the AMLIB's software and its effectiveness they say, cataloguing and authority control feature are interoperable with MARC 21 standards of cataloguing and has a very easy to use interface.

Giri, (2012: p. 4-12), in his research report on AMLIB, states that the software has the Z39.50 searching facility. This facility enables the cataloguing department to save on time by searching through other databases in the web for the cataloguing and classification number and bibliographic details of the information materials and uploading the information in the AMLIB catalogue database. Through this, the AMLIB system is able to search through such databases as libraries in Australia, the library of Congress, Suppliers and Universities in a single search. Once the record is found then it is uploaded with a single click into the AMLIB system.

Past researches have showed that in a library setting, circulation is a systematic process through which library books are loaned out to the library clients (Evgenia & Valentini, 2015: p. 37-66). Hence, the circulation module contains information relating to circulation collection which includes information materials available and the library users who are allowed to borrow library information materials in any given library.

Singh & Sanaman, (2012: p.809 - 832), stated that for the circulation module to operate smoothly, it should have information relating to all individual library items which comprises the status of the circulation of an item, maximum loan period of an item, borrower's identifier that is library patron details and the due date for materials in circulation regarding the original record. The circulation module also contains a borrower's file which has a single machine–readable record for each and every library user (Lees, 2009: p. 603-611). Consequently, he adds that borrower's file contains data fields which comprise the borrower's name and address, registration date, profile of the circulation activity and the borrower's library number and card.

According to Romero, (2012: p. 110-114), AMLIB'S circulation system is diverse in terms of the services a circulation system should be able to provide. The module, he adds, is able to manage circulation functions such as library loans and fines, returns, book reservations and location transfers. In his argument, he insisted that the module is able to give statistics in areas such as borrower visits and renewals of books and transfers which is then tallied by the system in relation to the borrower's information regarding the type of borrower, hours of visiting the library, the branch, and month as well as the year to give statistics.

Romero, (2012: p. 110-114) also said that just like the circulation system in KOHA, AMLIB'S circulation system is able to display the borrower picture. During a server failure, the module has an offline circulation system which can be used to serve the library clients. It can also be uploaded after the resumption of the network to the live AMLIB database system apart from the circulation system managing the borrower's profile. According to Romero (2012: p. 110-114), AMLIB system has a separate module

for managing and maintaining borrower's profile which is known as the borrower management. Other features such as defining borrower type categories, importing the client's picture, hosting borrower e-mail address and guardian address are available. He also added that the module is able to save a patron's frequent search history, change the borrower's barcode but still maintain the borrower's past history and provide for special interest services such as selective dissemination of information.

According to Donabedian & Carey, (2011: 136-154), the online public access catalogue (OPAC) is considered the final module of automation of the library functions and a vital module in terms of searching. In their report, Donabedian and Carey (2011: 136-154) add that online public access catalogue is a well-structured and systematically organized machine-readable collection of bibliographic information of records in library holdings. Donabedian & Carey adds that bibliographic records are stored on secondary computer storage media, such as hard disks for direct access from various computer terminals. OPAC happens to be a solution to the outdated manual catalogue where you have to flip through a lot of cards for you to know the location of an item in the library or whether the item in question is available or borrowed.

In addition Donabedian and Carey noted that, AMLIB's OPAC is also known as, Net Pac's and that just like the other open source software, Amlib's Net Pac is flexible enough for one to be able to customize the interface with the required layout colors, text and fonts of different sizes, together with controls for statistical capture and borrower self-service functions. Also, Donabedian and Carey add that it has an advanced OPAC and a junior OPAC for young people using the library; a borrower self-service which comprises online renewals, view of history, through submission of suggested readings

based on selective dissemination of information profile of a client and auto generation of new topics and new videos. Donabedian and Carey also noted that OPAC module is able to use its federated search facility by searching in other libraries such as ZOpacs portal and full text searches using infoXpert portal.

Wayne insists in his argument that, today's OPAC is referred to as the next generation catalogue due to the inclusion of web 2.0 features such as e-mail communication from the library system to clients. In this case, he adds that in comparison with KOHA and NewGenLib, AMLIB and NewGenLib are a step ahead, because as mentioned earlier with AMLIB's system and now NewGenLib, it is possible for the system to up-date library client through the use of selective dissemination of information.

Singh & Sanaman, (2012: p. 809-832), points out that KOHA hosts a powered interface unlike both Amlib and NewGenLib. It is important for library software to have the functionalities of hosting video link facilities or webinar's since such facilities could be utilized as during orientation or even during an information literacy course. In addition to this, it is also important for the library system to be interoperable with virtual systems such as Skype for use in virtual training sessions.

CHAPTER THREE: RESEARCH DESIGN AND METHODOLOGY

3.0 Introduction

This chapter elaborates the research methodology of the study. The chapter focuses on the research design and methods that were employed in order to harvest the right data for the study. It specifically focused on research design, target population, sampling design and size, data collection instruments, data collection methods and procedure, data analysis procedure, pre-test, validity, reliability and finally the ethical issues.

3.1 Research Design

The descriptive research design was used in collecting the data from respondents. Bryman, (2012: p. 50-72), defines a research design as the process of proper arrangement of all the required conditions and data analysis in an economical manner but relevant to the study. This study was about the preferences of AMLIB in a special library setting. A descriptive study was carefully designed to ensure complete description of the situation, making sure that there was minimum bias in the collection of data and to reduce errors in interpreting the data collected.

3.2 Study Area

The unit of research was the Kenya Bureau of Standards library department that has its main office in South C in Nairobi and nine branch libraries which are located in Nakuru, Kisumu, Mombasa, Eldoret, Namanga, Isbania, Meru and Garrisa.

3.3 Target Population

Zikmund, & Griffin, (2012: p. 205), referred to population as a totality of all elements, subjects, or members that possess a specific set of one or more common characters that define it. The target population of this study comprised the KEBS Library staff which were divided into three namely: Top Managers, Middle-level managers, junior library staff. The users of the information resources in the library were also considered. Kenya Bureau of Standards had 165 employees then in the library department and approximately 520 users making the whole total target population to be 685.

3.4 Sampling Technique

A sampling technique refers to the procedures used to select a representative sample from the target population (Zikmund et al., 2012: p. 384). This involved the procedures applied to get the representative sample from the target population. Stratified random sampling technique was used to select respondents. Simple random sampling was appropriate for this study because the population was heterogeneous and only staff working in various branches of the Kenya Bureau of Standards and the users in the same branches were studied. The study sought to explain the preference of AMLIB in KEBS library, being one of State Corporation libraries as opposed to other open source softwares.

The study targeted all the employees but sampled out 95 employees working in different branches of the KEBS, plus 45 users making the total representative sample population of this study to be 140, which was 20.4% of the total target population. In the research, careful considerations were made to ensure that the three categories of staff and the users were well represented.

Table 3.1: The Sample Size

Category/Department	Target Population	Sample size	% Sample size
Top Management	24	8	33.3%
Middle level management staff	42	22	52.2%
Junior Staff	99	65	65.7%
Library Users	520	45	8.7%
Total	685	140	20.4%

The table shows the sample size, the sample represented 20.4% of the target population. To confirm the figure, the sample size selected did not have less than 10% of the accessible population for descriptive research (Fowler, 2013).

3.5 Data Collection Methods

The study used questionnaires to collect data from respondents. Some of the data was collected through documentary evidence that was relevant to the study conducted. Documentary evidence involves data that takes many forms such as administrative reports (proposals, internal reports and other internal records), notes and other formal studies.

3.5.1 Data Collection Instruments

The study aimed at making use of both primary and secondary data. Primary data was collected using questionnaires. Questionnaires were developed and divided into sections with each section addressing each specific objective and research questions of the study. A questionnaire consisting of a number of questions in parts printed in a defined order on a given form were given to the sampled employees and users to fill spaces as specified. Both open ended questions were used. Since all the KEBS staff had access to email communication, a copy of the questionnaires were sent to those respondents who were in other branches away from Nairobi and the same method was used to receive feedback. Questionnaires are written statements designed to gather both qualitative and quantitative data (Bryman, 2012: p. 50-72). Secondary data was collected by reviewing related literature both the print and the online sources.

Qualitative technique was employed. Qualitative research is exploratory in nature and results in depth non-numerical information (Zikmund et al., 2012: p. 384-390). It deals with less tangible and measurable topics and allows for close examination of motives, perceptions, beliefs and attitudes. Good qualitative research can lead to valuable insights being gained regarding people's subjective perceptions; their deep rooted beliefs and feelings. As such it is a very valuable tool in understanding people's motivations and attitudes.

3.5.2 Document Analysis

The study reviewed existing information resources related to the case study and variables in order to gather secondary data to be used to analyze the results of this study topic.

3.6 Data Analysis

The analysis varies with the purpose of the research, the complexity of the research design and the extent to which conclusions can be reached easily (Hair, 2010). The data collected from the semi-structured questionnaires were analyzed descriptively and discussed to provide a comprehensive conclusion and recommendations for this study. The study used pie charts, tables as well as bar graphs to present the findings. Both descriptive and inferential statistical techniques were used in the data analysis process. Once the questionnaires were administered and collected from the respondents, the raw data collected was systematically organized in a manner to facilitate analysis. This involved data cleaning which included editing, coding and tabulation to ensure completeness and consistency of the questionnaires. Pie charts, graphs, as well as tables were used to compare the different results established by the research in relation to the objectives of this study.

3.7 Pre Test

It is necessary to conduct a pre-test before embarking on the main research. This enabled the researcher to carry pilot survey 10 respondents from neighbouring organization in Nairobi. The purpose of the pre-test was to identify the gaps in the questionnaire and give directions for fine tuning the data collection instruments (Zikmund et al., 2012: p. 352-360).

3.8 Validity

Validity of a research study refers to the soundness of the research (Fowler, 2013). This is measured by how effective the design and the methods used in the research is. Careful

selection of the sample size, distribution and collection of questionnaires within the stated time frame together with the use of the indicated data collection instruments was the basis in which the validity of this research was tested.

3.9 Reliability

Reliability of a research refers to the degree to which the assessment tool produces consistent results (Bunakov, Jones, Matthews, & Wilson, 2014). Since the KEBS library staff operated from the same platform regardless of the branch, offering the same services using the same system, policies and procedures, their questionnaires' response was expected to reveal a consistency. The same applied to the users who access the same services from the same platform in which the staff operated in. This was sure to prove the reliability of this research study.

3.10 Ethical Issues

This refers to highest level of integrity in conducting a research to ensure that law and order is maintained (Hair, 2010). Various issues are involved in ethics such as plagiarism, consents by relevant authorities before engaging in a research, use of faulty methods and procedures of data collection, and misleading authorship among others. The researcher was keen to ensure that all legal issues are taken care in the conducting process of this study.

The research was conducted within the confines of the necessary regulations prohibiting plagiarism and adherence to copyright obligations. Moreover, interviewees especially those within KEBS were afforded the opportunity to choose anonymity due to the sensitive nature of the subject matter.

The researcher also provided sufficient information before participant accepts to take part in the study, to allow him/her make the informed choice. This means that the researcher had ethical responsibilities to the scientific community on how data is analyzed and reported; meaning that there should be no misinterpretation and misreporting ((Bhattacherjee, 2010). Furthermore, all the respondents were given a free will to participate and contribute voluntarily to the study. Necessary research authorities was consulted and permission sought while due explanations was given to the respondents before commencement of the study.

CHAPTER FOUR: DATA PRESENTATION, ANALYSIS AND DISCUSSION

4.0 Introduction

This chapter covers data presentation, analysis and discussion. The aim of the study was to examine the adoption of integrated information management systems in Kenya.

4.1 Response Rate

The study sought to gather information from employees and users working in KEBS. A total of 140 questionnaires were distributed to employees of KEBS and 130 were collected having been filled completely. This made a response rate of 93% which was sufficient for data analysis. According to Mugenda and Mugenda (1999) this response rate was excellent since a response rate of 50% is adequate for analysis and reporting; a rate of 60% is good and a response rate of 70% and over is excellent.

Table 4.1: Response Rate

	Frequency	Percentage
Responded	130	93%
Not Responded	10	7%
Total	**140**	**100%**

4.2 Background Information of the Respondents

The respondents were asked to indicate their position in the organization. Figure 4.1 shows the results.

Figure 4.1: Background Information of the Respondents
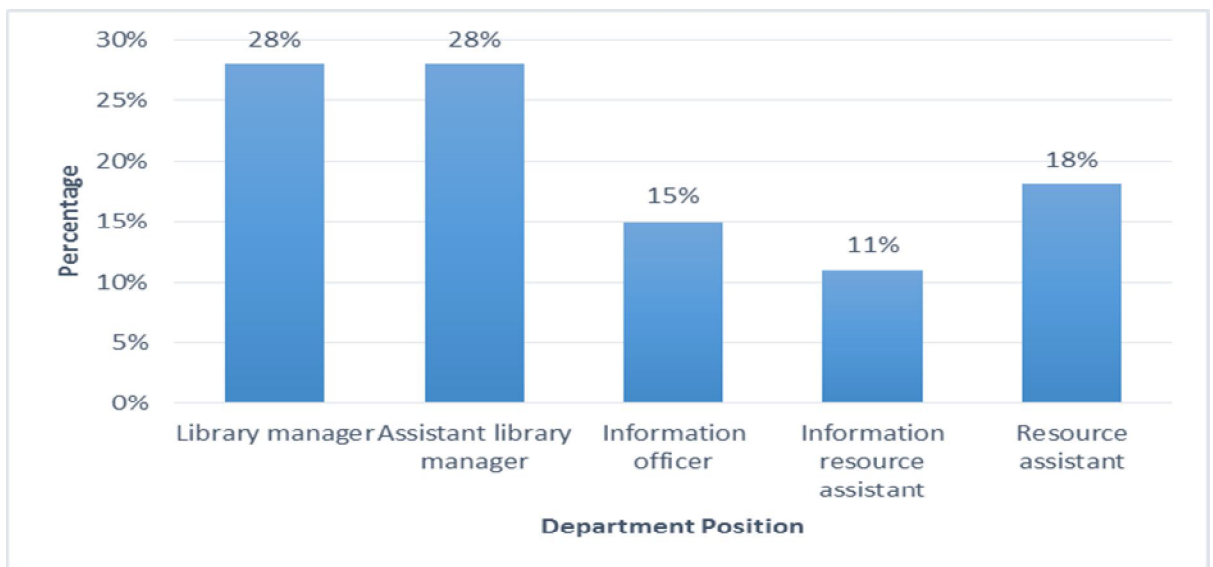
From the findings, 28% of the respondents indicated that they were library managers and assistant library manager respectively. 18% of the respondents stated resource assistant as their position in the organization, 15% stated information officer while 11% stated information resource assistant as their position in the organization. The findings indicate that majority of employees were library managers and assistant library managers in the organization.

4.3 The Application of AMLB in KEBS Library

The respondents were requested to indicate the application of AMLB in KEBS library. The table and figure below shows the results.

Figure 4.2: KEBS library application
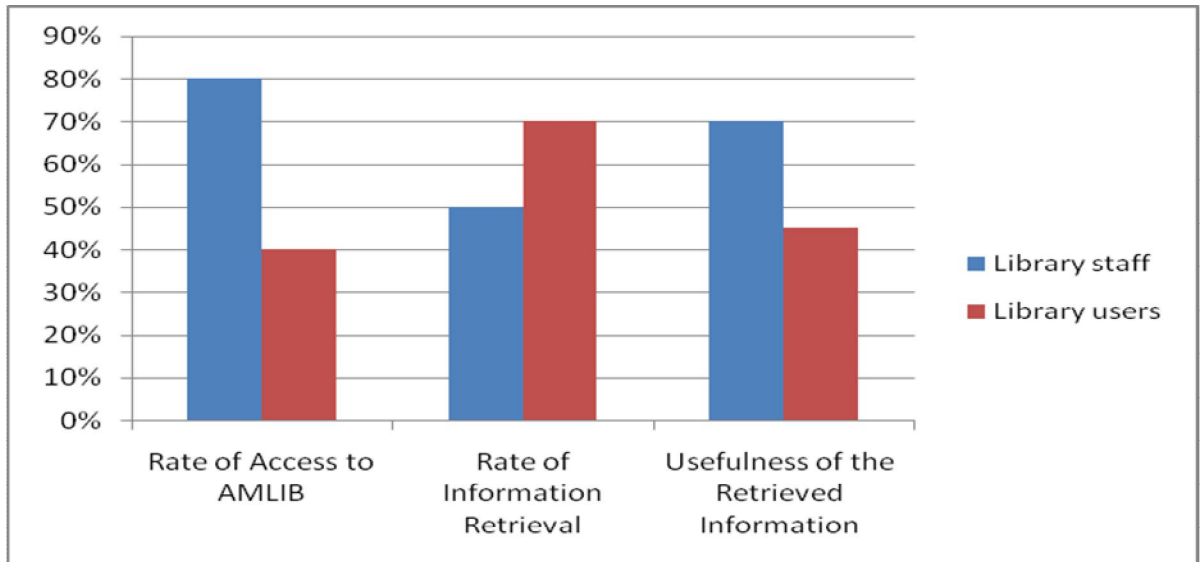
According to the results, the rate of staff access to AMLIB was higher than that of users by half (Staff was 80% while that of users was 40%).

The rate of information retrieval was lower for the staff by 20% compared to that of users which was 50%, and finally, the usefulness of the retrieved information by staff showed a higher rank by 70% compared to that of users which was 45%. The findings therefore show that the rate of staff access to AMLIB was higher than that of users by half. The reason attributed to this could be that the staff had a lot of time to interact with the system. It could also be attributed to the fact that the KEBS library also dealt with the external customers hence they had very little time to interact and may not be accustomed to the system. In terms of information retrieval it can be observed that the rate of staff compared to the users is lower. The reason for that could be that the user are involved in research matters than staff hence they retrieve information more often than the staff. It is very evident that such situation could arise in any situation where research work is more immense. For the usefulness of the retrieved information it showed a higher ranking in

terms of staff compared to the users. It should be noted that the staff had access and were able to use the system using all approaches and that was why they appreciated the system more than the users. During the interview the staff gave reasons why the decided to use the AMLIB library system and some of these reasons were that the system had various modules and searching for more relevant information was key.

4.4 Staff views on the use of AMLIB in KEBS's Library

The study asked the respondents to indicate their Staff views on the use of AMLIB in KEBS's Library. The findings are indicated in figure 4.3.

Figure 4.3: Staff views on the use of AMLIB in KEBS's library
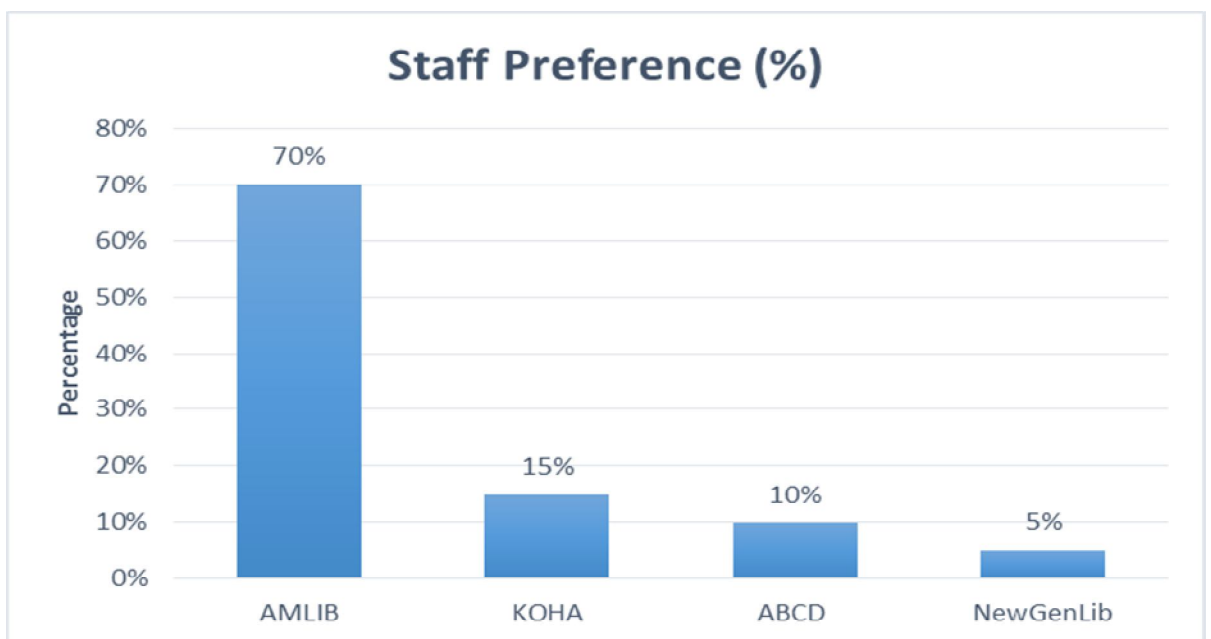
From the findings, majority of the respondents (70%) indicating a satisfaction with the system in regard to staff view on the use of AMLIB in the KEBS library as opposed to other OSSs was positive with the highest number of respondents. They however expressed a desire to have all the modules made active to perfect their service to their

users. Some staff however indicated different feelings with KOHA ranked the second preference for the library (15%); ABCD, the third with 10% and with the least number of staffs indicating 5% preference to NewGenLib.

From the findings, the library users preferred AMLIB as opposed to other library management systems. Their preference could be attributed to the fact that they had an opportunity to interact with the AMLIB as opposed to other library system. The other reason could be that the AMLIB system was simple and easy to be understood by both staff and users.

4.5 AMLIB's Compatibility with the Library's Daily Services to the User

The study requested the respondents to indicate their views on AMLIB's compatibility with the library's daily services to the user. The findings are indicated in figure 4.4.

Figure 4.4: AMLIB's Compatibility with the Library's Daily Services to the User
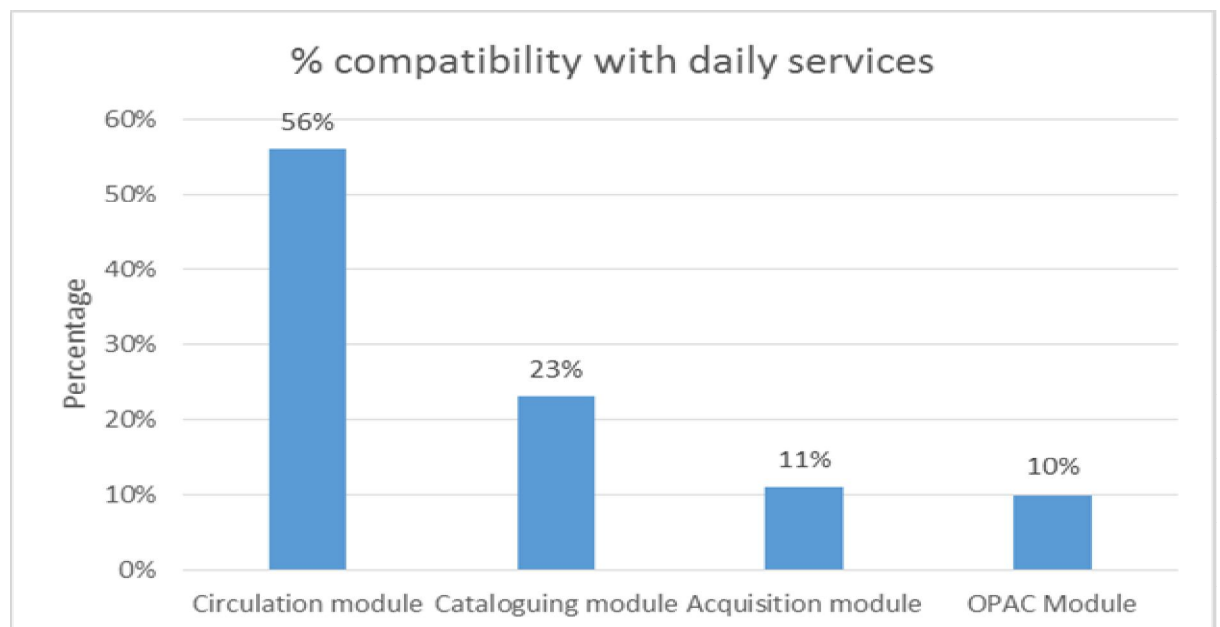
From the findings, majority of the respondents (56%) indicated the circulation module as the highest compatibility; the cataloguing module with 23% with the OPAC module while the acquisition module was ranked with 11%. 10% of the respondents stated that OPAC module was compatible with users. These findings indicated that circulation module was better in satisfying the daily users of the library. From the findings it can be deduced that that majority of the work in the library involved circulation services. Circulation involved lending and receiving the returned library materials. Downward trend was indicated in the other modules. The reason attributed to that could be that those other services are technical as opposed to library routine work such as circulation services.

4.6 User's Ability to use The AMLIB in Information Retrieval

Furthermore, the study requested the respondents to indicate their views on User's ability to use the AMLIB in information retrieval as compared to other OSSs. The findings are indicated in figure 4.5.

Figure 4.5: User's Ability to use The AMLIB in Information Retrieval
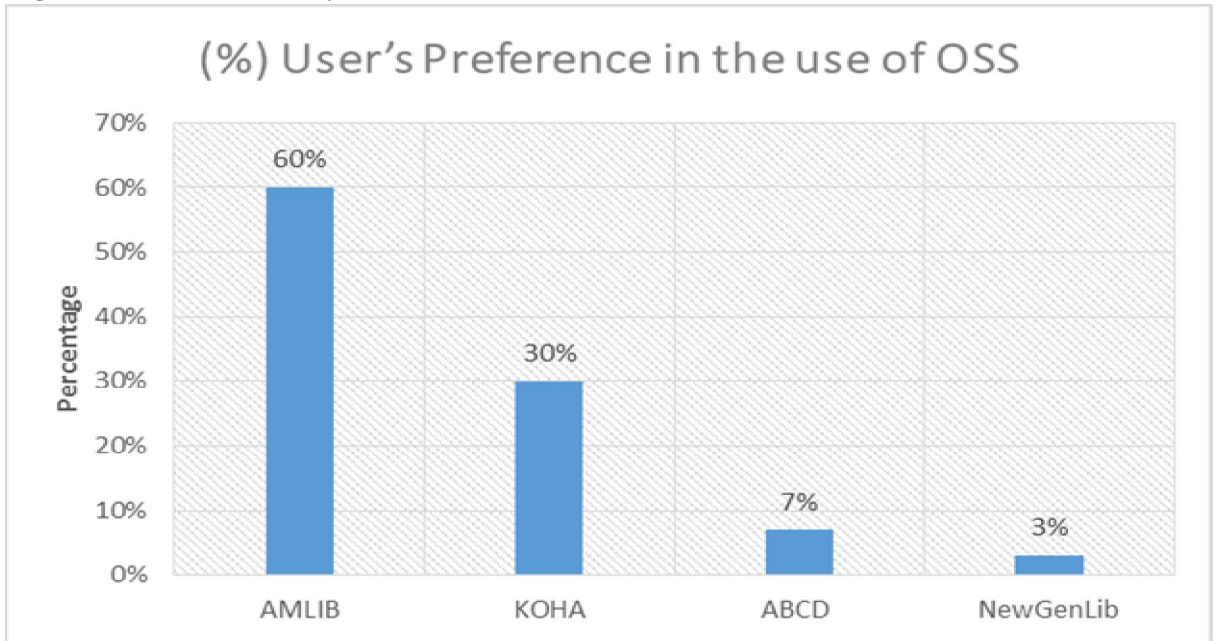
From the findings, majority of the respondents (60%) were comfortable using AMLIB to retrieve information. However a relatively larger group (30%) of users had been used to KOHA which is mainly used in academic libraries where they underwent their studies. A few of them (7%) had a different feelings and were comfortable using ABCD while others (3%) had explored NewGenLib and were now comfortable using it rather than using the rest of the management systems. From the findings it can be deduced that the users were more comfortable using AMLIB as opposed to other library systems in terms of retrieving information. As indicated earlier the AMLIB library system was easier to use for retrieving information since most of the users were accustomed to it and had a lot of time interacting with the system as opposed to other library systems. It was more evident that the comfort at which staff was able to comfortably use and apply AMLIB library system could also be attributed to the fact that the staff had been inducted and well.

4.7 Challenges experienced by AMLIB in KEBS's Library

The respondents were requested to indicate the challenges experienced by AMLIB in KEBS's library. The findings are indicated in the figure below.

Figure 4.6: Challenges experienced by AMLIB in KEBS's Library
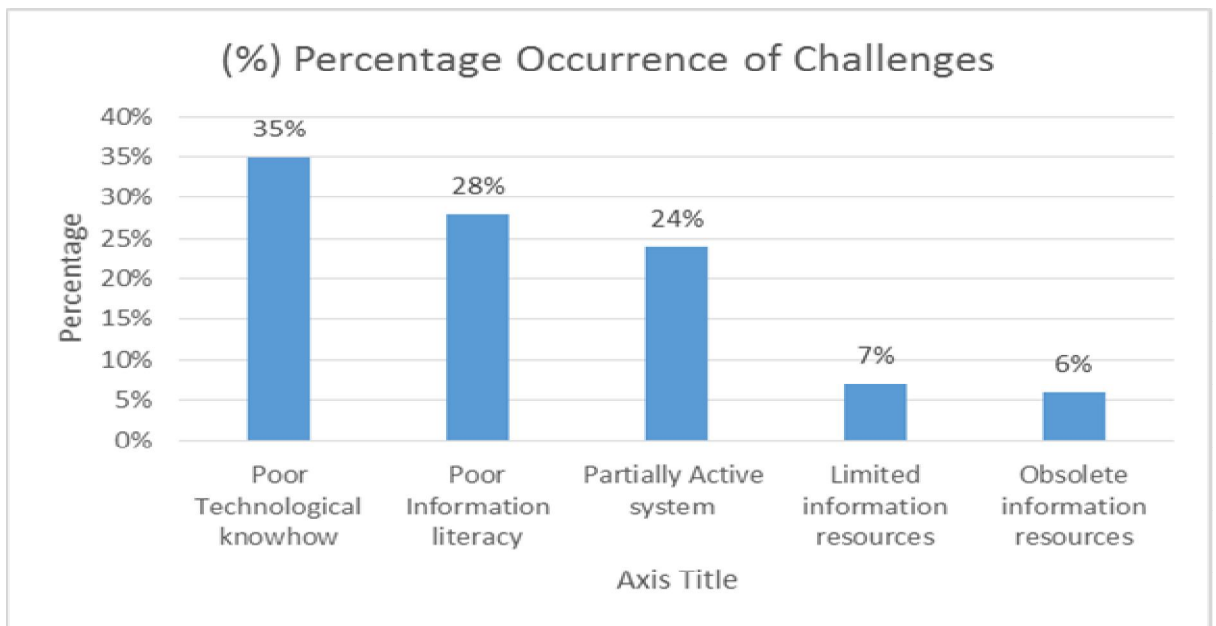
From the findings, majority of the respondents (35%) indicated poor technological knowhow as a challenge experienced by AMLIB users in KEBS' library. 28% and 24% of the respondents indicated poor information literacy and limited information resources knowhow as a challenge experienced by AMLIB users in KEBS' library respectively. This is due to poor funding of the library by KEBS, culminating into a shortage of resources. However, some of the respondents (7% and 6%) indicated limited information resources and obsolete information resources knowhow as a challenge experienced by AMLIB users in KEBS' library respectively. The findings therefore insinuate that poor technological knowhow is a major challenge experienced by AMLIB users in KEBS'

library. The biggest challenge from the findings was that the users had poor technological knowhow. That could be attributed to technological changes in information technology. That meant that there was need for both staff and users to upgrade themselves in terms of information technology. If both staff and users had the necessary technological knowhow there was no likelihood of encountering that kind of challenge. In terms of poor information literacy, that could be blamed on the side of the library staff of having not organized, mounted and imparted enough information literacy programme. An information literate user is one who knows when information is needed how to find it using the available retrieval tools and how to use it. On the side of the partially active system the blame could be on both the vendor of the system and the library staff. The vendor of the system was supposed to disclose the functionality of the system to the library staff while the library staff was to test all the modules of the system. That could alleviate that problem of partially active system. The challenge of obsolete information resources and limited information resources cold be blamed on the side of both library staff and management of KEBS in the sense that the library staff was to identify and forward to the management for consideration for purchasing most current library materials while on the other hand the management was to set aside funds to enable the library staff purchase the materials.

CHAPTER FIVE: SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.0 Introduction

The main objective of this study was to assess the adoption of integrated information management systems in Kenya with a view of suggesting the need to adopt specific information management systems that suit a library's services to their users, contrary to the current trend where most libraries adopt a particular system because another library is using it or for its popularity. Therefore, this chapter presents a summary of findings, conclusions and recommendations as well as suggesting other areas of further research.

5.1 Summary of Key Findings

In regard to the application of AMLB in KEBS library, the study found that KEBS library is useful to both users and staff. However, the response differed between the users of the library and the staff depending on what exactly is being done in the library. The use of AMLIB for example had the staff indicate a double percentage of use as compared to users who only indicated a 40% rate of use. The difference here is a result of the fact that the staffs always are in the library and must use the system to assist their users and perform other library processing activities. The users however only used the system when searching the catalogue for information retrieval. The rate of information retrieval had the staff indicate a lower percentage of 50% while the users indicated a higher rate of 70%. This is because the staff will rarely need to retrieve information unless they are helping a user to retrieve information.

On matters concerning staff views on the use of AMLIB in KEBS's Library Staff, the study found that use of AMLIB in KEBS's library as opposed to other OSSs had results indicating most staff as comfortable with it up to 70% rate. This was a good indication that the information management system is best for the KEBS library. It further found that few of them indicated preference to KOHA (15%), ten percent with preference to ABCD (10%) while the least number (5%) indicated to have preferred NewGenLib. The AMLIB's compatibility to the daily services offered by the library gave a very positive response with the modules used in the library to serve the users and to process information resources being given a very high percentage rate of compatibility.

Furthermore, the study found that most users were in agreement that circulation module was better in satisfying the daily users of the library as it plays AMLIB's compatibility with the library's daily services to the user. This is a clear indication of a gap between the users and the staff on what is important or useful to the users and what the staffs are providing as useful to the users.

The results on the users' ability to use AMLIB in information retrieval as compared to other OSSs indicated a positive response with most users giving a comfortability rate of 60%. A few (30%) of them said they were comfortable with KOHA than AMLIB, with others (7%) comfortable with ABCD and the 3% of the users indicated as being more comfortable with NewGenLib. Five major challenges were realized to be facing users and staff in the use of AMLIB at KEBS library which were: poor technological knowhow, poor information literacy, partially active system, few information library collections, and finally obsolete information resources. The percentages occurrences of these challenges in percentages were 65%, 55%, 70%, 85%, and 50% respectively. This was as high rate

of occurrence which calls for a need to have quick measures taken to curb or reduce these occurrences.

5.2 Conclusion

Adoption of information management systems in Kenya is a challenge facing information management institutions. The choice of an information management system should be a careful activity which should involve a survey of the users' needs in relation to the particular services being offered by the institution. The libraries and information centers should bear in mind that the trends in information management are gradually changing from stocking information resources for users to come and access them, into being providers of equipments and tools that enable the users to access the information they need. This means that there should not be a gap between what the information managers have for users and what the users expect to find in the library.

5.3 Recommendation

Based on the study's findings, the following recommendations were made on the use of AMLIB integrated information management system at the Kenya Bureau of Standards (KEBS) library.

1. Application of AMLB systems should be selected for any particular information center on the basis of the particular needs of the users. On such basis, the highest suggestions or proposals by users on the best management system should be the first priority in deciding which system to acquire for the library or information center.

2. Other factors like the staff views and the compatibility with the specific services of the library are also necessary to consider in addition to the users' suggestions. It is therefore important to note that most libraries in Kenya ought to revise on their information management system to see whether it is relevant to the services offered, and whether it achieves the mission and vision of the library.

5.5 Areas of further Research

Areas of further research in relation to this study include the following:

i). **The use of more than one information management system in one library**

Researchers should consider researching on the possibility of having more than one information management system in one library to ensure that users and staff use the system they feel comfortable rather than being restricted to one.

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APPENDIX I: INTRODUCTION LETTER

Catherine Ondoro

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Nairobi.

Dear Respondent,

RE: INTRODUCTION LETTER FOR RESEARCH

I am a Master of Library and information Science student in the Department of Library and information Science, University of Nairobi. I am currently, undertaking a research on the adoption of information management systems in state corporations. The KEBS library – Nairobi is my case study for this research study. The aim of the study is to evaluate the use of AMLIB integrated information management system at the Kenya Bureau of Standards library.

The study objectives are to; establish the staff views on the use of AMLIB in KEBS's library as opposed to other OSSs; determine the compatibility of the AMLIB with the library's daily services to the user; establish user's ability to use the AMLIB in information retrieval as compared to other OSSs which they may have used elsewhere and find out the challenges being experienced while using AMLIB in the KEBS's library.

The information and opinions you provide are purely for use in the study and shall remain strictly confidential. Thank you in advance for your cooperation.

Yours sincerely,

Catherine Ondoro

APPENDIX II: QUESTIONNAIRE FOR LIBRARY STAFF

Instructions:

Please indicate your response by ticking the provided boxes ☑ . For questions that require suggestions or comments, please use the provided space.

1. Name …………………………………………………………………………

2. Department …………………………………………………………………..

Background Information

1. Please indicate your position in the organization

a) Library manager ☐

b) Assistant library manager ☐

c) Information officer ☐

d) Information resource assistant ☐

e) Resource assistant ☐

f) Any other (please specify)……………………………………….

2. In your own opinion, what is the usability of KEBS library?

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3. Briefly describe the level of your awareness about the concept of automation of library functions?

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4. What are your views as a library staff on the use of AMLIB in KEBS's library as opposed to other Open Source Softwares?

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5. Why did the library choose to automate the library services using AMLIB open source software?

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6. In your own views, how compatible is AMLIB with the library's daily services to the user?

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7. Do you think AMLIB is the best Open Source Software for KEBS? Explain you
answer?

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8. In your view, are you comfortable using AMLIB as an Open Source Software? Justify
your answer?

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9. Which module of AMLIB do you frequently access in the library and why?

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10. In your own opinion, how effective is AMLIB in serving the objectives of the library management?

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11. In your opinion, is there other Open Source Software which you would suggest for the library instead of AMLIB? Explain why.

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12. How can you rate the automated library functions in terms of offering efficient and effective services to the library client? Explain your answer.

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13. In terms of security, explain how effective AMLIB is in regulating the rights and privileges of library staff and users?

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14. In your own opinion what are the factors should be considered when automating the
circulation library function with AMLIB software?

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15. Which challenges do you face in the use of AMLIB in the library as a user or staff?
Mention them?

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Appendix III: Budget

ITEM	QUANTITY	UNIT COST (KSHS)	TOTAL COST (KSHS)
Stationary	5 reams	500	2,500
Traveling & phone calls (Fuel)	Item	5000	5,000
Binding	8 copies	100	800
Photocopying	85 pages X 8 copies	2	1,360
Data collection	Item	5000	5,000
Supervision	Item	10,000	10,000
Miscellaneous	Item	10,000	10,000
Total			**34,660**